DEPARTMENT OF THE ARMY TECHNICAL MANUAL **TM 11-5895-391-15**

DEPARMENT OF THE NAVY TECHNICAL MANUAL **NAVSHIPS 0967-301-5010**

DEPARTMENT OF THE AIR FORCE TECHNICAL ORDER **TO 31S5-SFYQ42-1**

OPERATOR, ORGANIZATIONAL, DIRECT SUPPORT, GENERAL SUPPORT, AND DEPOT MAINTENANCE MANUAL

AUTOMATIC DIGITAL MESSAGE SWITCHING CENTERS

AN/FYQ-42(V)1 (NSN 5895-00-832-9349)
AN/FYQ-42(V)2 (NSN 5895-00-832-8555)
AN/FYQ-42(V)3 (NSN 5895-00-832-9060)
AN/FYQ-42(V)4 (NSN 5895-00-832-9063)
AN/FYQ-42(V)5 (NSN 5895-00-832-9069)
AN/FYQ-42(V)6 (NSN 5895-00-832-9075)
AN/FYQ-42(V)7 (NSN 5895-00-832-9345)
AN/FYQ-42(V)8 (NSN 5895-00-832-9344)
AN/FYQ-42(V)9 (NSN 5895-00-832-9343)
AN/FYQ-42(V)10 (NSN 5895-00-832-9346)
AN/FYQ-42(V)11 (NSN 5895-00-832-9347)
AN/FYQ-42(V)12 (NSN 5895-00-832-9348)
AN/FYQ-42(V)T1 (NSN 6940-00-832-9342)

This copy is a reprint which includes current pages from Changes 1 through 5. Title was changed by Change 5 as shown above.

DEPARTMENT OF THE ARMY, THE NAVY, AND THE AIR FORCE
OCTOBER 1968

TECHNICAL MANUAL
NO. 11-5896-391-15
TECHNICAL MANUAL
NAVSHIPS 0967-301-5010
TECHNICAL ORDER
TO 31S5-2FYQ42-1

DEPARTMENTS OF THE ARMY,

THE NAVY, AND THE AIR FORCE

WASHINGTON, D.C., *30 OCTOBER 1968*

OPERATOR, ORGANIZATIONAL, DIRECT SUPPORT, GENERAL SUPPORT, AND, DEPOT MAINTENANCE MANUAL.

AUTOMATIC DIGITAL MESSAGE SWITCHING CENTERS AN/FYQ-42(V)1 THROUGH AN/FYQ-42(V)12 AND AN/FYQ-42(V)T1

LIST OF ILLUSTRATIONS

CHAPTER 1

INTRODUCTION

Section I. GENERAL

1-1. Scope

a. This manual describes the Automatic Digital Message Switching Center (ADMSC) used within the Automatic Digital Network (AUTODIN).

b. The manual covers important system aspects to enable operating and maintenance personnel to understand the ADMSC as a whole and include system type information for operating personnel and for maintenance personnel.

c. Component-type information for each major component of the ADMSC is provided in separate manuals. A complete list of reference manuals for Automatic Digital Message Switching Centers AN/FYQ 42(V)1 Through AN/FYQ 42(V)12 and AN/FYQ 42(V)T1 is provided in appendix A.

d. This manual does not contain operating instructions for the ADMSC. The complete operating instructions are provided in DCA Circular 310-D70.

1-2. Indexes of Equipment Publications

a. *New Editions, Changes or Additional Publications.* Determine whether there are any new editions, changes, or additional information pertaining to your equipment ·by referring to DA Pam 310-4 (Army), NAVSAND A Publication 2002- (Navy), or Numerical Index and Requirement Table TO 0-1-01N (Air Force).

b. *Modification Work Orders.* Refer to the latest edition of DA Pam 310-7 to determine whether there are any Modification Work Orders (MWO's) pertaining to the equipment.

1-3. Forms and Records

a. Reports of Maintenance and Unsatisfactory Equipment. Maintenance forms, records, and reports which are to be used by maintenance personnel at all maintenance levels are listed in and prescribed by TM 38-750 (Army). Air Force personnel will use AFM 66-1 for maintenance reporting and TO-00-35D54 for unsatisfactory equipment reporting. Navy personnel will report maintenance performed utilizing the Maintenance Data Collection Subsystem (MDCS) IAW OPNAVINST 4790.2, Vol. 2, chapter 17.

b. *Report of packaging and Handling Deficiencies.* Fill out and forward DD Form 6 (Packaging Improvement Report) as prescribed in AR 700-58/NAVSUPINST 4030.29/AFR 7113/MCO P4030.29A, and DSAR 4145.8.

c. Discrepancy in Shipment Report (DISREP) (SF 361). Fill out and forward Discrepancy in Shipment Report (DISREP) (SF 361) as prescribed in AR 5538/NAVSUPINST 4610.33A/AFR 75-18/MCO P4610.19B and DSAR 4500.15.

1-3.1. Reporting of Errors

The reporting of errors, omissions, and recommendations for improving this publication by the individual user is encouraged. Reports should be submitted on DA Form 2028 (Recommended Changes to Publications and Blank Forms) and forwarded direct to Commander, US Army Electronics Command, ATTN: AMSEL-MA-Q, Fort Monmouth, NJ 07703 (Army); NAVSHIPS 5600/2 (REV 10-67) (formerly NAVSHIPS 4914) and forwarded to: Commander, Naval Electronics System Command, ATTN: 0451C, Washington, DC 20360 (Navy); or AFTO Form 22 (Technical Order System Publications Deficiency Report) and forwarded to: Commander, Oklahoma City Air Material Area, ATTN: OCNDT (B-F), Tinker Air Force Base, OK 73145 (Air Force).

1-4. Administrative Storage

For procedures, forms and records, and inspections required during administrative storage of this equipment, refer to TM 740,90-1.

1-4.1. ADMSC Equipment Lists

a. The equipment groups, the nomenclature, and the quantity of equipments comprising Automatic Digital Message Switching Centers AN/FYQ-42(V)1 through AN/FYQ-42(V)12 and AN/FYQ-42(V)T1 are given in tables 1-1 through 1-13.

b. The AUTODIN equipment list for all sites is contained on drawing numb 100000063; this drawing is part of the as built drawing package supped to each ADM SC and is retail in the on-site file as part of the permanent station records for use by ADMSC station personnel.

Table 1-1. AN/FYQ-4 (V) 1 Equipment List

Nomenclature	Manufacturer's part No.	Quantity
Automatic Digital Message Switching Group AN/FYA-10(V) 4.		
Switching Unit, Memory-Drum Control SA-1542/FYA-10(V)	397-1297-7	1
Switching Unit, Processor SA-1543/FYA-10(V)	397-1299-1	1
Switching Unit, Magnetic Tape Control SA-1544/FYA-10(V)	397-1298-1	1
Switching Unit, Communication Line SA-1545/FYA-10(V)	397-1294-2	1
Switching Unit, Tape Transport-Maintenance Console SA-1536/FYA-10(V)	397-1296-1	1
Switching Unit, Distribution SA-1537/FYA-10(V)	397-1301-1	1
Control Group Magnetic Tape OK-30/FYA-10(V)	397-1288-1	1
Control Group, Peripheral Input-Output OK-31/FYA-10(V)	397-1287-1	1
Monitor Assembly, Control-Sensing OK-33/FYA-10(V)	397-1285-1	1
Processor Unit OL-9/FYA-10(V)	397-1283-1	6
Memory Storage and Control Group 0A-8945/FYA-10(V)	293968-01	6
Printer Unit RP-164/FYA-10(V)	397-1300-1	2
Card Reader Unit RP-165/FYA-10(V)	397-1315-1	1
Card Punch Unit RO-328/FYA-10(V)	397-1316-1	1
Recorder-Reproducer, Signal Data RD-304 /FYA-10(V) .	397-1303-1	18
Console, Station Supervisory OJ-51/FYA-10(V)	397-1292-2	1
Console, Maintenance OJ-50/FYA-10(V)	397-1291-1	1
Line Termination Buffer Unit OA-8299(P)/FPYA-10(V)	397-1289-3 to 397-1289-29	5
Printer, Line RP 224/U	LP3000-1-12211112	2
Console, Message OJ-347/FYA-10(V)	398-5199-1	2
Disc Memory Unit MU-617/FYA-10(V)	397-1563-1	3
Console, Maintenance Support OJ-346/FYA-10(v)	397-1324-2	1
Communication; Group AN/FYA-11		
Patch Bay, Audio AN/FYA-25.	100001402-004	1
Patch Bay, High Level Signals ON-7/FYA-1	100001425-002	1
Patch Bay,. Low Level Signals ON-8/FYA-1	100001403-001	1
Patch Bay, Low Level Signals AN/FYA-26	100001403-010	1
Patch Bay, Secure Circuits AN/FYA-27	100001404-004	1
Patch Bay, Secure Circuits ON-11/FYA-11	100001404-008	1
Patch Bay, Secure Circuits ON-114(V)3/FY .	100003165-003	1
Patch Bay, Unsecure Circuits ON-12/FYA-11	100001405-002	1
Station Timing Unit TD-863/FYA-11	100001406-002	1
Converter Unit, Signal Level OU-20/FYA-11	100001407-002	1
Test Set. Electronic Systems AN/FYM-22	100001411	1
Interconnecting Unit AN/FYA-28	100001412-003	1
Interconnecting Unit AN/FYA-29	100001412-004	3
Interconnecting Unit AN/FYA-30	100001413-004	4
Interconnecting Unit, Audio ON-9/FYA-11	100001414-004	1
Interconnecting Unit, High Level Signals AN/FYA-31	100001426-003	1

Table 1-1. AN/FYQ-42(V) 1 Equipment List-Continued

Nomenclature	Manufacturer's part No	Quantity
Teletypewriter Set AN/FGC-132	100001445	2
Teletypewriter Set AN/FGC-133	100001597	5
Isolation Unit Data-Timing AN/FYA-35	100001415-002	1
Filter Unit, Audio F-1145/FYA	100001408-003	1
Filter Unit, Radio Frequency F-1146/FYA	100001409-101	1
Filter Unit, Radio Frequency P-1147/FYA-11	100001409-102	1
Filter Unit, Radio Frequency F-1148/FYA-11	100001409-301	1
Console, Channel Status Display AN/FYA-36	100000460-001	1
Console, Channel Status Display AN/FYA-37	100000460-004	1
Console, Monitor-Test AN/FYM-23	100000461-002	1
Console, Monitor-Test AN/FYM-24	100000461-003	1
Switching Unit, Monitor-Test Console SA-1560/FYA	100000462-004	1
Switching Unit, Monitor-Test Console SA-1560/FYA	100000462-005	1
Low Speed Modem Facility	100001196-005	11
High Speed Modem Facility	100001198-004	1
High Speed Modem Facility	100001198-006	1
H.F. Modem Facility	100001200-001	1
H.F. Modem Facility	100001200-003	1
COMSEC Type A Facility	100001186-001	33
COMSEC Type B Facility	100001189 001	42
COMSEC Type B Facility	100001189-002	5
Terminal, Telegraph AN/FCC-19	100001193	2
RFI Shield Point Enclosure	100000410	1
Intercommunication Station and Wall Mounting Kit (COMSEC)	100001192	5
Electric Power plant AN/FJQ-4		
Power Supply PP-4862/FJQ	100000024-001	2
Motor-Generator PU-682/FJQ	100000024-002	5
Distribution Box J-2741/FJQ	100000024-004	1
Starter Group, Motor-Generator AN/FJA-2	100000024-005	1
Master Control-Synchronizer C374/FJQ	100000024-007	1
Control, Motor-Generator C-7375/FJQ	100000024-008	5
Battery Set BB-631/FJQ	100000070	1
Filter, Radio Interference F-1180/FJQ	100000071	40
Simulator, Coordination AN/FTM-26	FSN 7440-027-7246	1
Power Supply Set OP-85(V) 1/FYQ		
Charger, Battery PP-6935/FYQ	100003081-002	1
Distribution Box J-3169/FYQ	100003081-003	1
Control, Inverter C-9362/FYQ	100003081-004	1
Inverter, Power, Static CV-3082/FYQ	100003080-005	2
Dummy Load, Electrical DA-649/FYQ	100003082-001	1
Distribution Box J-3171/FYQ	100003083-001	1
Entrance Switch	100003084-001	1
Battery Disconnect Switch	100003085-002	1

Table 1-2. AN/FYQ-42(V) 2 Equipment List

Automatic Digital Message Switching Group AN/FYA-10(V) 7.		
Switching Unit, Memory-Drum Control SA-1542/FYA-10(V)	397-1297-1	1
Switching Unit, Processor SA-1543/FYA-10(V)	397-1299-1	1
Switching Unit, Magnetic Tape Control SA-1544/FYA-10(V)	397-1298-1	1
Switching Unit, Communication Line SA-1545/FYA-10(V)	397-1294-2	1
Switching Unit, Tape Transport-Maintenance Console SA-1536/FYA-10(V)	397-1296-1	1
Switching Unit, Distribution SA-1537/FYA-10 (V)	397-1301-1	1
Control Group, Magnetic Tape OK-30/FYA-10 (V)	397-1288-1	1
Control Group, Peripheral Input-Output OK-31/FYA-10(V)	397-1287-1	1
Monitor Assembly, Control-Sensing OK-33/FYA-10(V)	397-1286-1	1

Table 1-2. AN/FYQ-42(V)2 Equipment List-Continued

Nomenclature	Manufacturer's part No.	Quantity
Processor Unit OL-9/FYA-10(V)	397-1283-1	6
Memory Storage and Control Group OA-8945/FYA-IO(V)	293968-01	6
Printer Unit RP-164/FYA-10(V	397-1300-1	2
Card Reader Unit RP-165/FYA-10(V)	397-1315-1	1
Card Punch Unit RO-328/FYA-10(V)	397-1316-1	1
Recorder-Reproducer, Signal Data RD-304/FYA-10(V)	397-1303-1	18
Console. Station Supervisory OJ-51/FYA-10(V)	397-1292-2	1
Console, Maintenance OJ-50/FYA-10(V)	397-1291-1	1
Line Termination Buffer Unit OA-8299(P)/FYA-10(V)	397-1289-3 to 397-1289-29	8
Printer, Line RP-224/U	LP3000-1-12211112	2
Console, Message OJ-347/FYA-10(V)	398-15199-1	2
Disc Memory Unit M-U-617/FYA-10(V)	397-1563-1	3
Console, Maintenance Support OJ-346/FYA-10(V)	397-1324-2	1
Communication Group AN/FYA-12.		
Patch Bay, Audio AN/FYA-25	100001402-004	1
Patch Bay, Audio ON-15/FYA-12	100001402-006	1
Patch Bay High Level Signals ON-16/FYA-12	100001425-003	1
Patch Bay, Low Level Signals AN/FYA-40	100001403-007	1
Patch Bay, Low Level Signals AN/FYA-26	100001403-010	1
Patch Bay, Secure Circuits AN/FYA-27	100001404-004	1
Patch Bay, Secure Circuits AN/FYA-41	100001404-007	1
Patch Bay, Secure Circuits ON-114(V}3/FY	100003165-003	1
Patch Bay, Unsecure Circuits ON-17/FYA-12	100001405-003	1
Station Timing Unit TD-865/FYA -12	100001406-003	1
Converter Unit, Signal Level OU-21/FYA-12	100001407-003	1
Test Set, Electronic Systems AN/FYM-22	100001411	1
Interconnecting Unit AN/FYA-29	100001412-004	4
Interconnecting Unit AN/FYA-42	100001413-001	1
Interconnecting Unit AN/FYA-30	100001413-004	4
Interconnecting Unit; Audio ON-18/FYA-12	100001414-001	1
Interconnecting Unit, Audio AN/FYA-43	100001414-005	1
Interconnecting Unit, High Level Signals AN/FYA-44	100001426-002	1
Interconnecting Unit, AUTODIN-AUTOVON AN/FYA-32	100001420-002	1
Interconnecting Unit, AUTODIN-AUTOVON AN/FYA-33	100001421-002	1
Interconnecting Unit J-3058(V)3/FY	100003166-003	1
Power Supply Set OP-24/FYA-12	100001418-003	1
Intercommunication Set AN/FYA-34	100001417-002	1
Teletypewriter Set AN/FGC-130	100001191	5
Teletypewriter Set AN/FGC-131	100001471	2
Teletypewriter Set AN/FGC-132	100001445	2
Teletypewriter Set AN/FGC-133	100001597	6
Isolation Unit, Data-Timing AN/FYA-35	100001415-002	1
Filter Unit, Audio F-1145/FYA	100001408-003	1
Filter Unit, Radio Frequency F-1146/FYA	100001409-101	1
Filter Unit, Radio Frequency F-1151/FYA-1 2	100001409-103	1
Filter Unit, Radio Frequency F-1152/FYA-12	100001409-302	1
Console, Channel Status Display AN/FYA-45	100000460-002	1
Console, Channel Status Display AN/FYA-46	100000460-005	1
Console, Monitor-Test AN/FYM-23	100000461-002	1
Console, Monitor-Test AN/FYM-24	100000461-003	1
Switching Unit, Monitor-Test Console SA-1560/FYA	100000462-004	1
Switching Unit, Monitor-Test Console SA-1560/FYA	100000462-005	1
Low Speed Modem Facility	100001196-005	24
High Speed Modem Facility	100001198-003	1
High Speed Modem Facility	100001198-006	1
H.F. Modem Facility	100001200-001	1

Table 1-2. AN/FYQ-42(V) 2 Equipment List-Continued

Nomenclature	Manufacturer's part No.	Quantity
RFI Shield Point Enclosure	100000410	2
Intercommunication Station and Wall Mounting Kit (COMSEC)	100001192	5
HW-8/TSEC Delay Compensator Facility		1
Simulator, Coordination AN/FYM-26	FSN 7440-027-7246	1
Electric Power plant AN/FJQ-5.		
Power Supply PP-4862-FJQ	100000024-001	2
Motor-Generator PU-682/FJQ	100000024-002	5
Distribution Box J-2742/FJQ	100000024-010	1
Starter Group, Motor-Generator AN/FJA-2	100000024-005	1
Master Control-Synchronizer C-7374/FJQ	100000024-007	1
Control, Motor-Generator C-7375/FJQ	100000024-008	5
Battery Set BB-631/FJQ	100000070	1
Filter, Radio Interference F-1180/FJQ	100000071	
Power Supply Set OP-85(V) 2/FYQ. Refer to table 1-1, Power Supply Set OP-85(V)/FYQ.		

Table 1-3. AN/FYQ-42(V) 3 Equipment List

Automatic Digital Message Switching Group AN/FYA-10(V)11. Refer to table 1-2, Automatic Digital Message Switching Group AN/FYA-10(V)7.		
Communication Group AN/FYA-13.		
Patch Bay, Audio AN/FYA-25	100001402-004	1
Patch Bay, Audio AN/FYA-47	100001402-005	1
Patch Bay, High Level Signals ON-19/FYA-13	100001425-004	1
Patch Bay, Low Level Signals AN/FYA-40	100001403-007	1
Patch Bay, Low Level Signals AN/FYA-26	100001403-010	1
Patch Bay, Secure Circuits AN/FYA-27	100001404-004	1
Patch Bay, Secure Circuits AN/FYA-41	100001404-007	1
Patch Bay, Secure Circuits ON-114(V)3/FY	100003165-003	1
Patch Bay, Unsecure Circuits ON-20/FYA-13	100001405-004	1
Station Timing Unit TD-866/FYA-13	100001406-004	1
Converter Unit, Signal Level OU-23/FYA-13	100001407-004	1
Test Set, Electronic Systems AN/FYM-22	100001411	1
Interconnecting Unit AN/FYA-29	100001412-004	4
Interconnecting Unit AN/FYA-42	100001413-001	1
Interconnecting Unit AN/FYA-30	100001413-004	4
Interconnecting Unit, Audio AN/FYA-43	100001414-005 .	
Interconnecting Unit, High Level Signals AN/FYA-31	100001426-003	1
Interconnecting Unit, AUTODIN-AUTOVON AN/FYA-32	100001420-002	1
Interconnecting Unit. AUTODIN-AUTOVON AN/FYA-33	100001421-002	1
Interconnecting Unit J-3058(V)3/FY	100003166-003	1
Power Supply Set OP-26/FYA-13	100001418-004	1
Intercommunication Set AN/FYA-34	100001417-002	1
Teletypewriter Set AN/FGC-130	100001191	4
Teletypewriter Set AN/FGC-131	100001471	2
Teletypewriter Set AN/FGC-132	100001446	2
Teletypewriter Set AN/FGC-133	100001597	5
Isolation Unit, Data-Timing AN/FYA-35	100001415-002	1
Filter Unit, Audio F-1145/FYA	100001408-003	1
Filter Unit, Radio Frequency F-1146/FYA	100001409-101	1
Filter Unit, Radio Frequency F-1153/FYA-13	100001409-104	1
Filter Unit, Radio Frequency F-1154/FYA-13	100001409-303	1
Console, Channel Status Display AN/FYA-45	100000460-002	1
Console, Channel Status Display AN/FYA-46	100000460-005	1
Console, Monitor-Test AN/FYM-23	100000461-002	1
Console, Monitor Test AN/FYM-24	100000461-003	1
Switching Unit, Monitor-Test Console SA-1560/FYA	100000462-004	1
Switching Unit, Monitor-Test Console SA-1560/FYA	100000462-005	1
Low Speed Modem Facility	100001196-003	1
Low Speed Modem Facility	100001196-005	21

Table 1-3. AN/FYQ-42(V) 3 Equipment List-Continued

Nomenclature	Manufacturer's part No.	Quantity
High Speed Modem Facility	100001198-003	1
High Speed Modem Facility	100001198-006	1
High Frequency Modem Facility	100001200-001	1
High Frequency Modem Facility	100001200-003	1
COMSEC Type A Facility	100001186-001	6
COMSEC Type B Facility	100001189-001	70
COMSEC Type B Facility	100001189-002	9
RFI Shield Point Enclosure	100000410	2
Intercommunication Station and Wall Mounting Kit {COMSEC)	100001192	5
Simulator, Coordination AN/FYM-26	FSN 7440-027-7246	1
Electric Powerplant AN/FJQ-6, Refer to table 1-2, Electric Powerplant AN/FJQ-5.		
Power Supply Set OP-85(V)3/FYQ. Refer to table 1-1, Power Supply Set OP-85(V)1/ FYQ.		

Table 1-4. AN/FYQ-42(V) 4 Equipment List

Automatic Digital Message Switching Group AN/FYA-10(V)6.		
Switching Unit, Memory-Drum Control SA-1542/FYA-10(V)	397-1297-1	1
Switching Unit, Processor SA-1543/FYA-10(V)	397-1299-1	1
Switching Unit, Magnetic Tape Control SA-1544/FYA-10(V)	397-1298-1	1
Switching Unit, Communication Line SA-1645/FYA-10(V)	397-1294-2	1
Switching Unit, Tape Transport-Maintenance Console SA-1536/FYA-10(V)	397-1296-1	1
Switching Unit, Distribution SA-1537/FYA-10(V)	397-1301-1	1
Control Group, Magnetic Tape OK-30/FYA-10(V)	397-1288-1	1
Control Group, Peripheral Input-Output OK-31 /FYA-10(V)	397-1287-1	1
Monitor Assembly, Control-Sensing OK-32/FYA-10{V}	397-1285-1	1
Processor Unit OL-9/FYA-10(V)	397-1283-1	6
Memory Storage and Control Group OA-8945/FYA-10(V)	293968-01	6
Printer Unit RP-164/FYA-10(V)	397-1300-1	2
Card Reader Unit RP-165/FYA-10(V)	397-1315-1	1
Card Punch Unit RO-328/FYA-10(V)	397-1316-1	1
Recorder- Reproducer, Signal Data RD-304/FYA-10(V)	397-1303-1	18
Conao0; Station-SupervisoryOJ-51/FYA-10(V)	397-1292-2	1
Console, Maintenance OJ-50/FYA-10(V)	397-1291-1	1
Line Termination Buffer Unit OA-2991P)/FYA-10(V)	397-1289-3 to	7
	397-128929	
Printer, Line RP-224/U	LP3000-1-	2
	12211112	
Console, Message OJ-347/FYA-10(V)	398-15199-1	2
Disc Memory Unit MU-617/FYA-10(V)	397-1563-1	3
Console, Maintenance Support OJ-346/FYA-10(V)	397-1324-2	1
Communication Group AN/FYA-14.		
Patch Bay, Audio AN/FYA-25	100001402004	1
Patch Bay, Audio AN/FYA-47	100001402-005	1
Patch Bay, High Level Signals ON-21/FYA-14	100001426-006	1
Patch Bay, Low Level Signals AN/FYA-40	100001403-007	1
Patch Bay. Low Level Signals ON-22/FYA-14	100001403-011	1
Patch Bay, Secure Circuits AN/FYA-27	100001404-004	1
Patch Bay, Secure Circuits ON-23/FYA-14	100001404-006	1
Patch Bay, Secure Circuits ON-114(V)3/FY	100003165-003	1
Patch Bay, Unsecure Circuits ON-24/FYA-14	100001405-006	1
Station Timing Unit TD-867/FYA-11	100001406-006	1
Converter Unit, Signal Level OU-24/FYA-14	100001407-006	1
Test Set, Electronic Systems AN/FYM-22	100001411	1

Table 1-4. AN/FYQ-42(V)4 Equipment List-Continued

Nomenclature	Manufacturer's part No.	Quantity
Interconnecting Unit J-3058(V)3/FY	100003166-003	1
Power Supply Set OP-27/FYA-14	100001418-006	1
Intercommunication Set AN/FYA-34	100001417-002	1
Teletypewriter Set AN/FGC-130	100001191	4
Teletypewriter Set AN/FGC-131	100001471	2
Teletypewriter Set AN/FGC-132	100001445	2
Teletypewriter Set AN/FGC-133	100001597	5
Isolation Unit, Data-Timing AN/FYA-35	100001415-002	1
Filter Unit, Audio F-1145/FYA	100001408-003	1
Filter Unit, Radio Frequency F-1146/FYA	100001409-101	1
Filter Unit, Radio Frequency F-1155/FYA-14	100001409-105	1
Filter Unit, Radio Frequency F-1156/FYA-14	100001409-304	1
Console, Channel Status Display AN/FYA-45	100000460	1
Console, Channel Status Display AN/FYA-37	100000460-004	1
Console, Monitor-Test AN/FYM-23	100000461-002	1
Console, Monitor-Test AN/FYM-24	100000461-003	1
Switching Unit, Monitor-Test Console SA-1560/FYA	100000462-004	1
Switching Unit, Monitor-Test Console SA-1560/FYA	100000462-005	1
Low Speed Modem Facility	100001196-004	1
Low Speed Modem Facility	100001196-005	20
High Speed Modem Facility	100001198-006	1
H.F. Modem Facility	100001200-003	2
COMSEC Type A Facility	100001186-001	62
COMSEC Type B Facility	100001189-001	34
COMSEC Type B Facility	100001189-002	5
Terminal, Telegraph AN/FCC-19	100001193	2
RFI Shield Point Enclosure	100000410	2
Intercommunication Station and Wall Mounting Kit (COMSEC)	100001192	5
Simulator, Coordination AN/FYM-26	FSN 7440-027-7246	1

Electric Powerplant AN/FJQ-7. Refer to table 1-1, Electric Powerplant AN/FJQ 4.
Power Supply Set OP-85(V)4/FYQ. Refer to table 1-1, Power Supply Set OP-85(V)1/FYQ.

Table 1-5. AN/FYQ-42 (V) 5 Equipment List

Automatic Digital Message Switching Group AN/FYA-10(V)1.		
Switching Unit, Memory-Drum Control SA- 1542/FYA-10(V)	397-1297-1	1
Switching Unit, Processor SA-1543/FYA-10(V)	397-1299-1	1
Switching Unit, Magnetic Tape Control SA-1544/FYA-10(V)	397-1298-1	1
Switching Unit, Communication Line SA-1545/FYA-10(V)	397-1294-2	1
Switching Unit, Tape Transport-Maintenance Console SA-1536/FYA-10(V)	397-1296-1	1
Switching Unit, Distribution SA-1537/FYA-10(V)	397-1301-1	1
Control Group, Magnetic Tape OK-30/FYA-10(V)	397-1288-1	1
Control Group, Peripheral Input-Output OK-31/FYA-10(V)	397-1287-1	1
Monitor Assembly Control Sensings OK-33/FYA-10(V)	397-1285-1	1
Processor Unit OI.-9/FYA-10(V)	397-1283-1	5
Memory Storage and Control Group OA-8945/FYA-10(V)	293968-01	5
Printer Unit RP-164/FYA-10(V)	397-1300-1	2
Card Reader Unit RP-165/FYA-10(V)	397-1315-1	1
Card Punch Unit RO-328/FYA-10(V)	397-1316-1	1
Recorder Reproducer, Signal Data RD-304/FYA-10(V)	397-1303-1	18
Console, Station Supervisory OJ-49/FYA-10(V)	397-1292-1	1
Console, Maintenance OJ-50/FYA-10(V)	397-1291-1	1
Line Termination Buffer Unit OA-5299(P)/FYA-10(V)	397-1289-3 to 397-1289-29	3

Table 1-5. AN/FYQ-42 (V) 5 Equipment List-Continued

Nomenclature	Manufacturer's part No	Quantity
Printer, Line RP-224/U	LP3000-1-12211112	2
Console, Message OJ-347/FYA-10(V)	398-15199-1	2
Disc Memory Unit MU-617/FYA-10(V)	397-1563-1	3
Console, Maintenance Support OJ-346/FYA-10(V)	397-1324-2	1
Communication Group AN/FYA-15	100001402-003	1
Patch Bay, Audio AN/FYA-48	100001402-003	1
Patch Bay, High Level Signals ON-25/FYA-15	100001425-007	1
Patch Bay, Low Level Signals ON-20/FYA-15	100001403-006	1
Patch Bay, Secure Circuits ON-27/FYA-15	100001404-002	1
Patch Bay, Secure Circuits ON-114(V)1/FY	100003165-001	1
Patch Bay, Unsecure Circuits ON-28/FYA-15	100001405-007	1
Station Timing Unit TD-868/FYA-15	100001406-007	1
Converter Unit, Signal Level OU-25/FYA-15	100001407-007	1
Test Set, Electronic Systems AN/FYM-22	10000141	1
Interconnecting Unit AN/FYA-49	100001412-001	1
Interconnecting Unit AN/FYA-29	100001412-004	2
Interconnecting Unit AN/FYA-50	100001413-002	1
Interconnecting Unit AN/FYA-30	100001413-004	2
Interconnecting Unit Audio AN/FYA-51	100001414-003	1
Interconnecting Unit High Levels Signals AN/FYA-52	100001426-001	1
Interconnecting Unit AUTODIN-AUTOVON AN/FYA-53	100001420-001	1
Interconnecting Unit AUTODIN-AUTOVON AN/FYA-54	100001421-004	1
Interconnecting Unit J-3058(V)1/FY	100003166-001	1
Power Supply Set OP-28/FYA-15	100001418-007	1
Intercommunication Set AN/FYA-55	100001417-003	1'
Teletypewriter Set AN/FGC-130	100001191	3
Teletypewriter Set AN/FGC-131	100001471	1
Teletypewriter Set AN/FGC-132	100001445	1
Teletypewriter Set AN/FGC-133	100001597	5
Isolation Unit, Data-Timing OA-8323/FYA-15	100001415-004	1
Filter Unit, Audio F-1157/FYA	100001408-001	1
Filter Unit, Radio Frequency F-1158/FYA-15	100001409-106	1
Filter Unit, Radio Frequency F-1159/FYA	100001409-305	1
Console, Channel Status Display AN/FYA-36	100000460-001	1
Console, Monitor-Test AN/FYM-25	100000460-001	1
Switching Unit, Monitor-Test Console SA-1561/FYA	100000462-001	I
Switching Unit, Monitor-Test Console SA-1561/FYA	100000462-002	1
Low Speed Modem Facility .	100001196-005	7
High Speed Modem Facility	100001198-006	1
H.F Modem Facility	100001200-002	1
H.F. Modem Facility	100001200-003	1
COMSEC Type A Facility	100001186-001	23
COMSEC Type B Facility	100001189-001	16
COMSEC Type B Facility	100001189-002	3
Terminal. Telegraph AN/FCC-19	100001193	1
RFI Shield Point Enclosure	100000410	2
Intercommunication Station and Wall Mounting Kit (COMSEC)	100001192	3
Simulator, Coordination AN/FYM-26	FSN 7440-027-7246	1
Electric Powerplant AN/FJQ-8		
Power Supply PP-4862/FJQ	100000024-001	2
Motor-Generator PU-682/FJQ	100000024-002	5
Distribution Box J-2741 -FJQ .	100000024-004	1
Starter Group, Motor-Generator AN/FJA-2	100000024-005	1
Master Control-Synchronizer C-7374/FJQ	100000024-007	1
Control, Motor-Generator C-7375/FJQ	100000024-008	5
Battery Set BB-632/FJQ	100000069	1
Filter, Radio Interference F 1180/FJQ	100000071	40

Table 1-5. AN/FYQ 42(V) 5 Equipment List Continued

Nomenclature	Manfacturer's part No.	Quantitv
Power Supply Set OP-85(V)5/FYQ		
Charger, Battery PP -6936/FYQ	100003080-002	1
Distribution Box J-3170/FYQ	100003080-003	1
Control, Inverter C-9363/FYQ	100003080-004	1
Inverter, Power, Static CV-3082/FYQ	100003080-005	1
Dummy Load, Electrical DA-649/FYQ	100003082-001	1
Distribution Box J-3171/FYQ	100003083-001	1
Entrance Switch	100003084-003	1
Battery Disconnect Switch	100003085-001	1

Table 1-6. AN/FYQ-42(V)6 Equipment List

Automatic Digital Message Switching Group AN/FYA-10(V) 5.		
Switching Unit, Memory-Drum Control SA-1542/FYA-10(V)	397-1297-1	1
Switching Unit, Processor SA-1543/FYA-10(V)	397-1299-1	1
Switching Unit, Magnetic Tape Control SA-1544/FYA-10(V)	397-1298-1	1
Switching Unit, Communication Line SA-1545/FYA-10(V)	397-1294-2	1
Switching Unit, Tape Transport-Maintenance Console SA-1536/FYA-10(V)	397-1296-1	1
Switching Unit, Distribution SA-1537/FYA-10(V)	397-1301-1	1
Control Group, Magnetic Tape OK-30/FYA-10(V)	397-1288-1	1
Control Group, Peripheral Input-Output OK-31/FYA-10(V)	397-1287-1	1
Monitor Assembly, Control-Sensing OK-33/FYA-10(V)	397-1285-1	1
Processor Unit OL-9/FYA-10(V)	397-1283-1	6
Memory Storage and Control Group OA-8945/FYA-10(V)	293968-01	6
Printer Unit RP-164/FYA-10(V)	397-1300-1	2
Card Reader Unit RP-165/FYA-10(V)	397-1315-1	1
Card Punch Unit RO-328/FYA-10(V)	397-1316-1	1
Recorder-Reproducer, Signal Data RD-304/FYA-10(V)	397-1303-1	18
Console, Station Supervisory OJ-49/FYA-10(V)	397-1292-1	1
Console, Maintenance OJ-50/FYA-10(V)	397-1291-1	1
Line Termination Buffer Unit OA-8299(P)/FYA-10(V)	397-1289-3 to 397-1289-29	5
Printer, Line RP-224/U	LP3000-1-12211112	2
Console, Message OJ-347/FYA-10(V)	398-15199-1	2
Disc Memory Unit MU-617/FYA-10(V).	397-1563-1	3
Console, Maintenance Support OJ-346/FYA-10	397-1324-2	1
Communication Group AN/FYA-16.		
Patch Bay, Audio AN/FYA-48	100001402-003	1
Patch Bay, High Level Signals AN/FYA-56	100001425-008	1
Patch Bay, Low Level Signals AN/FYA-57	100001403-008	1
Patch Bay. Secure Circuits AN/FYA-27	100001404-004	1
Patch Bay, Secure Circuits ON-114(V)2/FY	100003165-002	1
Patch Bay, Unsecure Circuits ON-31/FYA-16	100001405-008	1
Station Timing Unit TD-870/FYA-16	100001406-008	1
Converter Unit, Signal Level AN/FYA-58	100001407-009	1
Test Set, Electronic Systems AN/FYM-22	100001411	1
Interconnecting Unit AN/FYA-49	100001412-001	1
Interconnecting Unit AN/FYA-29	100001412-004	2
Interconnecting Unit AN/FYA-50	100001413-002	1
Interconnecting Unit AN/FYA-30	100001413-004	2
Interconnecting Unit, Audio AN/FYA-51	100001414-003	1
Interconnecting Unit, High Level Signals AN/FYA-52	100001426001	1
Interconnecting Unit, AUTODIN-AUTOVON AN/FYA-53	100001420-001	1
Interconnecting Unit, AUTODIN-AUTOVON AN/FYA-54	100001421-004	1

Table 1-6. AN/FYQ-42(V) 6 Equipment List-Continued

Nomenclature	Manfacturer's part No.	Quantity
Interconnecting Unit J-3058(V)2/FY	100003166-002	1
Power Supply Set AN/FYA-59	100001418-008	1
Intercommunication Set AN/FYA-155	100001417-003	1
Teletypewriter Set AN/FGC-130	100001191	
Teletypewriter Set AN/FGC-131	100001471	1
Teletypewriter Set AN/FGC-132	100001445	1
Teletypewriter Set AN/FGC-133	100001597	5
Isolation Unit, Data-Timing OA-8324/FYA-16	100001415-005	1
Filter Unit, Audio F-1157/FYA	100001408-001	1
Filter Unit, Radio Frequency	100001409-107	1
Filter Unit, Radio Frequency	100001409-306	1
Console, Channel Status Display AN/FYA-45	100000460-302	1
Console. Monitor-Test AN/FYM-25	100000461-001	1
Switching Unit, Monitor-Test Console SA-1561/FYA	100000462-001	1
Switching Unit, Monitor-Test Console SA-1560/FYA	100000462-002	1
Low Speed Modem Facility	100001196-005	12
High Speed Modem Facility	100001198-006	2
H.F. Modem Facility	100001200-002	1
H.F. Modem Facility	100001200-003	1
COMSEC Type B Facility	100001186-001	41
COMSEC Type B Facility	100001189-001	23
COMSEC Type B Facility	100001189-002	3
Terminal, Telegraph AN/FCC-19	100001193	2
RFI Shield Point Enclosure	100000410	2
Intercommunication Station and Wall Mounting Kit (COMSEC)	100001192	3
Simulator, Coordination AN/FYM-26	FSN 7440-027-7246	1
Electric PowerplantAN/FJQ-9. Refer to table 1-1, Electric Powerplant AN/FJQ-4.		
Power Supply Set OP-85(V)6/FYQ		
Charger, Battery PP-6936/FYQ	10000380-002	1
Distribution Box J-3170/FYQ	10000380-003	1
Control, Inverter C-9363/FYQ	100000380-004	1
Inverter, Power, Static CV-3082/FYQ	10000380-005	1
Dummy Load, Electrical DA-649/FYQ	10000382-001	1
Distribution Box J-3171/FYQ	100003083-001	1
Entrance Switch	100003084-002	1
Battery Disconnect Switch	100003085-001	1

Table 1-7. AN/FYQ-42(V) 7 Equipment List

Automatic Digital Message Switching Group AN/FYA-10(V) 2.		
Switching Unit, Memory-Drum Control SA-1542/FYA-10(V)	397-1297-1	1
Switching Unit, Processor SA- 1543/FYA-10(V)	397-1299-1	1
Switching Unit, Magnetic Tape Control SA-1544/PYA-10(V)	397-1298-1	1
Switching Unit, Communication Line SA-1545/FYA-10(V)	397-1294-2	1
Switching Unit, Tape Transport- Maintenance Console SA-1536/FYA -10(V)	397-1296-1	1
Switching Unit, Distribution SA-1537/FYA-10(V)	397-1301-1	1
Control Group, Magnetic Tape OK-30/FYA-10(V)	397-1288-1	1
Control Group, Peripheral Input-Output OK-31 /FYA-10(V)	397-1287-1	1
Monitor Assembly, Control Sensing OK-33/FYA-10(V)	397-1285-1	1
Processor Unit OL-9/FYA -10(V)	397-1283-1	5
Memory Storage and Control Group OA-8945/FYA-10(V)	29368-01	5
Printer Unit RP-164/FYA-10(V)	397-1300-1	2
Card Reader Unit RP-165/FYA-10(V)	397-1315-1	1
Card Punch Unit RO-328/FYA-10(V)	397-1316-1	1

Table 1-7. AN/FYQ-42 (V) 7 Equipment List-Continued

Nomenclature	Manufacturer's part No.	Quantity
Station Timing Unit TD-871/FYA-17	100001406-009	1
Converter Unit, Signal Level AN/FYA-58	100001407-009	1
Test Set, Electronic Systems AN/FYM-22	100001411	1
Interconnecting Unit AN/FYA-49	100001412-001	1
Interconnecting Unit AN/FYA-29	100001412-004	2
Interconnecting Unit AN/FYA-50	100001413-002	1
Interconnecting Unit, AN/FYA-30	100001413-004	2
Interconnecting Unit, Audio AN/FYA-51	100001414-003	1
Interconnecting Unit, High Level Signals AN/FYA-52	100001426-001	1
Interconnecting Unit, AUTODIN-AUTOVON AN/FYA-53	100001420-001	1
Interconnecting Unit, AUTODIN-AUTOVON AN/FYA-54	100001421-004	1
Interconnecting Unit J-3058(V)3/FY	100003166-003	1
Power Supply Set AN/FYA-59	100001418-008	1
Intercommunication Set AN/FYA-55	100001417-003	1
Teletypewriter Set AN/FGC-130	100001191	2
Teletypewriter Set AN/FGC-131	100001471	1
Teletypewriter Set AN/FGC-132	100001445	1
Teletypewriter Set AN/FGC-133	100001597	5
Isolation Unit, Data-Timing AN/FYA-60	100001415-001	1
Filter Unit, Audio F-1157/FYA	100001408-001	1
Filter Unit, Radio Frequency F-1162/FYA-17	100001409-108	1
Filter Unit. Radio Frequency F-1163/FYA-17	100001409-307	1
Console, Channel Status Display AN/FYA-45	100000460-002	1
Console, Monitor-Test AN/FYM-25	100000461-001	1
Switching Unit, Monitor-Test Console SA-1561/FYA	100000462-001	1
Switching Unit, Monitor-Test Console SA-1561/FYA	100000462-002	1
Low Speed Modem Facility	100001196-004	1
Low Speed Modem Facility	100001196-005	12
High Speed Modem Facility	100001198-004	1
H.F. Modem Facility	100001200-001	1
H.F. Modem Facility	100001200-003	1
COMSEC Type A Facility	100001186-001	39
COMSEC Type B Facility	100001189-001	21
COMSEC Type B Facility	100001189-002	5
Terminal, Telegraph AN /FCC-19	100001193	1
RFI Shield Point Enclosure	100000410	2
Intercommunication Station and Wall Mounting Kit	100001192	3
Simulator, Coordination AN/FYM-26	FSN 7440-027-7246	1

Electric PowerplantAN/FJQ-10. Refer to table 1-5. Electric Powerplant AN/FJQ-8.
Power Supply 0P-85(V) 7/FYQ. Refer to table 1-6, Power Supply Set OP-85(V)6/FYQ.

Table 1-8. AN/FYQ-42(V) 8 Equipment List

Automatic Digital Message Switching Group AN/FYA-10(V) 8.

Switching Unit, Memory-Drum Control SA-1532/FYA-10(V)	397-1297-2	1
Switching Unit, Processor SA- 1543/FYA-100(V)	397-1299-1	1
Switching Unit, Magnetic Tape Control SA-1544/FYA-10(V)	397-1298-1	1
Switching Unit, Communication Line SA-1545/FYA-10(V)	397-1294-2	1
Switching Unit, Tape Transport-Maintenance Console SA-1536/FYA 10(V)	397-1296-1	1
Switching Unit, Distribution SA-1537/FYA-10(V)	397-1301-1	1
Control Group. Magnetic Tape OK-30/FYA-10(V)	397-1288-1	1
Control Group, Peripheral Input-Output OK-31/FYA-10(V)	397-1287-1	1
Control Group, Magnetic Drum OK-32/FYA-10(V)	397-1264-1	2
Monitor Assembly, Control-Sensing OA-33/FYA-10(V)	397-1285-1	2
Processor Unit OL-9/FYA-10(V)	397-1283-1	5
Memory Storage and Control Group OA-8945/FYA-10(V)	293968-01	5
Printer Unit RP-164/FYA-10(V)	397-1300-1	2

Table 1-8. AN/FYQ-42(V) 8 Equipment Listed Continued

Nomenclature	Manufacture's parts No.	Quantity
Card Reader Unit RP-165/FYA-10(V)	397-1315-1	1
Card Punch Unit RO-328/FYA-10(V)	397-1316-1	1
Recorder-Reproducer. Signal Data RD-304/FYA-10(V)	397-1303-1	18
Console, Station Supervisory OJ-49/FYA	397-1291-1	1
Console, Maintenance OJ-50/FYA-10(V)	397-1291-1	1
Line Termination Buffer Unit OA-8299(P)/FYA-10(V)	397-1289-3	5
Printer, Line RP-224/U	LP3000-1-12211112	2
Console, Message OJ-347/FYA-10(V)	398-15199-1	2
Disc Memory Unit MU-617/FYA-10(V)	397-1563-1	1
Console, Maintenance Support OJ-346/FYA-10(V)	397-1324-2	1
Communication Group AN/FYA-18.		
Patch Bay, Audio ON-35/FYA- 18	100001402-002	1
Patch Bay, High Level Signals ON-36/FYA-18	100001425-010	1
Patch Bay, Low Level Signals ON-37/FYA-18	100001403-005	1
Patch Bay, Secure Circuits AN/FYA-61	100001404-003	1
Patch Bay, Secure Circuits ON-1141(V) 1/FY	100003165-001	1
Patch Bay, Unsecure Circuits ON-38/FYA-18	100001405-009	1
Station Timing Unit TD-872/FYA-18	100001406-010	1
Converter Unit. Signal Level OU-26/FYA-18	100001407-010	1
Test Set, Electronics Systems AN/FYM-22	100001411	1
Interconnecting Unit AN/FYA-49	100001412-001	1
Interconnecting Unit AN/FYA-29	100001412-004	2
Interconnecting Unit AN/FYA-50	100001413-002	1
Interconnecting Unit AN/FYA-30	100001413-004	2
Interconnecting Unit, Audio AN /FYA-51	100001414-003	1
Interconnecting Unit, High Level Signals AN/FYA-52	100001426-001	1
Interconnecting Unit, AUTODIN-AUTOVON AN/FYA-53	100001420-001	1
Interconnecting Unit, AUTODIN-AUTOVON ANr/FYA-54	100001421-004	1
Interconnecting Unit J-3058(V) 1/FY	100003166-001	1
Power Supply Set AN/FYA-62	100001418-009	1
Intercommunication Set A N/FYA-55	100001417-003	1
Teletypewriter Set AN/FGC-130	100001191	4
Teletypewriter Set AN/FGC-131	100001471	2
Teletypewriter Set AN/FGC-132	100001445	1
Teletypewriter Set AN/FGC-133	100001597	5
Isolation Unit, Data-Timing AN/FYA-60	100001415-001	1
Filter Unit, Audio F-1157/FYA	100001408-001	1
Filter Unit, Radio Frequency F-1164/FYA-18	100001409-109	1
Filter Unit, Radio Frequency F-1165/FYA-18	100001408-308	1
Console, Channel Status Display AN/FYA-45	100000460-002	1
Console, Monitor-Test AN/FYM-25	100000461-001	1
Switching Unit. Monitor-Test Console SA-1561/FYA	100000462-001	1
Switching Unit, Monitor-Test Console SA-1561/FYA	100000462-002	1
Low Speed Modem Facility	100001196-004	1
Low Speed Mo6dem Facility	100001196-005	4
High Speed Modern Facility	100001198-003	1
H.F. Modem Facility	100001200-003	1
COMSEC Type A Facility	100001186-001	13
COMSEC Type A Facility	100001186-002	1
COMSEC Type B Facility	100001189-001	47
COMSEC Type B Facility	100001189 002	4
Terminal, Telegraph AN/FCC-19	100001193	2
RFI Shield Point Enclosure	100000410	2
Intercommunication Station and Wall Mounting Kit (COMSEC)	100001192	3
Simulator, Coordination AN/FYM-26	FSN 7440-027-7246	1

Table 1-9. AN/FYQ-42 V) 9 Equipment List

Nomenclature	.Manufacturer's part No.	Quantity
Automatic Digital Message Switching Group AN/FYA-10(V) 12.		
Switching Unit, Memory-Drum Control SA-1542/FYA-10(V)	397-1297-1	1
Switching Unit, Processor SA-1543/FYA-10(V)	397-1299-1	1
Switching Unit, Magnetic Tape Control SA-1544/FYA-10(V)	397-1298-1	1
Switching Unit, Communication Line SA-1545/FYA-10(V)	397-1294-2	1
Switching Unit, Tape Transport-Maintenance Console SA-1536/FYA-10(V)	397-1296-1	1
Switching Unit, Distribution SA-1537/FYA-10(V)	397-1301-1	1
Control Group, Magnetic Tape OK-30/FYA-10(V)	397-1288-1	1
Control Group, Peripheral Input-Output OK-31/FYA-10(V)	397-1287-1	1
Monitor Assembly, Control-Sensing OK-33/FYA-10(V)	397-1286-1	1
Processor Unit OL-9/FYA-10(V)	397-1283-1	5
Memory Storage and Control Group OA-8945/FYA-10(V)	293968-01	5
Printer Unit RP-164/FYA-10(V)	397-1300-1	2
Card Reader Unit RP-165/FYA-10(V)	397-1315-1	1
Card Punch Unit RO-328/FYA-10(V)	397-1316-1	1
Recorder-Reproducer, Signal Data RD-304/FYA-10(V)	397-1303-1	18
Console, Station Supervisory OJ-49/FYA-10(V)	397-1292-1	1
Console, Maintenance OJ-50/FYA-10(V)	397-1291-1	1
Line Termination Buffer Unit OA-8299(P)/FYA-10(V)	397-1289-3 to 397-1289-29	4
Printer, Line RP-224/U .	LP3000-1-12211112	2
Console, Message OJ-347/FYA-10(V)	398-15199-1	2
Disc Memory Unit MU-617/FYA-10(V)	397-1563-1	3
Console, Maintenance Support OJ-346/FYA-10(V)	397-1324-2	1
Communication Group AN/FYA-19.		
Patch Bay, Audio AN/FYA-25	100001402-004	1

Table 1-9. AN/FYQ-42(V) 9 Equipment List-Continued

Nomenclature	Manufacturer's part No.	Quantitv
Patch Bay, Audio AN/FYA-47	100001402-005	1
Patch Bay, High Level Signals ON-39/FYA-19	100001425-011	1
Patch Bay, Low Level Signals AN/FYA-40	100001403-007	1
Patch Bay, Low Level Signals AN/FYA-26.	100001403-010	1
Patch Bay, Secure Circuits AN/FYA-27	100001404-004	1
Patch Bay, Secure Circuits AN/FYA-41	100001404-007	1
Patch Bay, Secure Circuits ON-114(V)1/FY	100003165-001	1
Patch Bay, Unsecure, Circuits ON-40/FYA-19	100001405-001	1
Station Timing Unit TD-873/FYA-19	100001406-001	1
Converter Unit, Signal Level OU-27/FYA-19	100001407-011	1
Test Set, Electronic Systems AN /FYM-22	100001411	1
Interconnecting Unit AN/FYA-49	100001412-001	1
Interconnecting Unit AN/FYA-29	100001412-004	4
Interconnecting Unit AN/FYA-42	100001413-001	1
Interconnecting Unit AN/FYA-30	100001413-004	4
Interconnecting Unit, Audio AN/FYA-43	100001414-005	1
Interconnecting Unit, High Level Signals AN/FYA-31	100001426-003	1
Interconnecting Unit, AUTODIN-AUTOVON AN/FYA-53	100001420-001	1
Interconnecting Unit, AUTODIN-AUTOVON ON-41/FYA-19	100001421-001	1
Interconnecting Unit J-3058(V)1/FY	100003166-001	1
Power Supply Set OP-29/FYA-19	100001418-001	1
Intercommunication Set AN/FYA-34	100001417-002	1
Teletypewriter Set AN/FGC-130	100001191	3
Teletypewriter Set AN/FGC-131	100001471	2
Teletypewriter Set AN/FGC-132	100001445	2
Teletypewriter Set AN/FGC-133	100001597	5
Isolation Unit, Data-Timing AN/FYA-60	100001415-001	1
Filter Unit, Audio F-1157/FYA	100001408-001	1
Filter Unit, Radio Frequency F-1146/FYA	100001409-101	1
Filter Unit, Radio Frequency F-1166/FYA-19	100001409-110	1
Filter Unit, Radio Frequency F-1167/FYA-19	100001409-309	1
Console, Channel Status Display AN/FYA-45	100000460002	1
Console, Channel Status Display AN/FYA-46	100000460-005	1
Console, Monitor-Test AN/FYM-23	10000461-002	1
Console. Monitor-Test AN/FYM-24	100000461403	1
Switching Unit, Monitor-Test Console SA-1560/FYA	100000462-004	1
Switching Unit, Monitor-Test Console SA-1560/FYA	100000462-005	1
Low Speed Modem Facility	100001196-003	1
Low Speed Modem Facility	100001196-005	21
High Speed Modem Facility	100001198-003	1
High Speed Modem Facility	100001198-005	1
Deleted		
R. F. Modem Facility	100001200-003	1
COMSEC Type A Facility	100001186-001	64
COMSEC Type A Facility	100001186-002	1
COMSEC Type B Facility	100001189-001	76
COMSEC Type B Facility	10000118-002	10
Terminal, Telegraph AN/FCC-19	100001193	3
RFI Shield Point Enclosure	100000410	2
Intercommunication Station and Wall Mounting Kit (COM SEC)	100001192	3
Simulator, Coordination AN /FYM-26	FSN 7440-027-7246	1

Electric Powerplant AN/FJQ-12. Refer to table 1-2, Electric Powerplant AN/FJQ-5.
Power Supply Set OP-85(V) 8/FYQ. Refer to table 1-5, Power Supply Set OP-85(V)5/FYQ.

Table 1-10. AN/FYQ-42(V) 10 Equipment List

Automatic Digital Message Switching Group AN/FYA-10(V)3.

Switching Unit Memory-Drum Control SA-1542/FYA-10(V)	397-1297-1	1
Switching Unit, Processor SA-1543/FYA-10(V)	397-1299-1	1
Switching Unit, Magnetic Tape Control SA-1544/FYA-10(V)	397-1298-1	1

Table 1-10. AN/FYQ-42(V)10 Equipment List Continued

Nomenclature	Manufacturer's No.	Quantity
Switching Unit, Communication Line SA-1545/FYA-10(V)	387-1294-2	1
Switching Unit, Tape Transport-Maintenance Console SA-1536/FYA-10(V)	397-1296-1	1
Switching Unit, Distribution SA-1537/FYA-10(V)	397-1301-1	1
Control Group, Magnetic Tape OK-30/FYA-10(V)	397-1288-1	1
Control Group, Peripheral Input-Output OK-31/FYA-10(V)	397-1287-1	1
Control Group, Magnetic Drum OK-32/FYA-10(V)	397-1264-1	2
Monitor Assembly, Control-Sensing OA-33/FYA-10(V)	397-1285-1	1
Processor Unit OL-9/FYA-10(V)	397-1283-1	5
Memory Storage and Control Group OA-8945/FYA-10(V)	293968-01	5
Printer Unit RP-164/FYA-10(V)	397-1300	2
Card Reader Unit RP-165/FYA-10(V)	397-1315-1	1
Card Punch Unit RO-328/FYA-10(V)I . .	397-1316-1	1
Recorder Reproducer, Signal Data RD-304/FYA-10(V)	397-1303-1	18
Console, Station Supervisory OJ-49/FYA-10(V)	397-1292-1	1
Console. Maintenance OJ-50/FYA-10(V)	397-1291-1	1
Line Termination Buffer Unit OA-8299(P)/FYA-10(V)	397-1289-3 to 397-1289-29	5
Printer, Line RP-224/U	LP3000-1-12211112	2
Console, Message OJ-347/FYA-10(V)	398-15199-1	2
Console, Maintenance Support OJ-346/FYA-1O(V)	397-1324-2	1
Communication Group AN/FYA-20.		
Patch Bay, Audio AN/FYA-48	100001402-003	1
Patch Bay, High Level Signals AN/FYA-56	100001425-008	1
Patch Bay, Low Level Signals AN/FYA-57	100001403-008	1
Patch Bay, Secure Circuits AN/FYA-61	100001404-003	1
Patch Bay, Secure Circuits ON-114(V)2/FY	100003165-002	1
Patch Bay, Unsecure Circuits ON-42/FYA-20	100001405-011	1
Station Timing Unit TD-876/FYA-20	100001406-012	1
Conveyor Unit, Signal Level OU-28/FYA-20	100001407-012	1
Test Set, Electronic Systems AN/FYM-22	100001411	1
Interconnecting Unit AN/FYA-49	100001412-001	1
Interconnecting Unit AN/FYA-29	100001412-004	2
Interconnecting Unit AN/FYA-50	100001413-002	1
Interconnecting Unit AN/FYA-30	100001413-004	2
Interconnecting Unit, Audio AN/FYA-51	100001414-003	1
Interconnecting Unit, High Level Signals AN/FYA-52	100001426-001	1
Interconnecting Unit, AUTODIN-AUTOVON AN/FYA-53	100001420-001	1
Interconnecting Unit, AUTODIN-AUTOVON AN/FYA-54	100001421-004	1
Interconnecting Unit J-3058(V)2/FY	100003166-002	1
Power Supply Set AN/FYA-59	100001418-008	1
Intercommunication Set AN/FYA-55	100001417-003	1
Teletypewriter Set AN/FGC-130	100001191	4
Teletypewriter Set AN/FGC-131	100001471	1
Teletypewriter Set AN/FGC-132	100001445	1
Teletypewriter Set AN/FGC-133	100001597	5
Isolation Unit, Data-Timing AN/FYA-64	100001415-007	1
Filter Unit, Audio F-1157/FYA	100001408-006	1
Filter Unit, Radio Frequency F-1173/FYA-20	100001409-111	1
Filter Unit, Radio Frequency F-1161/FYA	100001409-306	1
Console, Channel Status Display AN/FYA-45	100000460-002	1
Console, Monitor-Test AN/FYM-25	100000461-001	1
Switching Unit, Monitor-Test Console SA-1561/FYA	100000462-001	1

Table 1-10. AN/FYQ-42(V)10 Equipment List-Continued

Nomenclature	Manufacturer's parts No.	Quantity
COMSEC Type A Facility	100001186-002	1
COMSEC Type B Facility	100001189-001	22
COMSEC Type B Facility	100001189-002	5
Terminal, Telegraph AN/FCC -19	100001193	2
RFI Shield Point Enclosure	100000410	2
Intercommunication Station and Wall Mounting Kit /COMSEC)	100001192	3
Simulator, Coordination A N/FYM-26	FSN 7440-027-7246	1

Electric PowerplantAN/FJQ-13. Refer to table 1-1, Electric Powerplant AN/FJQ-4.
Power Supply Set OP-85(V)9/FYQ. Refer to table 1-5, Power Supply Set OP 85(V)5/FYQ.

Table 1-11. AN/FYQ-42 (V) Equipment List

Automatic Digital Messages Switching Group AN/FYA -10(V)10.		
Switching Unit, Memory-Drum Control SA-1542/FYA-10(V) .	397-1297-1	1
Switching Unit, Processor SA-1543/FYA-10(V)	397-1299-1	1
Switching Unit, Magnetic Tape Control SA-1544/FYA-10(V)	397-1298-1	1
Switching Unit, Communication Line SA-1545/FYA-10(V)	397-1294-2	1
Switching Unit, Tape Transport-Maintenance Console SA-1536/FYA-10 (V)	397-1296-1	1
Switching Unit, Distribution SA-1537/FYA-10(V)	397-1301-1	1
Control Group, Magnetic Tape OK-30/FYA-10(V)	397-1288-1	1
Control Group, Peripheral Input-Output OK-31/FYA-10(V) . . .	397-1287-1	1
Monitor Assembly, Control-Sensing OK-33/FYA-10(V)	397-1285-1	1
Processor Unit OL-9/FYA-10(V)	397-1283-1	6
Memory Storage and Control Group OA-8945/FYA-10(V)	293968-01	6
Printer Unit RP-164/FYA-10(V) .	397-1300-1	2
Card Reader Unit RP-165/FYA-10(V)	397-1315-1	1
Card Punch Unit RO-328/FYA-10(V)	397-1316-1	1
Recorder-Reproducer, Signal Data RD-304/FYA-10(V) .	397-1303-1	18
Console, Station Supervisory OJ-51/FYA-10(V)	397-1292-2	1
Console, Maintenance OJ-50/FYA-10(V)	397-1291-1	1
Line Termination Buffer Unit OA-8299(P)/FYA-10(V)	397-1289-3 to 397-1289-29	8
Printer; Line RP-224/U	LP3000-1-12211112	2
Console, Message OJ-347/FYA-10(V)	398-15199-1	2
Disc Memory Unit MU-617/FYA-10(V)	397-1563-1	3
Console, Maintenance Support OJ-346/FYA-10(V)	397-1324-2	1

Table 1-11. AN/FYQ-42(V)11 Equipment List-Continued

Nomenclature	Manufacturer's part No.	Quantity
Communication Group AN/FYA-21.		
Patch Bay. Audio AN/FYA-48	100001402-003	1
Patch Bay, High Level Signals AN/FYA-56	100001425-008	1
Patch Bay, Low Level Signals AN/FYA-57	100001403-008	1
Patch Bay, Secure Circuits AN/FYA-27	100001404-004	1
Patch Bay., Secure Circuits ON-114(V)4/FY	100003165-004	1
Patch Bay, Unsecure Circuits ON-43/FYA-21	100001405-014	1
Station Timing Unit TD-877/FYA-21	100001406-013	1
Converter Unit, Signal Level OU-29/FYA-21	100001407-013	1
Test Set, Electronic Systems AN/FYM-22	100001411	1
Interconnecting Unit AN/FYA-49	100001412-001	1
Interconnecting Unit AN/FYA-29	100001412-004	2
Interconnecting Unit AN/FYA-50	100001413-004	1
Interconnecting Unit AN/FYA-30	100001414-003	1
Interconnecting Unit, Audio AN/FYA-51	100001426-001	2
Interconnecting Unit, High Level Signals AN/FYA-52	100001420-001	1
Interconnecting Unit, AUTODIN-AUTOVON AN/FYA-53	100001421-004	1
Interconnecting Unit, AUTODIN-AUTOVON AN/FYA-54	100003166-004	1
Interconnecting Unit J-3058(V)4/FY	100001418-008	1
Power Supply Set AN/FYA-59	100001417-003	1
Intercommunication Set AN/FYA-55	100001191	3
Teletypewriter Set AN/FGC-130	100001471	1
Teletypewriter Set AN/FGC-131	100001445	1
Teletypewriter Set AN/FGC-132	100001597	1
Teletypewriter Set AN/FGC-133	100001415-007	5
Filter Unit, Radio Frequency F-1174/FYA-21	100001408-001	1
Filter Unit, Radio Frequency F-1159/FYA	100001409-101	1
Console, Channel Status Display AN/FYA-45	100001409-112	1
Console Monitor-Test AN/FYM-25	100001409-305	1
Switching Unit, Monitor-Test Console SA-1561/FYA	100000462-002	1
Switching Unit, Monitor-Test Console SA-1561/FYA	100000462-001	1
Low Speed Modem Facility	100001196-001	1
Low Speed Modern Facility	100001196-005	13
High speed Modem Facility	100001198-001	1
High Speed Modem Facility.	100001198-006	1
H. F. Modem Facility	100001200-001	1
H. F. Modem Facility	100001200-003	1
COMSEC Type A Facility	100001186-001	42
COMSEC Type B Facility	100001189-001	18
COMSEC Type B Facility	100001189-002	5
Terminal, Telegraph AN /FCC-19	100001193	2
RFI Shield Point Enclosure	10000410	1

Table 1-11. AN/FYQ-42(V)11 Equipment List-Continued

Nomenclature	Manufacturer's part No.	Quantity
Intercommunication Station and Wall Mounting Kit (COMSEC)	100001192	3
Simulator, Coordination AN/FYM-26	FSN 7440-027-7246	1

Table 1-12. AN/FYQ-42(V)12 Equipment List

Automatic Digital Message Switching Group AN/FYA-10(V) 9.

Switching Unit, Processor SA-1533/FYA-10(V)	397-1299-3	1
Switching Unit, Magnetic Tape Control SA-1534/FYA-10(V)	397-1298-3	1
Switching Unit, Communication Line SA-1535/FYA-10(V)	397-1294-1	1
Switching Unit, Tape Transport-Maintenance Console SA-1536/FYA-10(V).	397-1296-1	1
Switching Unit, Distribution SA-1537/FYA-10(V)	397-1301-1	1
Control Group, Magnetic Tape OK-30/FYA-10(V)	397-1288-1	
Control Group. Peripheral Input-Output OK-31/FYA-10(V)	397-1287-1	
Monitor Assembly. Control-Sensings OK-33/FYA-10(V)	397-1285-1	1
Processor Unit 9/FYA-10(V)	397-1283-1	4
Memory Storage and Control Group OA-8945/FYA-10(V)	293968-01	4
Printer Unit RP-164/FYA-10(V)	397-1300-1	2
Card Reader Unit RP-165/FYA-10(V)	397-1315-1	1
Card Punch Unit RO-328/FYA-10(V)	397-1316-1	1
Recorder-Reproducer, Signal Data RD-304/FYA-10(V)	397-1303-1	18
'Console, Station Supervisory OJ-51/FYA-10(V)	397-1292-2	1
Console,-Maintenance OJ-50/FYA-10(V)	397-1291-1	1
Line Termination Buffer Unit OA-8299(P)/FYA-10(V)	397-129-3 397-1289-29	5
Printer, Line RP-224/U	LP3000-1- 1211112	2
Console, Message OJ-347/FYA-10(V)	398-15199-1	2
Disc Memory Unit MU-617/FYA-10(V)	397-1563-1	1
Console, Maintenance Support OJ-346/FYA-10(V)	397-1324-2	1

Table 1-12. AN/FYQ-42(V)12 Equipment List Continued

Nomenclature	Manufacturer's part No.	Quantity
Communication Group AN/FYA-22.		
Patch Bay, Audio AN/FYA-48	100001402-003	1
Patch Bay, High Level Signals ON-44/FYA-22	100001425-012	1
Patch Bay, Low Level Signals AN/FYA-57	100001403-008	1
Patch Bay, Secure Circuits AN/FYA-27	100001404-004	1
Patch Bay, Unsecure Circuits ON-45/FYA-22	100001405-012	1
Patch Bay, Secure Circuits ON-114(V)2/FY	100003165-002	1
Station Timing Unit TD-878/FYA-22	100001406-014	1
Converter Unit, Signal Level OU-30/FYA-22	100001407-014	1
Test Set, Electronic Systems AN/FYM-22	100001411	1
Interconnecting Unit AN/FYA-28	100001412-003	1
Interconnecting Unit AN/FYA-29	100001412-004	3
Interconnecting Unit AN/FYA-30	100001413-004	4
Interconnecting Unit, Audio AN/FYA-51	100001414-004	1
Interconnecting Unit, High Level Signals AN/FYA-52	100001426-001	1
Interconnecting Unit, AUTODIN-AUTOVON AN/FYA-53	100001420-001	1
Interconnecting Unit, AUTODIN-AUTOVON AN/FYA-54	100001421-004	1
Interconnecting Unit J-3058(V)2/FY	100003166-002	1
Power Supply Set AN, FYA-62	100001418-009	1
Intercommunication Set AN 'FYA-34	100001417-002	1
Teletypewriter-Set AN/FGC-130	100001191	3
Teletypewriter Set AN/FGC-131	100001471	2
Teletypewriter Set AN/FGC-132	100001445	2
Teletypewriter Set AN/FGC-133	100001597	5
Isolation Unit, Data Timing AN/FYA-64	100001415-007	1
Filter Unit, Audio F-1157/FYA	100001408-001	1
Filter Unit, Audio Frequency F-1175/FYA-22	100001409-113	1
Filter Unit, Radio Frequency F-1176/FYA-22	100001409-310	1
Console, Channel Status Display AN/FYA-45	100000460-002	1
Console, Channel Status Display AN/FYA-37	100000460-004	1
Console, Monitor-Test AN/FYM-23	100000461-002	1
Console, Monitor-Test AN/FYM-24	100000461-003	1
Switching Unit, Monitor-Test Console SA-1560/FYA	100000462-004	1
Switching Unit, Monitor-Test Console SA-1560/FYA	100000462-005	1
Low Speed Modem Facility	100001196-005	11
Low Speed Modem Facility	100001196-006	1
High Speed Modem Facility	100001198-002	1
High Speed Modem Facility	100001198-006	1
H.F. Modem Facility	100001200-001	1
H.F. Modem Facility	100001200-003	1
COMSEC Type A Facility	100001186-001	38
COMSEC Type B Facility	100001186-001	32
COMSEC Type B Facility	100001189-002	5
Terminal, Telegraph AN/FCC-19	100001193	3
RFI Shield Point Enclosure	100000410	2
Intercommunication Station and Wall Mounting Kit (COMSEC)	100001192	3
Simulator, Coordination AN/FYM-26	FSN 7440-027-7246	1
Electric Powerplant AN/FJQ -15. Refer to table I -1, Electric Powerplant AN/FJQ-4.		
Power Supply Set OP-85(V)10/FYQ. Refer to table 1-5, Power Supply Set OP-85(V)5/FYQ.		

Table 1-13. AN/FYQ-42(V)T1 Equipment List

Nomenclature	Manufacturer's part No.	Quantity
Automatic Digital Message Switching Group AN/FYA-10(V)T1.		
Switching Unit, Memory-Drum Control SA-1532/FYA-10(V)	397-1297-2	1
Switching Unit, Processor SA-1533/FYA-10(V)	397-1299-3	1
Switching Unit, Magnetic Tape Control SA-1534/FYA-10(V)	397-1298-3	1
Switching Unit, Communication Line SA-1535/FYA-10(V)	397-1294-1	1
Switching Unit, Tape Transport-Maintenance Console SA-1536/FYA-10(V)	397-1296-1	1
Switching Unit, Distribution SA-1537/FYA-10(V)	397-1301-1	1
Printer, Line RP-224/U	LP3000-1-12211112	2
Console, Maintenance Support OJ-346/FYA-10(V)	397-1324-2	1
Console, Message OJ-347/FYA-10(V)	398-15199-1	2
Disc, Memory Unit:MU-617/FYA-10(V)	397-1563-1	2
Control Group,- Magnetic Tape OK-36/FYA-10(V)-T1	397-1288-2	1
Control Group, Peripheral Input-Output OK-37/FYA-10(V)-T1	397-1287-2	1
Monitor Assembly, Control-Sensing OK-38/FYA-10(V)-T1	397-1285-2	1
Processor Unit OL-9/FYA-10(V)	397-1283-1	4
Memory Storage and Control Group OA-8945/FYA-10(V)	293968-01	4
Printer Unit RP-164/FYA-10(V)	397-1300-1	2
Card, Reader Unit RP-165/FYA-10(V)	397-1315-1	2
Card Punch Unit RO-328/FYA-10(V)	397-1316-1	2
Recorder-Reproducer, Signal Data RD-304/FYA-10(V)	397-1303-1	14
Console, Station Supervisory OJ-51/FYA-10(V)	397-1292-2	1
Console, Maintenance OJ-50/FYA-10(V)	397-1291-1	1
Line Termination Buffer Unit OA-8299(P)/FYA-10(V)	397-1289-3 to 397-1289-29	2
Trainer, Communication Group AN/FYA-T1		
Patch Bay, Audio ON-46/FYA-T1	100001402-001	1
Patch Bay, High Level Signals ON-47/FYA-T1	100001425-001	1
Patch Bay, Low Level Signals ON-48/FYA-T1	100001403-002	1
Patch Bay, Secure Circuits ON-49/FYA-T1	100001404-001	1
Patch Bay, Secure Circuits ON-114(V)1/FY	100003165-001	1
Station Timing Unit TD 879/FYA-T1	100001406-011	1
Converter Unit, Signal Level OU-31/FYA-T1	100001407-001	1

Table 1-13. AN/FYQ-42(V)T1 Equipment List Continued

Nomenclature	Manufacturer's part No.	Quantity
Test Set, Electronic Systems AN/FYM-22	100001411	1
Interconnecting Unit ON-50/FYA-T1	100001412-002	1
Interconnecting Unit ON-51/FYA-T1	100001413-003	1
Interconnecting Unit, Audio AN/FYA-51	100001414-003	1
Interconnecting Unit, AUTODIN-AUTOVON ON-52/FYA-T1	100001420-004	1
Interconnecting Unit, AUTODIN-AUTOVON ON-53/FYA-T1	100001421-005	1
Interconnecting Unit J-3058(V)1/FY	100003166-001	1
Teletypewriter Set AN/FGC-130	100001191	1
Teletypewriter Set AN/FGC-131	100001471	1
Teletypewriter Set AN/FGC-132	100001445	1
Teletypewriter Set AN/FGC-133	100001597	3
Isolation Unit, Data-Timing OA-8393/FYA-T1	100001415-006	1
Console, Channel Status Display OJ-56/FYA-T1	100000460-003	1
Console, Monitor-Test OJ-57/FYA-T1	100000461-004	1
Switching Unit, Monitor-Test Console SA-1561/FYA	100000462-002	1
Switching Unit, Monitor-Test Console SA-1565/FYA-T1	100000462-003	1
Low Speed Modem Facility	100001196-005	1
High Speed Modem Facility	100001198-002	1
COMSEC Type A Facility	100001186-001	1
COMSEC Type B Facility	100001189-001	1
COMSEC Type B Facility	100001189-002	1
Terminal Telegraph AN/FCC-19	100001193	2
Intercommunication Station and Wall Mounting Kit (COMSEC)	100001192	1
Power Supply Set OP-85(V)11/FYQ	1000030789-011	1

Section II.. DESCRIPTION AND DATA

1-5. General System Description

a. General. The Automatic Digital Network (AUTODIN) System is a high speed, flexible, computer-controlled system. The AUTODIN System is centered around strategically-located switching centers; the largest switching center is ultimately capable of handling up to 1 million messages in any 24-hour period, assuming an average message length of 2,000 characters.

(1) The AUTODIN System is capable of handling JANAP 128 and ACP 127 format communications traffic with the minimum possibility of passing errors; the system capability may be briefly summarized as follows:

(a) Processing traffic on a store-and forward basis between two subscribers located anywhere in the world.

(b) Sending and receiving traffic to and from stations at various transmission rates between 45 and 2400 baud. (The system is capable of expansion to include an increased transmission rate of 4800 baud.).

(c) Sending and receiving traffic among a variety of station terminal devices, such as teletypewriters, punch card machines, magnetic tape terminals, and computers.

(d) Exchanging traffic between stations whose equipment operates at different transmission rates (speeds) and uses different codes and formats.

(2) The ADMSC system is comprised of various types of channel confirmations. These various configurations are necessary in order for the ADMSC to interface with the inter ADMSC trunk networks and the connected tributary configurations. Following is a list of the various types of channels:

(a) Synchronous.

(b) Asynchronous-Audio (VF/DC Multi-Channel).

(c) Asynchronous--DC (DC High Level).

(d) Automatic AUTOVON.

(e) Semi-automatic AUTOVON.

(3) Internal to the ADMSC, following subsystems are utilized to support the operation of the center.

(a) Channel status alarm subsystem.

(b) Monitor test console subsystem.

(c) AUTOVON DTMF subsystem.

(d) Miscellaneous circuits.

NOTE

Throughout the text which follows, reference is made to specific drawings by number and sheet number; these drawings are contained in chapter 2, section III.

b. Synchronous Channel (see drawing 100000170, Sheet 2). A synchronous channel operates in Mode I or III and utilizes JANAP 128 format with the ASCII code. The only exception to this is with a concentrator where ACP 127 format is used and operation is in Mode 1 only. The audio duplex line from either the inter-ADMSC trunk network or from the tributary is connected to the entrance af frame. It is then cross-connected to the entrance af patch bay which provides ready operator access for patching between the input line and the modem. The entrance af patch bay is connected to the entrance af frame where the channel is cross-connected to a modem. The modem may be a low speed wire-line modem, a high speed wire-line modem, or an hf modem. The modem converts the channel signal from an audio form to a dc digital data form. The dc side of the modem is connected to the black frame where the channel is cross-connected to a type A communications security (COMSEC) equipment. The COMSEC equipment decrypts the digital data. The decrypted output of the : COMSE: C equipment is connected to either the regular or the DSSCS red distribution frame. Circuits connected to the regular, red distribution frame are cross-connected to the red dc patch bay (secure ckts) which provides patching between the COMSEC equipment and the line termination buffer (LTB). Circuits connected to the DSSCS red distribution frame are cross connected to the red dc patch bay (DSSCS) which provides patching between the COMSEC equipment and the LTB. Both the re dc patch bay (secure ckts) and -the red dc patch bay ((DSSCS) are connected through their red distribution frames to a synchronous LTB.

The LTB is the interface unit which converts the serial binary stream into a sequence of eight-bit parallel characters for use by the ADMS. The modem and COMSEC equipments are bit-synchronous, requiring a companion timing signal along with the data signal for operation. The LTB is bit- and character synchronous requiring the companion timing for bit-synchronization and also the ASCII sync character for character framing in order to provide proper information transfer to the ADM'S.

c. Asynchronous-Audio (see drawing 100000170, Sheet 1). An asynchronous channel operates in Mode II, IV, or V, utilizing either JANAP 128 or ACP 127 format with either ASCII or ITA No. 2 code. With ACP 127 format, only the ITA No. 2 code is used. The audio duplex line from either the inter-ADMSC trunk network or from the tributary is connected to the entrance af frame. It is then cross connected to the entrance af patch bay which provides operator access for patching between the input line and the modem. The modem is asynchronous and does not require timing for operation. It is generally a multi-channel unit having a single composite audio input and multiple low speed dc digital data outputs. Each output of the modem is high level dc and is connected to the entrance dc frame. At this point, each channel is cross-connected to the entrance dc patch bay which proves access for patching between the modems and the dc/dc converters. The entrance dc patch bay. is connected to the entrance dc frame where each channel is cross-connected to a dc/dc converter. The converter changes the high level dc signals to low level dc signals so that the channels are compatible with the standard in-station level of operation. The low-level side of the dc/dc converter is connected to the black frame and is cross-connected to the black patch bay. The black patch bay provides access for patching between the COMSEC equipment and dc/dc converter. The patch bay is connected to the black frame where the channels are cross-connected to type B COMSEC equipments. The COMSEC equipment decrypts the digital data. The decrypted output of the COMSEC equipment is connected to either the regular or the DSSCS red distribution frame. Circuits connected to the regular red distribution frame are cross connected to the red dc patch bay (secure ckts) which provides patching between the COMSEC equipment and the LTS. Circuits connected to the DSSCS red distribution frame are cross-connected to the red dc patch bay (DSSCS) which provides patching between the COMSEC equipment and the LTB. Both the red dc patch bay (secure ckts) and the red dc patch bay(DSSCS) are connected through their red distribution frames to an asynchronous LTB. The LTB's are the interface units which convert the serial binary stream into a sequence of eight-bit parallel characters for use by the ADMS. An eight-bit character is transferred to the ADMS even though the input character contains only five informational bits.

d. Asynchronous -DC (,see drawing 1000001 Set 1). This type of channel is the same as an asynchronous-audio channel except that the input duplex line is connected to the entrance dc frame. The audio portion of the channel is not required since the channel does not use a modem. It does make use of the entrance dc patch bay, dc/dc converters, and other equipment as described under the asynchronous-audio channel.

e. Automatic AUTOVON (see drawing 1000000170, Sheet 3)

(1) Asynchronous automatic AUTOVON channel operates in Mode III with JANAP 128 format utilizing the ASCII code. The channel description is the same as the synchronous channel with the addition of two items of equipment: the black AIU and the red AIU. The entrance of patch bay is connected to the black AUTOVON interface unit (AIU) via the entrance af frame. The black AIU is connected directly to the red AIU via radio isolators and also to the modem via the entrance af patch bay and the entrance af frame. The black AIU is essentially a switch, controlled by the red AIU. It switches the data lines between the red AIU (audio tones for AUTOVON operation) and the modem (audio tones for data operation) and the modem (audio tones for data operation). The modem is connected to the COMSEC equipment or red/black isolators are connected to the red AIU and the black frame. The COMSEC equipment or red/black isolators through the black patch bay through the red patch bay and the red frame. The red AIU is then connected to

the red patch bay via the red frame and then to the LTB, also via the red frame. The red AIU contains the logic circuits and tone generating circuits required for interfacing the ADMS with AUTOVON.

(2) An asynchronous automatic AUTOVON channel operates in Mode V with either JANAP 128 or ACP 127 format utilizing the ITA #2 code. The circuit description is the same as the synchronous automatic AUTOVON except that red/black isolators and an asynchronous LTB are used.

f. Semiautomatic AUTOVON (see drawing 100000170 , Sheet 4).

(1) A synchronous semiautomatic AUTOVON channel operates in Mode III with JANAP 128 format utilizing the ASCII code. The channel description is the same as the synchronous channel (para 1-5 b) with the addition of a line termination and transfer unit (LTTU). The entrance af patch bay is connected to the LTTU via the entrance af frame. The LTTU is connected to the AUTOVON control panel on the monitor test console via audio isolators. It is also connected to the modem through the entrance af patch bay and entrance af frame. The LTTU is controlled by the AUTOVON control panel and connects the channel

to the panel for voice communication or to the modem for data communication.

(2) An asynchronous semi-automatic AUTOVON channels operates in Mode V with either JANAP 128 or ACP 127 format utilizing the ITA No. 2 code. The channel description is the same as the synchronous semi-automatic AUTOVON channel except that an asynchronous modem COMSEC and LTB are used.

g. Channel Status Alarm Subsystem (See drawing 100000170, Sheet 6). The channel status display (CSD) portion of the AUTODIN station control console (ASCC) is a centrally located position for displaying channel alarm conditions. The alarms from the modem and from the type A COMSEC equipment associated with a channel are connected to the black frame. At the frame they are cross-connected to sensor jacks in the black patch bay. These sensor jacks are associated with the channel jacks and permit patching between the sensors and CSD. This type of patching is done in parallel with channel patching on the black patch bay in order to retain the proper channel display identity on the CSD with respect to the sensors. The AUTOVON pre-empt alarm from the LTTU and the cut key indicators from the red patch bay are cross-connected directly to the CSD since they do not change their channel identity. The CSD is inter-connected with the AUTODIN station supervisors console (ASSC) to accomplish and interchange of alarm indications between the tech control area and the ADMS.

h. Monitor Test Console Subsystem (See drawing 100000170, Sheet 7). The monitor test console (MTC) subsystem is composed of two basic equipments—the console and a remote switcher. In a small ADMSC (125 line or less) there is one console and two remote switchers. In a large ADMSC (up to 250 lines) there are two consoles and four remote switchers. The switching system for a large ADMSC has been divided into four sections. The area between the COMSEC equipment and the LTB's has been designated red, and the area between the COMSEC equipment and the modems has been designated black. The 250 channels have been divided into two groups, the first 125 channels being Group 1 and the second 125 channels being Group 2. This provides the four sections—Red Group 1, Red Group 2, Black Group 1, and Black Group 2. Each one utilizes a remote switcher in the system. Each remote switcher is connected to its respective area distribution frame, where the individual channels are cross-connected to the proper monitor points in the patch bays. When a console accesses a remote switcher in the switching system, it sends a busy signal to the other console indicating the switching system quadrant in use. The console operator is then capable of monitoring the selected channel activity through the selected area patch bay monitor access points.

i. AUTOVON DTMF Subsystem (See drawing 100000170, Sheet 4). The incoming line from the AUTOVON switch is connected to the entrance af frame through the shield point isolators. It is then cross-connected to the entrance af patch bay to provide access for patching between the AUTOVON switch and DTMF telephones. The entrance af patch bay is connected to the entrance af frame where the line is cross-connected to the associated DTMF control unit. The entrance af patch bay is connected to the entrance af frame where the lines is cross-connected to the associated DTMF control unit. The control unit is connected to the DTMF telephone through audio isolators. This telephone is located at the ASSC for the supervisor's use.

j. Miscellaneous Circuits (see drawing 100000-170, Sheet 8). The af/dc test facility, the entrance af patch bay, the entrance dc patch bay, and the black patch bay area contain a miscellaneous jack panel equipped with several trunk jacks. These trunk jacks are inter-connected to give a patching capability between each of the equipments. This enables the tech control operator to use the test equipment in the af/dc test facility for circuit testing in the entrance and black areas. The model 28 KSR teletypewriter set associated with the ASCC and the model 35 ASR teletypewriter sets located in the ADMS area are connected to the red frame. They are then cross-connected to the red patch bay. The patch bay is connected to the frame where the teletypewriter equipments lines are cross-connected to LTB's.

1-6. AUTODIN Increment

The existing Continental United States (CONUS) system, known as AUTODIN Increment I and formerly known as AF DATACOM (Air Force Data Communications), is a leased commercial system consisting of five automatic electronic switching centers (AESC) with the CONUS. Each AESC provides automatic store-and-forward message switching through the message switching unit (MSU) and provides for direct-connection

circuit switching through a circuit switching unit (CSU).

a. Four of the five CONUS automatic electronic switching centers (AESC) presently have the capacity to accommodate 50 message switching unit (MSU) users; the fifth AESC has a capacity for 100 MSU lines. Each AESC has the capability of serving various lines speeds, codes, and formats. The CONUS, Fieldata is presently being used on the trunks and is the internal code of the AESC, although existing documents call for a change to ASCII; as a result, all received characters are translated to Fieldata. Translation is accomplished by the accumulation and distribution unit (ADU). The ADU serves the function of data buffering for the input and output lines of the message switching unit (MSU).

(1) Channel coordination is also performed by the ADU. Each ADU is designed to serve 25 full duplex lines with line speeds up to 4800 baud. The 50-line AESC's have two on-line ADU's and one standby ADU. The ADU operates under the control of the communications data processor (CDP) which is general purpose, stored-program computer. The CDP is the nucleus of the AESC and performs the functions required to process traffic. Each AESC has one on-line CDP and one standby CDP; the standby CDP assumes processing responsibilities in the event the on-line CDP should fail. Messages are completely stored in the AESC before transmission; this storage is provided by three magnetic drums in the 100-line center.

(2) The AESC utilizes magnetic tape storage for processing records, intercept storage, drum overflow, etc. A small general purpose stored-program computer is also used at each AESC as a tape search unit (TSU); the tape search unit performs message retrievals, traffic-statistics processing, and other varied off-line functions.

(3) Each AESC is equipped with a 50-line circuit switching unit (CSU) for subscribers whose needs are more efficiently served by circuit switch operation. The CSU utilizes nonblocking, dry-reed switching. To establish a CSU connection, the security, speed, and type of the called and calling subscriber are compared; the caller receives and automatic disconnect if an incompatibility is detected. All CSU subscribers have access to the message switching unit (MSU); the CSU inter-communicated with MSU interchange trunks.

b. The AUTODIN Increment I is being expanded to bring the total to nine CONUS AESC's; in addition, the five existing AESC's are being expanded to accommodate 125 duplex line per accumulation and distribution unit (ADU). Modification of the ADU's at the five existing AESC's will expand the MSU size to 250 duplex lines per AESC. The CONUS system will then have a capacity of more than 2,000 subscribers.

c. The AUTODIN Increment I system will be linked to AUTODIN Increment II (see para 1-7) by means of gateway trunks to the overseas system to form a global integrated network.

d. The CONUS tributaries are connected to the AESC's by a number of terminal equipments which are separate and distinct from those equipments to be used for overseas. AUTODIN subscribers; however, existing documents call for the eventual use of overseas terminal equipment at the CONUS tributaries. CONUS tributary equipments include the following:

(1) Low-speed Compound Terminal: less than 1200-baud operation with multi-media input/output capability (punched card and teletypewriter).

(2) High-speed Compound Terminal: greater than or equal to 1200-baud operation with multi-media input/output capability (punched card, teletypewriter, and/or magnetic tape).

(3) Magnetic Tape Terminal: 2400-baud operation magnetic tape input/output capability.

(4) Computer Terminal: high-speed operation with computer input/output capability.

(5) Teletypewriter: 100 wpm with controlled teletypewriter input/output capability.

1-7. AUTODIN Increment II

a. AUTODIN Increment II, as an integral part of the AUTODIN system, provides improved store-forward service to logistic, administrative, and command/control subscribers and to communication networks presently served by automatic, semi-automatic, and manual relays as well as a variety of point-to-point allocated circuits within the Defense Communication System.

b. AUTODIN increment II consists of the installation of Automatic Digital Message Switching Centers (ADMSC) throughout various overseas areas to perform general purpose store-and-forward communications in accordance with

specification requirements generated by the Defense Communications Engineering Office.

(1) Modular construction of the various elements of an ADM SC permit expansion from minimum sizes through maximum capacity.

ADMSC's fall into two general size classes:

(*a*) Ranging from approximately 50 ADMS terminated lines to a maximum expansion limit of approximately 100 ADMS terminated lines.

(*b*) Ranging from approximately 120 ADMS terminated lines to maximum expansion limit of approximately 200 ADMS terminated lines.

(2) Provision is made within the ADMSC to handle allocated or through (non-ADMS) circuits which do not terminate at the ADMS.

(*a*) An ADMSC corresponding to the size given in subparagraph 1-7*b*(1)(*a*) above is capable of terminating a total of 125 lines.

(*b*) An ADMSC corresponding to the size given in subparagraph 1-7*b*(1)(*b*) above is capable of terminating a total of 250 lines.

c. The ADMSC is operationally compatible with the automatic electronic switching center (AESC) of CONUS thereby enabling the formation of a world-wide, integrated network.

1-8. Detail System Description

a. Automatic Digital Network (AUTODIN). The automatic digital network (AUTODIN) is a digital data switching system capable of providing store-and-forward message switching service to data and teletype subscriber terminals throughout the world. AUTODIN provides services for all authorized government agencies including Army, Air Force, and Navy. The AUTODIN is interconnected through a network of high-frequency point-to-point radio channels, microwave and tropospheric scatter systems, submarine cables, and wire lines. Interfaces exist among AUTODIN, automatic voice network (AUTOVON), and digital circuit switching units.

b. Automatic Digital Message Switching Center (ADMSC). The Automatic Digital Message Switching Center (ADMSC) is a major element within AUTODIN An ADMSC Includes: a technical control facility; power generating and distribution equipment; station timing source and distribution modems, cryptographic and cryptoancillary equipment; maintenance facilities; an ADMS; and the building, primary and emergency power, and environmental equipment. An ADMSC handles both encrypted and unprotected digital message traffic while performing necessary transmission and message switching functions. An ADMSC provides necessary monitoring, supervision, and control required to maintain continuous service. The fundamental responsibility of the ADMSC under all circumstances is to maintain the following:

(1) Message security.

(2) Message accountability.

(3) Message integrity.

c. Major Elements of an ADMSC. An ADMSC includes a programming package of routines to accomplish required message switching functions and four major technical elements, illustrated in figure 1-1, as follows:

(1) Uninterrupted Power Supply (UPS).

(2) Communications and Technical Control.

(3) Automatic Digital Message Switch (ADMS).

(4) Uninterruptable Power Supply (UPS) Bypass.

d. Synchronous Circuits (See drawing 100000611). Synchronous circuits within the ADMSC are briefly described as follows:

(1) The external duplex line is connected to shield point isolators which serve to eliminate spurious RF that is generated within the ADMSC from being radiated by the external line. The shield point isolators are cross-connected to the entrance af patchbay at the entrance af frame. The entrance of patch bay contains a standard normal-through jack set arrangement consisting of a send set and a receive set. Each set has an equipment side connected to the instation equipment and a line side connected to the external line or equipment leading: to the external line. Each side of a jack set consists of two jacks, one for patching (series) and one for monitoring (parallel). Thus each duplex line contains eight jacks in a jack set arrangement.

(2) The entrance af patch bay, circuit-wise, is located between the shield point isolators and the modem. The modem converts the audio signals to digital data signals and contains alarm circuits on the inputs and outputs connected to the unit. The modem is cross-connected to the black patch bay at the black frame. The black patch bay contains a jack set arrangement that. has been designed to preserve circuit integrity to the switching system associated with the monitor test console.

The switching system monitor points are located within the patch bay between the equipment and line jacks. They are located there so that the monitor points will always be associated with the channel whether the channel is normal or a patch cord has been placed in either the line or equipment jack to pick up a spare equipment. The signal portion of the jack set arrangement contains eight jacks similar to those described for the entrance at patch bay. There is also a sensor jack arrangement consisting of a send set and a receive set, each containing a line jack and an equipment jack. The sensor jacks are electrically located between the equipment fault sensors and the channel status display cabinet. The jacks are used to preserve circuit integrity at the channel status display cabinet when a spare equipment has been patched into the channel.

(3) The signal jacks on the black patch bay are electrically located between the modem and the COMSEC equipment. The tip of the jack set carries the signal, and the ring carries the associated synchronous. timing. The sleeve of the send patch jack carries the sync inhibit command from the modem to the COMSEC equipment. This signal is generated by the modem whenever there is a loss of carrier alarm sensed within the modem. The sync inhibit command then inhibits the COMSEC equipment from going through a resync cycle.

(4) In the synchronous circuit, a type A COMSEC unit is used along with a COMSEC ancillary unit (CAU). Associated with the resync feature is a CAU alarm which is activated when the resynchronization fails after three consecutive times. This alarm is connected to the channel status display cabinet through the sensor jacks on the black patch bay.

(5) The red dc patch bay (secure) and red dc patch bay (DSSCS) are electrically located between the COMSEC equipment and the line termination buffer (LTB). Each red patch bay contains a jack set arrangement that is the same as the signal jack sets in the black patch bay. In addition to the jack sets there are circuit cut keys with indicators. The cut keys are used to break the circuit and apply a steady mark voltage on; the line to the receive device (LTB). Along with the signal and timing in the jack set, the sleeve carries two command signals. On the send side, the signal is the auto-resync command from the LTB to the CAU. On the receive side, the signal is a data inhibit signal from the CAU (during. resync) to the LTB.

(6) The receive LTB is a serial to parallel converter capable of recognizing a sync or idle line character for character framing or synchronization. The serial signal input is stepped into the LTB by the associated timing signal while the parallel information is taken out on demand. The send LTB is a parallel to serial converter capable of generating a sync or idle line character. The parallel signal input is accepted on demand and is stepped out, by a timing signal, in serial fashion.

e. Asynchronous Circuits-Audio (See drawing 100000610). Asynchronous circuits-audio within the ADMSC are briefly described as follows:

(1) The external duplex line is connected to shield point insolators which serve to eliminate spurious RF from being radiated by the external line. The isolators are cross-connected on the entrance af frame to the entrance-af patch bay. The patch bay contains a standard jack set with parallel monitor jacks for a total of eight jacks.

(2) The entrance af patch bay is electrically located between the shield point isolators and the modem. The audio side of the modem contains tones representing sixteen low speed digital data channels. The unit uses frequency division principals and converts the audio tones into dc data. The modem contains a loss of carrier alarm associated with the audio side. This alarm is cross-connected to the sixteen channel displays on the channel status display cabinet.

(3) The dc side of the modem is high level and is cross-connected on, the entrance dc frame to the; entrance dc patch: bay. The patch bay contains a standard jack set with parallel monitor jacks similar to those in the entrance af patch bay. On the send side of the circuit between the entrance dc patch jacks and modem is a loop resistor for adjusting the current in the loop. On the receive side, the loop resistor is placed

between the entrance dc patch jacks and the dc/dc converters. The jack sets also contain a 100-ohm resistor to obtain a low level current sample of the high-level signals for monitor point access by the test console.

(4) The sensor jack panel is located in the entrance dc patch bay for the asynchronous audio channels since the majority of the sensors are located in the modem.

(5) The high level battery facility supplies power to the modem and the dc/dc converters for loop current. The mode of operation (polar or neutral) of the high level portion of the system is dependent upon the external dc landlines connected to the site. This mode of operation is made the same as the landlines so that patching on the entrance dc patch bay is not complicated.

(6) The entrance dc patch bay: is cross-connected to the dc/dc converter on the entrance dc frame. The dc/dc converter converts the high level signal to a low level signal for operation in the instation low level environment.

(7) The dc/dc converter is cross-connected on the black frame to the black patch bay which contains the signal jack set configuration. The sensor jacks normally associated with the black patch bay are located in the entrance dc patch bay for asynchronous audio channels. The associated timing signals are described for synchronous channels are not required in an asynchronous circuit.

(8) The black patch bay is Cross-connected to the COMSEC equipment on the black frame. In the asynchronous circuit a type B COMSEC unit is used. This type of COMSEC equipment does not have an automatic resync feature and does not require external timing for operation. The clear text send input side does make use of a step pulse in place of the timing. The step pulse is generated by; the COMSEC unit and controls the output character rate of the send LTB.

(9) The red dc patch bay (secure) and red dc patch bay (DSSCS) are electrically located between the COMSEC equipment and the LTB. Each red dc patch bay contains a jack set with monitor point access for the switching system and cut keys with indicators.

(10) The asynchronous LTB utilizes a timing signal for operation of the serial side of the unit. The send LTB serially commences stepping out a character in accordance with the timing signal upon receipt of a step pulse. The receive LTB serially steps in a character in accordance with the timing signal upon receipt of the start pulse of the character.

f. Asynchronous-Dc (See drawing 100000610). This type of channel is the same as that previously described for the asynchronous audio except for the input area. The external duplex high level dc landline is connected to a shield point isolator. The isolator is cross-connected on the entrance dc frame to the entrance dc patch. bay. The remainder of the circuit is the same as the asynchronous audio circuit except that a sensor jack set is not required. Without a modem there are no sensors to be patched.

g. Automatic AUTOVON (See drawing 100000612). Automatic AUTOVON circuits within the ADMSC are briefly described as follows:

(1) An automatic AUTOVON channel operates either in a synchronous or asynchronous mode depending upon the particular channel configuration. The external line consists of six wires-two for the transmit audio signal, one for the associated high level dc M lead, two for the receive audio signal, and one for the associated high level dc E lead. This external channel is connected to the shield point isolators which serve to eliminate spurious RF from being radiated by the-external lines. The isolators are cross-connected to the AUTOVON line panel jacks on the entrance af patch bay. The jack set configuration is the standard audio set with the sleeve connection brought through for patching the E and M leads. The black-AUTOVON: interface unit is electrically located been two jack sets on the AUTOVON line panel in the entrance af patch bay. The higher numbered jack set gives access for patching between the external line and the black AIU. The lower numbered jack set gives access for patching between the black AIU and the modem.

(2) The black AIU serves as a switch for the audio signals and as a level converter for the E and M signals. In the idle state the black AIU, under control of the red AIU, switches the send and receive audio lines from the modem direct to the read AIU. The E and the M signals, after being converted to low signals, are connected directly to the red AIU. The red AIU controls the circuit, recognizing and generating the proper signals for an incoming or outgoing connection. At the proper time it will cause the black AIU to connect the audio lines to the modem. At this time the data will be transferred. The red AIU upon receipt of the disconnected signal will cause the black AIU to switch to its idle state.

(3) The modem is cross-connected to a signal jack set and a sensor jack set in the black patch bay. The black patch bay is cross-connected to red/black isolators or COMSEC equipment, which in turn is cross-connected to the red patch bay.

(4) The red AUTOVON interface unit is electrically located between two jack sets on the red patch bay. The higher numbered jack set gives access for patching between the red/black isolators or the COMSEC equipment and the red AIU. The lower numbered jack set gives access for patching between the red AIU ad the LTB.

(5) A synchronous automatic AUTOVON channel utilizes a synchronous LTB and a type A COMSEC unit or red/black :isolator. An asynchronous channel utilizes an asynchronous LTB and red/black isolator.

h. Semiautomatic AUTOVON (See drawing 100000613). Semiautomatic AUTOVON circuits within the ADMSC are briefly described as follows:

(1) A semiautomatic AUTOVON channel operates either in a synchronous or asynchronous mode depending upon the particular channel configuration. The external line consists of six wires-two for the transmit audio signal, one for the associated high level dc M lead, two for the receive audio signal, and one for the associated high level dc E lead. This, external channel is connected to the shield point isolators which serve to eliminate spurious RF from being radiated by the external lines. The isolators are cross-connected to the access trunk panel in the entrance af patch bay. The jack set configuration contains a send jack set consisting of a line patch jack, a line monitor jack, a console jack, and a modem jack. The receive jack set consists of the same four types of jacks for the receive side.

(2) The entrance patch bay is cross connected to the line termination and transfer unit (LTTU) and the modem. The LTTU is connected to the AUTOVON control panel through audio isolators. The AUTOVON control panel is located in the AUTODIN station control console and is the control element of the system. With the switch on the control panel in the off position, the LTTU is in the idle state and connects the external line to the control panel. The ASCC operator/supervisor thus answers and initiates incoming and outgoing calls. With the switch on the control panel in the DTMF position the system is set up for the voice mode of operation through the use of the DTMF telephone. With the switch in the DATA position, the LTTU transfers the external line to the modem. The system configuration from the modem to the LTB is the same as described for a synchronous or an asynchronous channel.

i. Channel Status Display Alarm Subsystem (See drawing 100000615). Channel status display alarm subsystem circuits are briefly described as follows:

(1) The channel status display (CSD) portion of the AUTODIN station control console (ASCC) contains displays for each channel and major components o the site. The channel alarms are obtained from the modem and type A and B COMSEC equipment, through a sensor patch panel. The AUTOVON preempt alarm and cut key indicators are connected direct to the CSD.

(2) An asynchronous audio channel utilizes a multiplexing type of modem which contains one send carrier alarm and one receive carrier alarm. These two carrier alarms are cross-connected to each of the associated sixteen channels. The individual notransition alarms: are cross-connected to their respective channels.

(3) The system alarm portion of the CSD contains alarms for failures that affect a multiple number of channels. The: ac power alarm indicates when the main ac power feed to the UPS has failed. A UPS battery voltage sample is carried through the ASCC and displayed on a meter in the SYSTEMS STATUS panel of the ASCS. This gives an indication of the battery voltage during the time the UPS is operating on batteries. The emergency power alarm indicates when the emergency ac power system is on-line and operating the UPS. The UPS alarm indicates that a failure has occurred in the UPS. The environmental alarm indicates that the temperature or humidity is out of tolerance. The black clock alarm indicates a failure in the station timing facility located in the black area. The red clock alarm indicates a failure in the red timing line driver facility. The ADMS alarm indicates that an equipment is in State 3 (off-line and unavailable).

j. Monitor Test Console Subsystem (See drawing 100000616). Monitor test console subsystem circuits are briefly described as follows:

(1) The monitor test console (MTC) is capable of controlling remote switches in the black and red areas of the site. Access to the two areas is accomplished through interlocked relays so that only one area at a time can be addressed. There is a control lead for the group 1 switch and a control lead for the group 2 switch. The address lines and the monitor lines for the two remote switches in one area are in parallel. The control leads are interlocked through a rotary switch so that only one of the two remote switches in an area will be activated by one MTC. Thus with the address information fed to an area and the control lead alerting one of the switchers, the cross point for the selected channel will be operated.

(2) Each remote switcher can be accessed by one of two MTCs. This is accomplished through interlocked relays so that only one MTC at a time can control the switcher.

(3) Between the primary MTC and secondary MTC there is interlock circuitry. When the primary MTC has accessed a quadrant of the switching system, the interconsole interlock circuitry causes a busy light to illuminate on the primary MTC. The primary MTC has the option of overriding the secondary MTC in addressing the switching system.

(4) In addition to the switching system, each MTC has patch jacks on the miscellaneous jack panel in the red and black patch bays. The function switch on the MTC must be turned to the red or black patch position in order to access the patch jacks since they are grounded by the console function switch when they are unselected.

k. Miscellaneous Circuits . (See drawings 100000618 and 100000619). Miscellaneous circuits within the ADMSC are briefly described as follows:

(1) The af/dc test facility contains various test equipment and jack set configurations necessary to perform maintenance on the various equipment. There are trunk jacks interconnecting the various patch bays with the af/dc test facility.

(2) The model 28 and model 35 teletypewriter equipments are connected to LTB's through jack sets on the red patch bay. This provides access for patching and maintenance of the equipment.

(3) On the red and black patch bays, the test trunk jacks for the MTC have been setup in a series arrangement. This has been done so that only one circuit at a time can be patched to the MTC for testing even though there are multiple jack appearances.

1-9. Uninterrupted Power Supply (UPS) Description (fig. 1-2)

a. The uninterrupted power supply (UPS) furnishes continuous regulated power to service the sensitive loads within the ADMSC. Nomenclature assigned to the UPS is Electric Power-plant AN/FJQ-4 through AN/FJQ-15 for the various sites with AUTODIN. Details of the UPS will be found by reference, to the UPS power system manual, TM 11-5895-424-15/1 and TM 11-5895-424-15/2.

b. The equipments of the UPS system are located in two general areas within the building; one area

houses the main power equipments of the UPS system and the other area is a special room housing the emergency 240-volt battery.

c. Primary ac power, either 60 cycle or 50 cycle, is obtained from commercial, base (GFE), or emergency sources for operation of the UPS. An emergency transfer feature is provided to enable operation from auxiliary diesel power generating equipment in case of commercial or primary power source failure.

d. The UPS basically consists of two dc power supplies, a 240-volt battery, five motor-generator sets driven from a dc bus, controls, power feeder distribution, powerline filters, and circuit breakers in the technical power panels which supply the various ADMSC loads.

(1) Each dc power supply is voltage regulated and consists of a three-phase input transformer, rectifier with associated controls and protective circuits, and output circuit breaker. Either dc power supply is capable of driving four motor-generator sets and can simultaneously charge the emergency battery. The second dc power supply serves as an automatic standby unit for the first unit.

(2) The 240-volt battery consists of 120 two-volt cells connected in series.. The battery is connected to the common dc bus in parallel with the output of the dc power supply and is capable of providing power to the motor-generator sets for 15 minutes in the event of primary power source failure. The UPS system battery is rated at either 250 kw or 200 kw, depending upon the site configuration.

(3) The UPS system includes five motor-generator sets. Normally, four motor-generator sets operate in parallel to provide the 200 kw or 250 kw of uninterrupted power to the ADMS technical loads. Three motor-generator sets can sustain rated UPS output continuously to the ADMSC equipment in the event of a failure and isolation of one of the on-line motor-generator sets. The fifth motor-generator set is maintained in a standby status immediately available to automatically start up, synchronize, and transfer to the UPS output bus upon failure and isolation of any of the on-line motor-generator sets.

(4) Switch gear, control and power feeder distribution, instrumentation and alarm circuitry, powerline filtering, and power distribution within the ADMSC are described in detail in the UPS power system manual (TM 11-5895-424-14-1 and TM 11-5895-424-15/2).

1-9.1. Uninterruptable Power Supply (UPS) Bypass Description

(fig. 1-2)

a. The uninterruptable power supply (UPS) bypass provides an alternate source of continuous regulated power to serve the sensitive loads within the ADMSC. This provides system flexibility in that the entire UPS can be taken out of service for overhaul or maintenance. Nomenclature assigned to the UPS bypass is Power Supply Set OP-85(V)1/FYQ through OP-85(V)11/FYQ for various sites within AUTODIN. The UPS bypass is fully described in TM-11-5895-810-1 4.

b. The majority of the UPS bypass equipment normally is located in the room that houses the UPS power equipment. The load bank, however, is always mounted outdoors.

c. The UPS bypass utilizes the same primary-power that is applied to the UPS. Normally, the UPS bypass is held in a "standby" mode while the UPS supplies power to the ADMSC loads. At this time, the battery bank is disconnected from the UPS bypass and connected to the UPS system, If the UPS must be taken off-line, the UPS bypass is energized and the UPS bypass output power is synchronized with the UPS output. The load is then transferred in a "make-before-break" operation from the UPS to the UPS bypass. The rotary UPS is shutdown and the battery bank is transferred to the UPS bypass feeder, and circuit breaker CB3 of the UPS bypass operated to the ON position. Uninterrupted power is maintained to the load during the entire power switchover operation. Switchover from the UPS bypass to the UPS system is accomplished in a similar manner.

d. The UPS bypass consists of an entrance switch, a battery charger, a dc distribution cabinet, an inverter (inverter control and inverter group), an ac distribution cabinet, a battery disconnect switch, and a load bank. These units are shown in the UPS bypass block diagram

provided in figure 1-2. The following sub-paragraphs provide a brief functional operation description of the UPS bypass.

(1) Primary ac power is applied through the entrance switch to the battery charger. The battery charger converts this power to 270 volts dc. This dc power is applied through the dc distribution assembly to the inverter. In addition, when the battery bank is connected to the UPS bypass, 270 volts is applied as a float charge to the batteries. The inverter is a functional grouping that consists of the inverter control and the inverter group. This equipment converts the 270 volt dc from the battery charger to regulated, three phase, 60 Hz output power for the ADMSC loads. A particular UPS bypass is rated at 175k VA or 250k VA, depending upon site load requirements. In the event that primary ac power is lost (or that the battery charger fails), battery voltage is immediately supplied to the inverter. The UPS bypass can supply the critical loads from the battery source for up to 15 minutes.

(2) The ac output of the UPS bypass is distributed to the critical ADMSC loads through a bypass feeder cubicle. This unit is Electrically interlocked with a feeder breakers cubicle in the UPS system so that only one of the two systems will supply a particular load at any one time. In addition, this interlocking enables the "make-before-break" switching arrangement necessary for uninterrupted load transfer between systems.

(3) The load bank is a resistive dummy load that can be connected to the power system not supplying the critical ADMSC loads. Thus, the off-line system can be tested or adjusted under loaded output conditions. The maximum load of the load bank is 60 kW.

1-10. Communication Group Description

(fig. 1-3)

a. General. The communications .and technical control portion on the ADMSC provides facilities for termination of the external communication lines and interfaces the ADMS; the function of technical control is to maintain continuity of service over the communication lines while monitoring the status of supporting areas, including power and station timing.

b. Nomenclature. Nomenclature assigned to the communications and technical control portion of the ADMSC is Communications Group AN/FYA-11 through AN/FYA-22, and AN/FYA-11.

c. Shield Point Isolation Facility. The facility provides radio frequency interference (rfi) filters on all lines entering or leaving the ADMSC. The facility provides RF filters which prevent unwanted RF signals which may be present on the lines inside the ADMSC from appearing outside the shielded enclosure. Each line, audio or dc, which penetrates the shielded enclosure, passes through a filter. The filter passes dc and audio signals up to 3500 cycles with negligible attenuation; RF signals (14 kc and higher) which may be present on the lines are attenuated by the filter. For a detailed description of the shield point isolation facility, refer to TM 11-5895-410-15.

d. System Distribution and Patching Facility. The system distribution and patching facility contains six types of patch bays and four types of distribution frames, each performing a specific function at the ADMSC. Table 1-13 lists the patch bays and distribution frames (in alphabetical order), the major equipments contained in each bay and frame, and the maximum number of major equipments which may be installed in the bay or frame. The actual number of major equipments depends upon the functions which are to be

performed by each specific AUTODIN side. (For this information, refer to TM 11-5895-410-15.) Certain bays and frames contain components which are not functionally a part of the system distribution and patching facility. These components are identified in table 1-13.

(1) The system distribution and patching facility provides the signal distribution and transmission functions at the ADMSC. The facility interconnects the equipment of the communication subsystem, connects equipment and lines for normal-through operation, permits manual cross-patching of equipment and lines, and provides the capability for local and remote testing of lines.

Table 1-18. System Distribution and Patching Facility, Major Components

Bay or frame	*Major component*	*Maximum quantity*
Black dc patch bay	Frequency comparison unit.	1
	Line jack panel (black)	6
	Miscellaneous jack panel (red,/black).	1
	Sensor jack panel	6
Black distribution frame	Taper pin panel	6
Entrance distribution frame (af).	Taper pin panel	6
Entrance patch bay (af) (cabinet 1).	Access trunk panel	1
	AUTOVON line panel	1
	Miscellaneous jack panel (entrance).	1
	VF patch panel	5
	ADNSC DTMIF Set	1
Entrance patch bay (af) (cabinet 2).	Miscellaneous jack panel (entrance)	1
	VF patch panel	8
Entrance distribution frame (dc).	Taper pin panel	6
Entrance patch bay (dc).	Dc patch panel	7
	Loop resistance panel	7
	Meter panel	1
	Miscellaneous jack panel (entrance)	1
	Sensor jack panel	2
Red dc patch bay (secure).	Line jack panel (red)	6
	Miscellaneous jack panel (red,/black).	1
	6-volt dc power supply	1
Red dc patch bay (unsecure).	Line jack panel (DSSCS).	5
	Miscellaneous jacks panel (DSSCS).	1

Table 1-13, System Distribution and Patching Facility, Major Components-Continued

Bay or frame	*Major component*	*Maximum quantity*
Red dc patch bay (unsecure).	Line jack panel (red)	2
	Miscellaneous jack panel (red/black).	1
	Station intercom unit	
	Redundant power supply red timing driver[1].	1
Red distribution frame	Taper pin panel	6

[1] Not a functional component of; the system distribution and patching facility.

(2) All basic functions of the facility are performed by a distribution frame and a patch bay. The distribution frame provides a permanent connection between equipment patch bays and external lines. Under normal operating conditions, a normal-through path exists from the external line through the various patch bays and equipments. This normal-through patch in the patch bay is provided via the normally-closed jack circuits in the patch bay. By inserting patch cords into the patch jacks in the various panels at the patch bay, a selected equipment can be disconnected from its line and reconnected to a new line thus providing a new through path. Similarly, a selected line can be disconnected from its equipment and reconnected to a new equipment. Each line and equipment can be monitored at any time by connecting the monitoring device into the applicable monitor jack at the patch bay.

(3) Certain patch bays contain facilities for-testing and .adjustment of the lines. Each patch bay performs its assigned functions independently of the other patch bays in the facility. System application functions of the individual patch bays and of the distribution frames are described in, the following paragraphs.

e. Distribution Frames, Distribution frames provide the signal distribution functions within the system distribution and the patching facility. All line circuits, equipment circuits, and patch bay circuits terminate at the distribution frame. Physically, the individual conductors in the interrack cable, assemblies terminate in inserts at the rear of the taper pin panels in the frame.

Jumper leads placed in appropriate inserts at the front of the taper in panel complete the circuits between the equipment and the patch panel and between the lines and the patch panel.

(1) The facility includes the following frames:

(*a*) Entrance distribution frame (af).

(*b*) Entrance distribution frame (dc).

(*c*) Black distribution frame.

(*d*) Red distribution frame.

(*e*) Red distribution frame (DSSCS),

(2) All distribution frames are virtually identical in appearance and all perform the same function. For detailed descriptions of the system distribution and patching facility equipments, refer to TM 11-5895-414-15.

f. Entrance Patch Bay (Dc). The entrance patch bay (dc) provides the capability for interchanging compatible dc lines and equipment. All operational circuits pass through the jack sets in the bay. Through the use of patch cords, testing and monitoring can be performed when required. Functions of the panels mounted in the entrance patch bay (dc) are described below.

(1) *Dc patch panel*. The dc patch connects all high level dc circuits through the jack sets in the panel to their assigned equipment. Line and equipment sides are provided with the monitor jacks. Each jack circuit contains a 100-ohm resistor to reduce the high level signal to a low level signal. The low level signal is fed to the station control console for monitoring purposes. Each panel can accommodate 12 duplex circuits.

(2) *Loop resistance panel*, The loop resistance panel provides the capability for adjusting loop current in the various teletypewriter circuits. A jack is associated with each circuit so that the loop current can be monitored at the meter panel while a variable resistor on the panel is being adjusted. An internal strapping arrangement allows resistance to be added to or removed from the circuit.

(3) *Meter panel*. The meter panel contains a voltmeter and an ammeter which are used for testing and adjusting the dc circuits. Each meter is connected to a: jack on the miscellaneous jack panel (entrance) to enable patching of the applicable meter to the circuit under test.

g. Entrance Patch Bay (Af). The entrance patch bay (af), provides the capability for interchanging compatible voice frequency (vf) lines and equipment. All original circuits pass through the jack sets in the bay. Through the use of patch cords, testing and monitoring can be performed when required. Functions of the panels mounted in the entrance path bay (af) are described below.

(1) *Access trunk panel*. The access trunk panel provides manual interconnection flexibility between various equipments at the site. Refer to AUTOVON control and interface manual, TM 11-5895-415-15, for system applications of this panel.

(2) *AUTOVON line panel*. The AUTOVON line panel connects AUTOVON lines to their associated equipment. The panel contains necessary jacks for patching, monitoring, and testing.

(3) *Miscellaneous jack panel (entrance*). The miscellaneous jack panel (entrance) provides jack termination for miscellaneous trunks.

(4) *Vf patch panel*. The vf- patch panel connects all incoming audio lines, other than AUTOVON trunks, through the jack sets in the panel to their assigned equipment

(5) *ADMSC DTMF set*. The ADMSC DTMF set is not a functional part of the system distribution and patching facility. For a description of this equipment, refer to the dual tone multifrequency (DTMF) telephone manual, TM 11-5895-428-15.

h. Black Dc Patch Bay. The black dc patch bay, provides the capability for flexible patching between equipment in the black area of the ADMSC. All operational circuits pass through the jack sets in the bay. Equipment can be cross-patched and disconnected for service, for adjustment, or for repair through the use of patch cords which are inserted in the applicable jack sets in the bay. Traffic can be rerouted as required and can be patched for testing or monitoring

when required. Functions of the panels mounted in the black patch bay are described below.

(1) *Line jack panel (black*). Each line jack panel (black) handles 24 duplex circuits. The line and equipment sides of each jack set are provided with monitor jacks for monitoring and testing active circuits without interruption of traffic.

(2) *Miscellaneous jack panel (red/black).* The miscellaneous jack panel (red/black) provides trunking jacks, test jacks, and positive and negative 6-volt dc test voltages. The jacks in this panel which are used for monitoring and testing contain line terminating resistors.

(3) *Sensor jack panel*. The sensor jack panel provides patching facilities for the station alarm circuits.

(4) *Frequency comparison unit*. The frequency comparison unit compares the oscillator frequency of the local digital clock with the oscillator frequency of a similar remote digital clock. Magnitude and direction of deviation are displayed on a digital readout.

i. Red Dc Patch Bay (Secure). The red dc patch bay (secure) provides the capability for patching of the red dc secure circuits of the AUTODIN site. All circuits pass through the jack sets in the bay.. Equipment can be crosspatched, or disconnected for service or adjustment, and traffic can be rerouted as required and can be patched for testing or monitoring when required. Detailed functions of the panels mounted in the red dc patch bay (secure) are described below.

(1) *Line jack panel (red).* The line jack panel (red) is provided with monitor jacks for monitoring and testing all of the red line circuits without interruption of traffic. Each circuit is provided with a cut key- and an indicator lamp which illuminates to indicate that a cut-circuit condition exists.

(2) *Miscellaneous jack panel (red/black).* The miscellaneous jack panel (red black) provides trunking jacks, test jacks, and positive and negative 6-volt dc test voltages. The jack circuits in this panel which are used for monitoring and testing contain line terminating resistors.

(3) *6-volt dc power supply.*. The 6-volt dc power supply contains two power supply modules which provide +6 and -6-volt dc test voltages to various miscellaneous jack panels in the facility patch bays.

i. 1 *Red DC Patch Bay (DSSCS).* The Defense Special Security Communication System (DSSCS) interfaces with the ADMSC at the red dc patch bay (DSSCS). All circuits pass through the jack sets in the bay. Equipment can be cross-patched or disconnected for service or adjustment, traffic can be rerouted as required, and circuits can be patched for testing and monitoring when required. Jack panels that are mounted in the DSSCS red patch bay are described below.

(1) *DSSCS line jack panel*. The DSSCS line jack panel contains monitor jacks for monitoring and testing all of the DSSCS circuits that interface with the ADMSC. Each circuit is provided with a cut key and an indicator lamp which illuminates to indicate that a cut-circuit condition exists.

(2) *DSSCS miscellaneous jack panel*. The DSSCS miscellaneous jack panel provides test jacks, positive and negative 6-volt dc test voltages, mark and space test levels, and 6800-ohm terminating resistors.

j. Red Dc Patch Bay (Unsecure). The red dc patch bay (unsecure) performs the same system application functions as the red dc patch bay (secure). Functional panels in the red dc patch bay (secure) include line jack panel (red) and miscellaneous jack panel (red/ black), but do not include the 6-volt dc power supply. The red dc patch bay (unsecure) may contain four pieces of equipment which are not functionally part of the system distribution and patching facility. These include the station intercom unit, redundant power supply, card housing module, and red timing line driver. For a description of the intercom unit, refer to the intercom and public address equipment manual, TM 11-5895-416-15. For descriptions of the other units, refer to the station timing subsystem manual, TM 11-5895-413-15/1, TM 11-5895-413-15/2, and TM 11-5895-413-15/3.

k. Signal Level Converter Facility. The facility performs two basic functions at the ADMCS. High level polar and neutral signals received by the ADMSC on high level dc circuits and generated by the site modem

facility are converted to low level polar signals for use in the ADMSC. Low level polar signals from the ADMSC must be changed to high level signals for the modems within the ADMSC and for the high level dc circuits leaving the ADMSC.

(1) The primary function is to interface the existing high-level signals with the standard polar low-level signal within the ADMSC. High-level signals are utilized external to the site and in the AN/FCC-19 site modem facility within the ADMSC.

(2) Two signal level converter cards are used to perform the required basic functions. The lo/hi converter receives the standard low-level polar dc signals within the ADMSC and converts them to high-level polar or neutral signals which are fed to the AN/FCC-19 modem facility or to the dc circuits leaving the site. The hi/lo converter receives high-level polar or neutral signals from the AN/FCC-19 modem facility and from dc circuits entering the ADMSC and converts them to the standard low-level polar dc signals used within the ADMSC. The type of signal which is processed by each pair of converters is determined by the operational requirements of the individual sites. For the detailed description of the signal level converter facility, refer to TM 11-5895-410-15.

l. Electronic Systems Test Set AN/FYM-22 (AF/DC Test Facility). The purpose of the Electronic Systems Test Set AN/FYM-22 is to enable the technical controller to perform malfunction analysis of any audio, high-level dc, and low-level dc circuits at a central location. The analysis can be performed by monitoring and testing any receive-signal generated by an external equipment or by a signal generated in the test set unit and furnished to the equipment under test. All test equipment circuits are conveniently available on the miscellaneous jack panel. In addition, direct trunk circuits are provided from this miscellaneous jack panel to the miscellaneous jack panel in the entrance af, entrance dc, and black patch facility.

(1) The meter panel is also provided for measuring line voltages and loop currents of the telegraph transmission lines.

(2) The oscilloscope and associated plug-in preamplifiers are used to analyze the low-level dc signals, .such as rise and fall time, pulse width, ,jitter, and distortion. The dual-trace plug-in preamplifier permits simultaneous presentation of two signals for comparison; for example, a timing signal with an associated data signal.

(3) The wide-range oscillator is used to apply audio-frequency test signals to the audio line under test. The ac vacuum-tube voltmeter is used to measure audio levels such as send and receive audio signals at the entrance patch facility.

(4) The isolation network is used for isolating the audio test equipment from the line and to provide a high-impedance bridge access to the audio line under test. The attenuation networks provide a means of attenuating the audio test signals.

(5) The data analysis center is used to analyze and generate high and low-level dc signals, such as to test the high-level dc signals prior to their entry into the modem and voice-frequency telegraph (VFTG) equipments, or to generate a low-level dc signal for use on the black patch facility.

(6) The distortion analyzer is used to measure noise levels and the signal-to-noise ratio such as the audio on the modem and VFTG equipments.

(7) The phase-delay measuring set provides relative delay measurements in the frequency range from 300 cycles to 110 cycles. The instrument accommodates three modes of operation: end-to end, loop-back, and end-to-end with return reference patch. The test equipment can also be utilized to measure the delay of the audio transmission lines connected to the modems.

(8) The audio-frequency signals and the high-level dc signals enter the communications subsystem through separate entrance patch facilities. Any low-level dc signal entering the communications subsystem will bypass the entrance patch facility to prevent cross-talk. The individual equipments of the electronic systems test set can be patched to the entrance patch facilities by utilizing the trunk jack circuits in the miscellaneous jack panels in each facility. This jack panel also contains trunking jacks which are connected to the black dc patch facility. With all signals in the communications subsystem available at the miscellaneous jack panel, the utilization of the electronic systems test set is rapidly accomplished through the use of appropriate patch cord connections. For a detailed description of the electronic systems test set, refer to TM 11-5895-411-15.

m. Audio Isolation Facility. The facility provides radio frequency (RF) interference filters in the audio (and intercom) lines connecting AUTOVON equipment in the red area with AUTOVON equipment in the black area.

(1) The facility provides RF filters which prevent unwanted RF signals which may be present at

the red AUTOVON equipment from appearing at the black AUTOVON equipment. Each transmit and receive line which routes audio signals between the red and black AUTOVON equipment passes through a radio interference filter. This filter passes audio signals in the 50- to 3500-cps range with negligible attenuation. Rf signals (14 kc and higher) which may be present on the transmit or receive line are attenuated by the filter.

(2) For a detailed description of the audio isolation facility, refer to TM 11-5895-410-15.

n. Red/Black Isolation Facility. The facility is provided to meet the security requirements for high-speed data and timing circuits passing between the red and black areas at the ADMSC.

(1) The primary function of the facility is to transfer polar low-level digital information within the AUTODIN site between red and black areas and, at the same time, prevent classified data from leaving the secure area. The physical barrier between the areas is the center portion in the red/ black isolation cabinet. The digital information in the receive and transmit directions is passed through separate isolator switches. The red/black isolation cabinet contains a maximum of 96 isolation switches. Operationally, as many as 56 isolation switches are used in the receive lines (with input module on black side) and 40 isolation switches are used in the transmit lines (with input module on red side).

(2) Each side of the red/black isolation cabinet contains identical power supply and distribution circuits. These circuits provide dc operating power to the modules of the isolation switches. Two separate primary ac power lines from the site power system are fed to the redundant power supply unit. One half of each power supply on the black and on the red side is, connected to one circuit breaker. Two power supply modules in the power supply unit provide +6 volts dc operating power through the associated common module to a bus which routes the power to the positive fuse panel. Redundant connection of the power supplies (connecting the output of each through the isolation diode to the same bus) insures that power will be present on the bus even if one of the power supplies fails or its output voltage falls below the required output. When this situation occurs, a local and remote power alarm circuit is actuated by an associated common module in the redundant power supply unit. Two other power supply units and the associated common module provide similar alarm functions and route -6 volts dc power to the negative fuse panel. For a detailed description of the red/black isolation facility, refer to TM 11-5895-410-15.

o. Signal Power Equipment. The signal power equipment is used to supply regulated, high-level voltages with fuse protection The equipment includes two types of power supplies capable of providing adjustable outputs of 48, 50 or 60 volts and 80, 120 or 130 volts dc, respectively. Either one or both polarities of any given voltage can be supplied. In addition, the equipment includes automatic transfer capabilities for automatic power supply substitution in a two-polarity configuration.

(1) The signal power equipment supplies high level dc power for the AUTODIN communications subsystem. It supplies all data circuits operating as high level including circuits on the dc side of the high-level keyer/converters and the external high level de circuits which are part of existing communications networks.

(2) While actual voltage and current requirements are dependent upon the particular site concerned, the voltage supplied will be one or more of the following: 48, 50 or 60 volts and 80, 120 or 130 volts. Redundant power supplies are provided to enable immediate automatic switch-over in the event of a basic dc power supply failure. For additional details on the signal power equipment, refer to TM-11-5895-426-15.

p. DTMF Telephone Set. The DTMF telephone within an ADSC is used exclusively for AUTOVON communications including the establishment of voice communications between switching centers for verification prior to the transmission of data through AUTOVON. A desk model is located on the writing shelf of the AUTODIN station supervisory console (ASSC) and a panel mounted model is mounted in the af entrance patch bay located at the technical control area of the communication section.

(1) The DTMF telephone uses a pushbutton dialing system instead of the conventional dialer, and speaker for aural ringing in lieu of a bell, A four-wire configuration is used between the subset and the control unit, and a six-wire configuration from the control unit to the line signaling equipment at the AUTOVON. The connection to the central office is accomplished by the

use of a four wire adapter circuit. This adapter circuit is rack-mounted and located in the AUTOVON black equipment cabinet (Autovon control and interface equipment).

(2) The purpose of the DTMF telephone is to provide a means of voice communications bi-directionally to the AUTOVON. It is used to pass address information to the AUTOVON switch by means of dial tone combinations to establish a connection to an associated subscriber. The control unit of the DTMF telephone, through appropriate interface, acts as a drop of the AUTOVON switch and, thereafter, is used in much the same manner as a standard telephone. The pushbutton dialing permits selection of various frequency combinations to activate the AUTOVON switch, whereas the conventional dialer uses a pulse system. A four wire circuit adapter is required for each DTMF telephone. Reference should be made to the AUTOVON control and interface equipment manual, TM 11-5895-415-15, for a description of the four-wire circuit adapter.

(3) The audio signals of the DTMF telephone are connected through the ADMSC by means of the-audio isolation facility, the control unit for conversion to a six-wire line (M and E lines), through the entrance patch bay to audio filters and then to the AUTOVON switch. The AUTOVON switch converts the station battery (M lead) to 2600 cps for transmission to the distant station to apply ground on the E lead at the receiving end. The signals from AUTOVON are routed through the called ADMSC in the reverse manner of the calling ADMSC. For a detailed description of the DTMF telephone set, refer to TM 11-5895-428-15.

q. Intercom and Public Address Equipments. The general and COMSEC station intercom systems utilize a basic 10-station master unit within each ADMSC.

(1) *General station intercom system*. This system provides voice communication between a maximum of nine similar stations. In addition, each of the station units can select use of a public address system which consists of a public address amplifier and a maximum of 16 remote speakers. It is possible to replace the public address system with another station unit to provide a full 10-station intercom system. The station units and speakers are located within the ADMSC complex.

(2) *COMSEC station intercom system*.. This system consisting of up to six station units, provides voice communications between the various locations in the COMSEC area and technical control of the ADMSC.

(3) *Public address system*. The public address system is used only in the general station intercom system. Any station can use the public address system simply by lifting the station unit handset and depressing the PA pushbutton. Communications over the public address system is on a push-to-talk basis. The handset disconnects the public address system and returns the station and public address system to a standby condition. For a detailed description of the intercom and public address equipment, refer to TM 11-5895-416-15.

r. AUTODIN Station .Control Console (AS CC), Monitor Test Console. The monitor test console (MTC) provides the AUTODIN station control console operator with the capability of monitoring and testing semi-automatically any one of the red group or black group duplex telegraph channels. Panel-mounted controls and indicators provide for selection of channels to be monitored, visual identification of channel number, speed and routing, selection of test equipment to be connected to the channel under test, and indication of test results. A selected channel is switched to the MTC via remote switchers associated with the red group and the black group of channels. Interlocks within the control circuitry prevent crossover in the system between red and black lines.

(1) In configurations requiring capacity of more than 125 channels in each of the red and black groups, the MTC equipment (console and remote switchers) is duplicated. In these cases, one MTC is designated *primary* and the other is designated *secondary*. The primary console will always be designated as cabinets 6101 and 6102. The secondary console (required when more than 125 channels are used) will always be designated as cabinets 6102 and 6104. Where four remote switchers are provided, they are designated Red Group 1 (channels 1 through 125), Red Group 2 (channels 126 through 250). Both consoles normally have access to all channels. However, when .the primary console has selected a channel in one of the four switching groups, the secondary console can gain access to only those channels in the other three groups. The primary control console has priority override, so that any connection

established through the secondary console can be broken down by the primary console in order to establish a connecting in the switching group affected.

(2) The remote switchers are mounted separately from the rest of the MTC equipment, and are slaved to the cabinet-mounted control circuits. The MTC also contains a Teledata analysis system and a dual-trace oscilloscope (see AUTODIN test equipment manual), an AUTOVON control panel (see TM 11-5895-415-15), and a station intercom unit (see TM 11-5895-416-15).

(3) The MTC contains all operating controls and indicators for semiautomatic monitoring arid testing of the duplex channels. A channel is selected for test by operation of rotary ad push-button switches on the selector panel. The channel is extended to the MTC and its number (001-250), routing indication, arid speed (baud-rate) are shown on the display panel. Where two MTC are used, busy indication of a group selected on one console is given on the selector panel BUSY lamp on the other console.

(4) When a channel has been selected, a monitor point on the channel is also designated on the selector panel. In the red area, the monitoring points are: send signal, send timing, receive signal, and receive timing. In addition to the four lines listed for the red area, the black area also has high level send signal and high level receive signal. Other controls on the selector panel are provided to connect a channel to the test equipment associated with the MTC. Testing is then performed by means of controls on the appropriate test equipment (see AUTODIN test equipment manual). Channel points may be selected on the scope select panel when the oscilloscope is used for testing. All lamps on the MTC panels are wired to a ± 24 vdc source via LAMP TEST pushbuttons for purposes of testing lamp operation.

(5) Programmable diode matrices provide information in binary format to the display panel ROUTING INDICATOR and BAUD RATE displays for a channel when the channel has been selected for monitoring. The diode matrices are programmed at the site by placing diodes in certain bit-positions in each row assigned to a channel. The matrix drawers are slide-mounted and accessible at the rear of the MTC.

(6) All cabling to the control console enters from the floor; separate red entry and black entry maintains isolation between the two cables groups.

(7) The red remote switcher and black remote switcher are mounted in rack remote from the MTC. These form the interface between the duplex channels and MTC and are controlled from the MTC. Switching is performed by two crossbar switches in each remote switcher. At channel selection, the crossbar switches connect one of 125 channels to the control console circuits. Interlocking circuitry prevents any further operation within that group until the connection is released. Control signaling between the MTC and the remote switchers is in the BCD form, which is translated at the remote switcher into the decimal form required by the crossbar switches. For a detailed description of the monitor test console, refer to TM 11-5895-417-15.

s. AUTODIN Station Control Console (ASCC), Channel Status Display Cabinet. The channel status display cabinet (CSDC) provides visual and audible-alarm indication of the status of the AUTODIN duplex communications channels. Each channel is identified on the CSDC front panel with an indicator lamp which flashes when a failure is detected by ADMSC equipment associated with the channel. A common alarm indicator panel is then used to identify the type of fault that has occurred. Audible alarm indicator panel is then used to identify the type of fault that has occurred. Audible alarm indication is also given during fault conditions, and continues until the operator responds to fault indication. Channel capacity of the CSDC can be varied by changing the number of circuit modules in the cabinet, and the number of cabinets utilized. A 250-channel configuration, for example, uses two cabinets; one cabinet is associated with channels 001 through 125, the other with channels 126 through 250.

(1) Two levels of alarm conditions, major and minor, are registered on the CSDC. A major alarm is shown by a flashing red lamp pushbutton combination indicator on the system alarm panel and a high-pitched audible alarm, and indicates a system fault that could affect a number of channels, such a failure of ac power, variations in environment, or a master-clock failure. When the affected pushbutton is depressed, the lamp changes from flashing to steady and the audible alarm stops.

(2) Minor alarms, reflecting any of 11 alarm conditions on a single channel, are indicated on the CSDC master alarm panel by a flashing red lamp

associated with the faulty channel, and an audible alarm considerable lower in pitch than the audible major alarm.

(3) The alarm circuits and master alarm panels are modular. By varying the number of alarm panels, the channel capacity of the CSDC is varied accordingly. A master alarm circuit board is associated with each channel; these circuit boards are contained in the common alarm assembly and the master alarm assembly.

(4) Capacities of the various configurations of equipment are 25 channels, 100 channels, and 125 channels. In all cases, there is one common alarm panel and one power supply test cabinet , and one system alarm panel per site. For a detailed description of the channel status display cabinet, refer to TM 11-5895-527-15.

t. Station Timing Subsystem. The station timing subsystem supplies all external time bases required by the synchronous and asynchronous data equipments located within the ADMSC. The timing system consists of all oscillator section, a frequency synthesizer section used to generate the desired timing rates, and a distribution section to provide output timing signals to the various equipments within the ADMSC. In addition, a chronometer section is incorporated to drive wall-mounted and ceiling-mounted clocks to provide time-of-day information to station personnel. In addition to timing system components necessary to generate and distribute timing signals, a frequency comparator equipped with a digital readout enables local standard oscillator frequency comparison measurements between individual oscillators to be made by the operator; further, a vlf receiver/phase comparator is used to permit comparison of locally generated standard frequencies with that of an external standard. A dual-trace oscilloscope permits simultaneous visual monitoring and comparison of any two output waveforms.

(1) The station timing subsystem utilizes triple redundancy and majority logic to obtain a high degree of reliability and, further, incorporates monitoring, detection, and alarm circuitry to enable rapid localization of all equipment failure, or malfunction.

(2) The station timing subsystem supplies highly stable time bases which are required by the synchronous and asynchronous circuits within the ADMSC. Output timing signals are applied to the following ADMSC devices: modems, COMSEC equipments, line termination buffer units, and processors operating at standard modulation rates.

(*a*) *Synchronous timing and distribution.* Square waves with fundamental frequencies of 75 x 2^n (where n is any integer from 0 to 6, inclusive) are generated within the data timing subsystem and are made available for distribution to the various synchronous circuits. Modulation rates for synchronous LTBs to be provided for the ADMSCs will, however, be limited to 75 x 2^n baud (where n is any integer from 1 to 6, inclusive). Distribution to synchronous equipments in the black (encrypted text) area, such as for the modems, is accomplished by line drivers in the black timing distribution section. Timing signals to synchronous equipments in the red (clear text) area, such as for crypto devices and ADMS equipments, must first pass through black-to-red timing isolation units before distribution is accomplished by the line drivers in the red timing distribution section.

(*b*) *Asynchronous timing and distribution.* Square waves with fundamental frequencies of 16 x 45, 16 x 50, 16 x 75, and 16 x 150 are generated within the data timing subsystem and are made available for distribution to the various asynchronous circuits. Timing signals to asynchronous equipments in the red area must, first pass through black-to-red timing isolation units before distribution is accomplished by the line drivers in the red timing distribution section.

(*c*) *Chronometer section*. Square waves generated within the data timing subsystem are filtered to provide fundamental frequency 60-cycle sine waves which are used as the driving source for the synchronous motors of the ceiling- and wall-mounted clocks. The clocks are the 24-hour type and indicate hours, minutes, and -second

(*d*) *Alarm circuits*. Alarm circuitry is incorporated in the station timing subsystem to enable rapid detection and localization of failures or malfunctions.. Aural and visual alarms for the black area position of the data timing subsystem are located at tile equipment cabinet and remote alarm indications are also provided to the channel status display cabinet of the AUTODIN station control console (ASCC) located in the communications room, and to the AUTODIN station supervisory console (ASSC), located in the ADMS room. For the red-timing distribution section,

only visual alarms are provided within the red equipment cabinet; however, remote alarm indications, similar to those provided for the black-area portions, are provided to both the ASCC and the ASSC.

(3) For a detailed description of the station timing subsystem, refer to TM 11-5895-413-15/1, TM 11-5895-413-15/2, and TM 11-5895-413-15/3.

1-11. Automatic Digital Message Switching Group Description

(fig. 14)

a. General. The basic function of the Automatic Digital Message Switch (ADMS) is to accept, process, store, and deliver digital message traffic performing code, modulation rate, and format conversion as required. In addition, the ADMS performs various bookkeeping and administrative functions to assure protection and security of the message traffic and to provide operations and performance data for management evaluation.

b. Nomenclature. Nomenclature assigned to the ADMS portion of the ADMSC is Automatic Digital Message Switching Group AN/FYA-10(V)1 through AN/FYA-10(V)12 and AN/FYA-10(V)T1 for the various sites within AUTODIN and for the training site.

c. Processor Unit. Six processor units are used in the ADMS 2000-line system to perform three functions; generally, four processor units are used as line traffic coordinators (LTC), one processor unit is used as a message processor (MP), and one processor unit serves as a standby (SB). Any one processor unit can assume the duties assigned to any other process units determined by the system program. Each processor unit has the ability to communicate and exchange data with other equipments in the ADMS system either directly or through the related memory/memory control unit, by means of two mass memory controller channels, three magnetic tape controller channels, six communication line and device channels, and five processor-to-processor channels. Additional details concerning the purpose and use of the processor unit in the ADMS system are described in TM 11-5895-406-15/1.

(1) The processor unit is composed of a stored program asynchronous processing assembly (PROC) used to decode and perform 16 basic instructions: a real time input/output controller and data assembly (IOCD); and a processor communication and character interface assembly which controls data transfer over six character-mode channels and one word-mode channel between the IOCD and various input/output channels (including the processor-to-processor interface.

(2) To simplify the block diagram presentation of figure 1-4, the configuration switches have been omitted from the diagram: however configuration switch unit functional connections are shown as a small *x* on the connecting lines of the diagram.

(3) When a processor unit assigned function is changed or associated peripheral equipment fails for one reason or another, the appropriate configuration switches must be actuated to either connect the processor unit to the equipment necessary for its new function, or the appropriate configuration switches must be actuated to replace the failed peripheral equipment.

(4) A processor unit functioning as a line traffic coordinator (LTC) is normally connected to the following, either directly or through the related memory/memory control unit.

(*a*) Up to four communication line busses.

(*b*) Deleted

(*c*) A processor unit the message processor (MP).

(*d*) Station timing line.

(5) A processor unit functioning as a processor (MP) is normally connected to the following, either directly or through the related memory/memory control unit.

(*a*) Deleted

(*b*) Two mass memory control units.

(*e*) Three tape controllers.

(*d*) Four processor units functioning as line termination coordinators (LTC).

(*e*) A printer control unit with high speed printer.

(*f*) A message console and line printer.

(*g*) Monitor, configuration controller, and sense point scanner.

(*h*) Station supervisory console (ASSC).

(*i*) Station timing line.

(6) A processor unit, functioning as a standby (SB) is normally used to perform maintenance to execute off-line processing functions, in which case it may be connected to any combination of the following, either directly or through the related memory unit.

(*a*) A mass memory.

(*b*) A processor unit.

(*c*) (Deleted.)

(*d*) Two tape controllers with a maximum of eight tape transports.

(*e*) A printer controller unit with high speed printer.

(*f*) A message console and line printer.

(*g*) A card controller unit with card reader and card punch.

(*h*) Maintenance console.

(*i*) Station timing line.

(7) The processor unit is used to perform any one of three functions, depending upon the configuration: the three functions are line traffic coordinator: (LTC), message processor (MP), and standby (SB). During normal operation, the functions essential to the processing and handling of communications by the processor units are those of a line traffic coordinator (LTC) and a message processor (MP); major-functions of the LTC and MP in the ADMS system are described in the following, paragraphs

(*a*) *Line traffic coordinator (LTC).* The LTC has three major functions in the ADAMS system: to provide storage for incoming line blocks which will be transferred to the MP, to maintain communications with the MP for the exchange of (control information applicable to the transfer of data between the LTC and MP, and to perform channel coordination on lines operating in Modes I and III as well as to perform channel control on lines operating in Modes II, IV, and V.

1. The LTC builds line blocks of 84 characters each and stores them in a memory storage area reserved for the channel. When sufficient data has been accumulated, the MP arranged for transfer of the blocks from the LTC storage to a storage area under control of the MP. The LTC also recognizes and extracts incoming control characters which (do not form a part of the message.

2. The LTC maintains tables for each channel and communicates information to the MP of the number of line blocks available for processing in each message.

3. The LTC performs channel coordination on synchronous channels, checks the framing characters, and computes character parity and block parity. On asynchronous channels, the LTC provides translation (code conversion) to ASCII, if required, recognizes the start-of-message sequence, and checks the channel sequence number; if the message is valid, the LTC divides the data into 80 character segments, appends four framing characters, and processes the message until an end-of-message sequence is received.

4. Since one function of the LTC is to provide buffering of incoming traffic until the MP can process and place the data in an acceptable output form, it is necessary for records of the data flow to be maintained. During each program cycle, these records or catalogues are upon request of the MP, transferred from the LTC to the MP. After the MP analyzes the LTC catalogues, it requests the LTC to transfer the appropriate number of line blocks of data to the MP. The MP also determines which lines are ready to transmit data by analyzing the same catalogues, and schedules those lines for the output transmission. The line blocks of data scheduled for transmission are read from the mass memory storage through the MP and transferred to the appropriate LTC.

5. Inputs to the LTC consists of data characters and control signals from the in line termination buffer units and the data needed signal from output line buffers. The LTC accepts inputs from the MP in the form of commands and requests for the catalogue information; the MP provides input to the LTC by sending data to the LTC for later transmission. Outputs from the LTC consist of message data and control signals sent to the output line buffers as well as control information, catalogues, and incoming message data sent to the MP at the request of the MP.

(*b*) *Message processor (MP).* The MP major functions in the ADMS system include; but are not limited to, those programs and routines necessary for executive control; input traffic; output traffic; restart, recovery, and error handling; supervisor-initiated command; and message retrieval.

1. The MP executive control program provides for the sequencing of the on-line data processing subroutines together with their related

input-output instructions. It is also a prime function of the executive control program to utilize all time available productively and to coordinate all error conditions and eternal requests made to the program. The executive control program responds to inputs which indicate a need to initiate or terminate a peripheral device, the completion of a subroutine, or the presence of an error or interrupt condition; the executive control program also initiates peripheral devices, turns control over to a subroutine, or initiates a new program cycle.

2. The MP input traffic program implements the input message data handling functions for the ADMS system. The input traffic program provides for the preparation of instructions necessary to obtain data from the LTC, routing and security checking, error checking, and other processing of message data; the compiling of certain data for statistics related to message traffic; the assembly of data needed for message protection; and the queuing of messages into the system according to the message time-in and precedence.

3. The MP output traffic program implements the output of message data handling functions for the ADMS system. The output traffic program for the preparation of instructions necessary to apply data to the LTC, security and error checking; the compiling of data or statistics concerning message traffic, and the assembly of data concerning messages for the journal tape.

4. The MP restart and recovery routine is in the form of error signals generated within the equipment; when an error is detected, the on-line program attempts to roll back and continue normal operation to determine whether the error can be corrected or circumvented. This action may or may not involve changes in the on-line equipment configurations. If a serious error occurs, an off-line program is provided to re-introduce messages into the system; this program can be run simultaneously with the operational program after a reload. Error analyses and corrective actions are a family of subroutines generated and controlled by the MP. The reload can be initiated automatically by depressing the autoload pushbuttons activates the NSPC (non-volitile stored program controller) logic contained in the processor and the SACL (system autoload control logic) located in the supervisory console. In conjunction with the logic, switches located on the system autoload activation panel are used to specify the hardware to be used for the reload.

5. A supervisor-initiated commands program permits the supervisor to control a late ADMS message processing and traffic flow as required. The system supervisor can insert coded commands into the program by means of the message console. These commands fall into the following general categories: individual channel control commands, changes to ADMS equipment configuration, changes to program parameters, requests for status, and requests for transmission of messages.

6. The message retrieval routine commands to the MP from the system supervisor requesting retrieval of any message or messages that have arrived in the ADMS system within the previous 96-hour period. Retrieved messages are delivered to the supervisory position or are re-entered into the system for transmission to the appropriate destination.

(*c*) *Standby* (*SB*). The SB does not perform any on-line functions but provide equipment redundancy; it is available to replace either the MP or an LTC in an on-line function in the event an MP or LTC should fail. A standby processor unit can be used for test and diagnostic; perform off-line searches and recoveries from journal and reference tapes; and testing, debugging, and development of ADMS computer programs.

d. Deleted

e. Mass Memory Subsystem. The mass memory subsystem consists of Disc Memory Unit MU-617/FYA-10(V) (Disc and Disc Controller).

(1) The ADMS normally includes three mass memory subsystems (fig. 1-4); two of which are online and one of which is off-line; two are operated in parallel so that identical information is stored on each mass memory to provide duplication of data for recovery in the event of failure of one subsystem. Configuration switches permit each mass memory subsystem to be connected to any of the processor units of the ADMS; also, one mass memory subsystem can perform on-line functions while the other is switched off-line for maintenance.

(2) The principal on-line functions of a mass memory subsystem are the storage of a copy of the on-line operational program, the storage of intransit messages, the storage of statistical information required for printout, and the storage of information required to effect restart procedures. Each mass memory subsystem is treated as a single unit and no provision is made for transferring control of a particular mass memory unit from one mass memory controller to another mass controller.

(a) The mass memory controller is the interface between the MP and the mass memory unit The mass memory controller receives instructions from the MP, interprets the instructions, and causes data to be accepted from the MP and to be written into a specified mass memory location, or to be read from a specified mass memory location and transferred to the MP.

(b) The mass memory controller is responsible to the mass memory unit for addressing the starting location of data to be transferred, for the conversion of data words from processor format to mass memory unit format, for transfer of data between the MP and the mass memory unit, performance of parity checks on each word received and generation of parity bits after format conversion, and for maintenance of control data.

(c) The mass memory controller is responsible to the MP for the acknowledgment and performance of instructions, and for the transmission of status information to the MP.

f. Magnetic Tape Subsystem. The magnetic tape subsystem consists of tape controllers and tape units. Within the tape subsystem each tape controller is the interface between the processor unit and up to four tape units. The tape controller receives instructions from the processor unit, interrupts the instructions, and causes data to be accepted from the processor unit and to be written on tape, or to be read from a specified tape location and transferred to the processor unit.

(1) Configuration switches between the tape controllers and the tape transport units permit any transport to be controlled by any tape controller; other configuration switches between the tape controllers and the processor units permit the connections of any tape controller to any processor unit in the ADMS.

(2) The principle responsibilities of the tape controller to the tape unit are: addressing the starting location of data to be transferred; connecting the tape unit specified by the processor unit; assembling characters into words or disassembling words into characters; performing parity checks on data received and the generation of parity bits after conversion from processor format to tape format, or vice versa; and maintenance, of control data.

(3) An operating ADMS contains 5 tape controllers and 18 tape transports. Of these, a maximum of 3 tape controllers and 11 tape transports can be associated with the on-line MP. Normally, only 2 tape controllers and 4 tape transports are associated with the MP.

g. Line Termination Buffer Unit (LTBU). The line termination buffer unit (LTBU) forms a interface between the communication group and the ADMS group, and is a component of the ADMS. The LTBU is used to effect parallel/serial conversion of digital data between the ADMS and the AUTODIN communication subsystem. Data to be transmitted to the communication subsystem must be converted from the parallel form used in the ADMS to the serial form required by the communication subsystem; data received from the communication subsystem must be converted from serial form to parallel form.

(1) System application of the , LTBU is illustrated in figure 14. Various configurations of the LTBU are used in the ADMS. Depending on each specific application, the LTBU contains up to 14 line termination buffers (LTBs), each of which provides serial/parallel conversion for a separate serial data line to the communication subsystem through the red path bay in the communications (technical control) area. The parallel data lines from each LTB are combined on a parallel data bus through the ADMS configuration switch units to the character interface assembly (CIA) of the processor units.

(2) The line termination buffer unit (LTBU) consists of a line termination buffer interface unit and two types of line termination buffers: synchronous LTB (model 126) and asynchronous LTB (model 127). Connections from the LTBU on the ADMS side are made through the character interface assembly (CIA).

(3) Each LTB, synchronous and asynchronous, is one of a maximum of 14 LTBs paralleled together on one LTB bus line by means of the LTB interface assembly. Since all input signals from the CIA are connected together on one bus line in the LTB interface assembly, a unit select system is employed to enable only one LTB at a time to be activated. Each LTB is uniquely wired on the back pan which enables it to decode only one of 16 possible unit-select codes. There are actually two separate decodes, one to enable operation of the LTB in a transmit direction (parallel-to-serial conversion) and one to enable operation of the LTB in the receive direction (serial-to-parallel conversion).

(*a*) *Transmit operation*. When an LTBU is selected for operation in the transmit direction, parallel input data and control signals are applied through the LTB interface assembly for application to the selected LTB. The LTB interface assembly accepts standard signals from the CIA and converts them into signals usable by all LTBs connected in parallel; likewise, all LTB output signals passing through the LTB interface assembly are converted into levels usable by the CIA. After the necessary data conversion has taken place in the LTB, serialized output data is sent directly to the communications subsystem. Concurrent with the LTB serialization of input data, output control signals are applied through the LTB interface assembly to the CIA for control purposes.

(*b) Receive operation*. When an LTB is selected for operation in the receive direction, serial input data and control signals are applied directly to the selected LTB from the communication subsystem. Control signals from the CIA are also applied to the selected LTB through the LTB interface assembly. After the necessary data conversion has taken place in the LTB parallel output data, as well as control signals are applied through the LTB interface assembly to the CIA.

h. Peripheral Device. Peripheral devices forming subsystems as a part of the ADMS include a peripheral input-output control unit, high speed printer units, card punch, card reader, and a message console and line printer.

(1) Peripheral input-output control unit. The peripheral input-output control unit contains two printer controllers with buffers, a punch card controller with buffer, two single-line termination buffer interface units, and power supplies with associated ac controllers.

(2) High-speed printer subsystem. The ADMS contains two identical high-speed printer subsystems. One subsystem is connected to the MP for on-line operations, while the other is connected to the standby processor. Both subsystems can be interchanged by the configuration switch thus providing backup for the on-line system. Each printer subsystem consists of one printer controller, one buffer memory (both housed in the peripheral input-output control unit cabinet) and one high-speed printer.

(*a*) One printer subsystem is functionally associated with the AUTODIN station supervisory console (ASSC) and the other printer subsystem is associated with the maintenance console. The printer subsystem associated with the ASSC position is under the control of the message processor (MP) program and prints out subsystem, configuration and system statistics in response to the supervisors requests. The printer subsystem associated with the maintenance console can be used for off-line printouts associated with memory dumps, diagnostic programs, program debugging, etc. Each printer controller can be connected through the configuration switch to any processor unit; therefore, in the event that the online printer subsystem malfunctions, the off-line

(maintenance) printer subsystem can be substituted. Each printer controller is part of its own high-speed printer subsystem and cannot be switched except as part of that subsystem.

(*b*) Within the printer subsystem, the printer controller is the interface between the processor unit and the high-speed printer, as shown in the block diagram of figure 1-4. The printer controller receives instructions and data from a processor unit, interprets the instructions, and passes the data to the high-speed printer which turns the data into hard copy. The printer controllers primary responsibilities to the printer are: the addressing of print columns at the appropriate time; the control of paper advance; and maintenance of control data. The printer controllers responsibilities to the processor unit are: the performance of instructions; the acknowledgment of data and instructions; the assembly of successive data words into a complete print line;. and the transmission of printer status to the processor unit.

(*c*) The purpose of the high-speed printer is to produce hard-copy printout at 600 lines per minute in accordance with specified data from the printer controller. Printing is accomplished by a 120-column engraved print roll that rotates over a roll of solenoid actuated hammers. As each row of characters on the print roll turns into printing position over the print hammers, pulses identifying the character on the row are generated in the printer logics and are transmitted to the printer controller. A strobe signals the end of transmission of the binary code identifying the character row. The printer controller sends a hammer driver trigger pulse and a print strobe to fire a corresponding hammer which presses the paper and inked ribbon against the print roll, thus printing the character for that column. The paper is advanced, as required, between print cycles.

(*d*) The printer unit is described in detail in TM 11-5895-423-15, and the printer controller is described in TM 11-5895-420-15/1.

(3) *Punch card subsystem*. The punch card subsystem consists of punch card controller, buffer memory (both housed in the peripheral I/O controller), card punch, and card reader. The punch card subsystem provides the means of storing information from the ADMS subsystem processor units on punched cards, and for providing the processor units with information for pre-punched cards. Within the punch card subsystem, the punch card controller is the interface between, the processor unit and the card reader and card punch, as shown in the block diagram of figure 1-4. The information that is transferred between the punch card controller and the card punch or card reader passes through a buffer memory.

(*a*) *Punch card controller*. The punch card controller is part of the punch card subsystem. The punch card subsystem can be associated with any processor unit through the communication line and device configuration switch. The punch card subsystem is normally associated with the standby processor. There are, however, infrequent on-line requirements for the punch card subsystem, in which case it is automatically configured into and out of the on-line system under MP control.

(*b*) *Card punch*. The card punch is an electromechanical device which is capable of punching standard 80-column tabulating cards at 100 cards per minute in accordance with digital data supplied to the equipment. The card punch has the capability to pick the tabulating cards from an input hopper, transport these cards through a punching station where they are punched row-by-row in accordance with data supplied to the equipment, then through a brush station where the punched cards are checked for accuracy. Finally, the completed cards are delivered to an output stacker in the same order that they were picked from the input hopper. The card punch also includes an operators panel, power supplies and sequencer, controller logic for driving the punch station mechanism and for converting the read check signals, and a data shift register which stores the punch and check-read information. The card punch is described in detail in TM 11-5895-421-15/1.

(*c*) *Card reader*. The card reader is a self contained photoelectric unit used as an input device. Standard 80-column tabulating cards are read and processed at an effective speed of up to 400 cards per minute, depending upon program instructions. The punched cards are extracted from the input hopper and passed over a data-read station where punched information is transformed into electrical impulses. The cards are stacked in the output stacker in exactly the same order as they were extracted from the input hopper. A card consists of 80 columns and 12 rows; all information punched in any one column is used as a character. The card reader reads and checks this information, column-by-column, and transfers the

information to the input-output controller for temporary storage. After all 80 characters have been received by the input-output controller, the information is transferred to the processor unit for final processing. The card reader is equipped with fault control circuits to detect malfunctions in the card transport and read-compare photodiodes which ascertain the validity of information read. Detailed information on the card reader is contained in TM 11-5895422-15/1.

(4) *System Command Terminal*. There are two systems command terminals (SCT) each consists of a message console (console, message OJ-347/FYA-10(V) and line printer (Printer, Line RP-224/J). One SCT is associated with the online (MP) processor, while the other is associated with the off-line (SB) processor.

(*a*) The message console consists of a keyboard, tape cassette, CRT display and the necessary control logic. The message console is used to enable the ASSC operator/supervisor to insert and effect commands to the ADMSC. Refer to TM 11-5895-839-14 for details concerning the message console.

(*b)*The line printer is a medium speed dot matrix printer capable of printing 80 alpha-numeric characters per line at a rate of 135 lines per minute. The printer provides (in conjunction with the message console) the ASSC operator/supervisor with the capability to receive printouts from the on-line (MP) processor. Refer to TM 11-5895-583-14 for details concerning the line printer.

(5) *Buffer memory*. The peripheral input-output controller contains three buffer memories; two are associated with printer controllers and the third is associated with the punch card controller. The buffer memories store information from the printer and punch card controllers and, upon command, transfer the stored information either to the controllers or to the peripheral equipment (printer or card punch). Storage in the buffer memory is by means of ferritemagnetic core planes; the buffer memories contain all circuitry needed for drive and sense of the magnetic memory cores.

(*a*) The two buffer memories associated with the printer controllers (one for each controller) store the information received from the controllers and, upon completion of the loading cycle, transfer the information to the data register buffer of the printer controller for comparison before transfer to the printer.

(*b*) The buffer memory associated with the punch card controller is divided into two sections. During a card punch operation, data from the processor unit is transferred through the punch card controller to the first section of the buffer memory where it is stored. During a read operation, the second section of the buffer memory stores data from the card reader and, on command, transfers the data through the punch card controller to the processor unit. Refer to TM 11-5895-420-15/1 for details concerning the system application for the buffer memories.

i. Configuration Control and Sensing System. The configuration control and sensing system of the ADMS consists of a configuration control and sensing unit (CCSU), a configuration switch distribution unit (CSDU), and various configuration switching units. The CCSU and the CSDU operate together and are controlled by the processor unit (MP) which applies the control and sensing functions required for the operation of the Configuration switching units.

(1) *Configuration control and sensing unit (CCSU).* The CCSU consists of two monitor assemblies, a configuration switch access network assembly, two configuration switch control assemblies, two sense point scanners, and two separate dc power supplies (redundant operation).

(*a*) *Monitor assembly*. The purpose of the monitor assembly is to provide connections between one of the processor units and one of the configuration switch access network assembly. The controlling monitor assembly interrogates the selected processor unit (MP) at periodic intervals; if the correct response is not received within a specified time period, the monitor

selects a new processor unit as the MP.

(*b*) *Configuration switch access network assembly.* The configuration switch access network assembly provides the switch contact connections to establish circuit paths between the on-line monitor assembly and the processor unit that is selected by the monitor, and between one configuration switch control assembly and the selected processor unit. The off-line monitor, configuration switch controller, and sense point scanner are connected to the device configuration switch and may be connected to the standby processor. In addition, the CSAN provides switch contact connections between the on-line CSC and its 48-volt power supply. This connection insures that the off-line CSC will not switch the ADMS configuration switches.

(*c*) *Configuration switch control assembly.* The on-line configuration switch control assembly communicates with the selected processor unit through the configuration switch access network assembly. The on-line configuration switch control assembly, upon orders from the processor unit, provides solenoid operating power to the CSDU which, in turn, closes contacts to connect power from the configuration switch control assembly to the appropriate solenoids of configuration switch units. In addition, the configuration switch control assembly transmits and receives sense information concerning CCSU switch-module contact positions.

(*d*) *Sense point scanner (SPS) assembly.* The sense point scanner assemblies scan 755 sense points within the ADMSC to determine if any fault exists. The types of faults which are reported by the SPS are those detected by communication channel and system sensors. The sense point scanner assembly, upon request from the connected processor unit (MP), reports the location and type of each active sense point. (An active sense point is an indication of a fault.)

(*e*) *DC power supply.* The dc power supply system of the CCSU provides the solenoid operating power requirements for the CSDU and configuration switching units as well as the operating potentials for the CCSU logic circuits.

(2*) Configuration switch distribution unit (CSDU).* The CSDU provides the connection between the configuration switch control assemblies and the various: configuration switching units. The CSDI contains switching networks that transfer horizontal-select and vertical-select code pulses (48-volt dc) from the on-line configuration switch control assembly to the control solenoids of individual switch modules within the configuration switching units.

(*a*) The CSDU and the configuration switching units do not contain internal power supplies for operation of the control solenoids: therefore, the CCSU, in addition to specifically selecting the correct solenoids on decoded orders from the processor units, provides correctly timed pulses to energize these control solenoids.

(*b*) The SCDU and the CCSU, operating together in the ADMS, provide the means by which the processor unit(s) can alter the ADMS configuration by providing solenoid power through the CDSU to the proper switch modules of the configuration switching units.

(3) Refer to TM 11-589-4035-15/1 for a detailed description of the CCSU and CSDU, and to TM 11-5895-425-15 for a detailed description of the configuration switching units.

j. Traffic Service Section. The traffic service section within the ADMS consists of two model 35 ASR teletypewriter sets, each of which is interfaced through the communications subsystem with one of the LTC's. The system command terminal is used to receive copies of service messages automatically generated by the ADMS and, also function as local tributaries for the introduction and receipt of messages switched through the ADMSC.

k. AUTODIN Station Supervisory Console (ASSC). The ASSC enables over-all supervision of the operation and maintenance of the ADMSC. Differences in ASSC equipments for ADMSC's of various line capacities are covered in TM 11-5895-512-51/1.) The ASSC is used to monitor all ADMSC communication channels, to monitor the status of ADMSC major systems, to monitor ADMS subsystem equipment, and to alarm adverse changes in environmental conditions.

(1) The ASSC is interfaced with a processor unit (MP) and the maintenance console in the ADMS, with the UPS group, and with the ASCC (monitor test console and channel status display console) in the communications group. Within the ADMSC, the ASSC is used in conjunction with a system command terminal, and a high-speed printer subsystem.

(2) The ASSC is equipped with a DTMF

telephone and an intercom or public address system to enable verbal communications with all major operating positions within the ADMSC. The DTMF telephone may also be used for communication with other ADMSC's through AUTOVON.

(3) Four conditions of the ADMSC major systems are visually indicated on the panels of the ASSC; these conditions are briefly summarized as follows:

(*a*) On-line and operating.

(*b*) Operable and in standby condition.

(*c*) Out-of-service with an unacknowledged alarm (accompanied by an audible alarm).

(*d*) Out-of-service with an acknowledged alarm (audible alarm silenced).

(4) In conjunction with the message processor unit (MP), the message console and line printer provide the ASSC operator/supervisor with the capability to insert and effect commands to the ADMSC.

(5) The message console and line printer also provides the ASSC operator/supervisor with the capability to receive printouts from the message processor unit (MP).

l. Maintenance Console. The maintenance console is used to perform a number of specific maintenance functions for the ADMS. The major functions performed are: certification for ADMS subsystems and display of associated malfunction indications, display of mode conditions and register contents in the standby (SB) .processor unit, insertion of new data into the SB-processor unit registers, and SB processor unit mode controller. All interface signals between the maintenance console and other ADMS equipment, except for the ASSC, are routed through the configuration switch units.

(1) Deleted

(2) Maintenance procedures performed on the standby processor (SB) complex utilizing test and diagnostic routines include the use of the maintenance console for program initialization and control as well as the display of data and control signals from the SB to indicators on the maintenance console. The processor control panel can be utilized to control any off-line processor unit.

(3) Off-line/on-line certification of ADMS subsystems is provided by the maintenance console which receives off-line indications for specific subsystems from the ASSC. When off-line indications are acknowledged by the maintenance console operator/supervisor, the maintenance console generates a permission-to-access indicator signal. This signal indicates that the equipment is accessible for maintenance purposes. Malfunctions associated with the specific off-line condition are displayed at the maintenance console. When the maintenance technician(s) on the equipment floor certifies the equipment, a certified signal is returned to the maintenance console. When the equipment is, in turn, certified by the maintenance console operator, a certified signal is sent to the ASSC.

(4) An intercom/paging unit is also located at the maintenance console to facilitate verbal communication and coordination with the operator at the ASSC and with personnel located on the equipment floor.

1-12. ADMSC System Operational Modes

Communication circuits in AUTODIN are capable of operation in one of the following five modes, in one of two codes, at one of a variety of speeds, and either with or without communications security (COMSEC) equipment as indicated below.

a. Mode I. Mode I channel operation is duplex operation *with* automatic error and channel controls allowing independent and simultaneous two-way transmission as follows:

(1) *Operation:* synchronous, two-way traffic.

(2) *Code:* ASCII.

(3) *Rate:* 75×2^m baud ($1 \leq m \leq 6$).

(4) Format: JANAP 128 (ACP 127 or JANAP 128 with concentrators).

(5) *Controls:* automatic error and channel

controls in accordance with DECEO ENG. PUB. H500-3-65.

(6) *Security:* type A COMSEC with cryptographic ancillary unit (CAU).

b. Mode II. Mode II channel operation duplex operation *without* automatic error and channel controls allowing independent and simultaneous two-way transmission as follows:

(1) *Operation:* asynchronous, two-way traffic.

(2) *Code:* ITA No. 2 or ASCII.

(3) *Rate:* 45, 50, 75, or 150 baud.

(4) *Format:* ACP 127 or JANAP 128.

(5) *Controls:* no automatic error and channel controls.

(6) *Security:* type B COMSEC.

c. Mode III. Mode III channel operation is a duplex operation for AUTOVON with automatic error and channel controls, but utilizing only one-way data transmission. The return direction is used exclusively for error control and channel coordination responses. The Mode III channel is reversible on a message basis. The characteristics of Mode III operation are as follows:

(1) *Operation:* synchronous, one-way -traffic.

(2) *Code:* ASCII.

(3) *Rate:* 75×2^m $(1 \leq m \leq 6)$.

(4) *Format:* JANAP 128.

(5) *Controls:* automatic channel coordination and error controls in accordance with DECEO ENG. PUB. H500-3-65.

(6) *Security:* type A COMSEC with cryptographic ancillary unit (CAU).

d. Mode IV. Mode IV channel operation is, a unidirectional operation, either send only or receive only, without error control and channel coordination. The Mode IV channel is non-reversible. The characteristics of Mode IV operation are as follows:

(1) *Operation:* asynchronous, one-way traffic.

(2) *Code:* ITA No. 2 or ASCII.

(3) *Rate:* 45, 50, 75, or 150 baud.

(4) *Format:* ACP 127 or JANAP 128.

(5) *Controls:* no automatic error and channel controls.

(6) *Security:* type B COMSEC.

e. Mode V. Mode V channel operation, a teletypewriter-controlled mode, is a duplex operation with channel controls allowing independent and simultaneous two-way transmission of traffic. The characteristics of Mode V operation are as follows:

(1) *Operation:* asynchronous, two-way traffic.

(2) *Code:* ITA No. 2 or ASCII.

(3) *Rate:* 45, 50, 75, or 150 baud.

(4) *Format:* ACP 127 or JANAP 128.

(5) *Controls:* automatic channel coordination and error controls in accordance with DECEO ENG. PUB. H500-3-65.

(6) *Security:* type B COMSEC.

1-13. ADMSC Traffic Flow

(figs. 1-3 and 1-4)

a. Messages enter the ADMSC on wire lines in the following forms:

(1) Audio frequency modulated by digital data.

(2) High-level (±48 to ±130 volt) digital data.

(3) Low-level (±6 volt) digital data.

(4) AUTOVON input.

b. Digital modulated audio frequency signals pass through the entrance patch bay to the modems where they are demodulated. The outputs of the synchronous modems are low-level dc (±6 volt) digital data: the outputs of several asynchronous modems are high-level dc.

c. The high-level dc data passes through a high-to-low, dc-to-dc converter where it is converted to low-level (±6 volt) data.

d. Any low-level dc data which enters the station is wired directly to the black patch bay.

e. All data entering the black patch bay is in low-level digital form. It is either in clear text or encrypted for purposes of security. In any case the line must be isolated from crosstalk generated in the red or secure area. Clear text messages enter the red area through red/black isolation units which decouple any crosstalk. Encrypted messages pass through COMSEC devices which perform dual functions of red/black isolation and decryption. The signal, now in clear text, passes through the red patch bay and out to the line termination buffers (LTB) at the interface between the communications area and ADMS area.

f. The signal passes through the ADMS area by means of the LTB's, the line traffic coordinator (LTC), the message processor (MP) and, after processing, the signal passes through the LTC output channels, and, once again, out through the LTB's to the communication area.

g. Input data to the line termination buffer (LTB) is in bit serial form. The function of a receive LTB is to frame the bits into the characters and to transmit these

characters to the LTC in bit parallel form, one character at a time. Synchronous lines are constantly active and will present idle line (sync) character when no message is being processed. The LTB recognizes idle line characters, and utilizes them for synchronization, but it does not transmit them to the LTC. Idle asynchronous lines present a steady MARK voltage (+6 volts) to the buffer. A transition to a SPARE voltage (-6 volts) precedes each data character and is utilized for synchronization.

h. The LTC is a processor unit connected to the MP and LTBU's. The LTC performs the following major functions:

(1) Line block construction.
(2) Code conversion to ASCII, if required.
(3) Synchronous channel coordination.
(4) Asynchronous channel control.
(5) Error control.
(6) LTC-MP communications.

i. The LTC builds line blocks of 84 characters each and stores them in a memory area reserved for the channel. When sufficient data has been accumulated, the MP will arrange for the transfer of line blocks from the LTC storage area into its own storage area.

j. The LTC recognizes and extracts incoming control characters which do not form part of the message.

(1) On synchronous channels, the LTC performs channel coordination, checks the framing characters, and computes and compares character parity and block parity. The LTC sends REP's in response to control character errors and sends NACKs in response to erroneous blocks: . If the transmission of a message must be interrupted for any reason, the LTC sends WBT's until the message can proceed; the distant terminal replies to a WBJ with a REP. Three such sequences activates a REP/WBT alarm. If the message must be rejected, the LTC sends an RM to the transmitter; if the transmitter wants to discard a message, it sends a CNCL.

(2) On asynchronous channels, the LTC provides translation from ITA #2 to ASCII. The LTC recognizes the start-of-message sequence (ZCZC) and checks the channel sequence number. If the message is valid, the LTC divides the data into 80 character segments, appends 4 framing characters, and processes the message until the end-of-message sequence (NNNN) is received.

k. The LTC maintains tables for each channel and informs the MP of the number of the line blocks available for processing in each message.

l. The message processor (MP) surveys the LTC catalogs to determine when a sufficient number of line blocks (2 line blocks for a low-speed channel, 4 line blocks for a high-speed channel) have been accumulated in the LTC to warrant transfer. Segments containing the end-of-message (EOM) sequence are transferred even when they do not contain the required number of line blocks.

m. When the header is ascertained to be valid, the MP performs the following functions on the start-of-message (SOM) segment:

(1) Creates a fixed queue assignment.
(2) Builds a mass memory write list and updates the mass memory linking tables.
(3) Writes an in-journal SOM entry.
(4) Writes the segment to mass memory.
(5) Writes the segment to reference tape.
(6) Prepares and appends a message control block (MCB) which is used for subsequent routing, routing checks, and message protection.

n. Once the segment has been written to the drum and to the reference tape, the MP acknowledges receipt of the segment to the LTC, and the memory areas in both the LTC and MP which retained the segment are released. When subsequent segments of a message are received, the MP does the following:

(1) Continues the mass memory linking.
(2) Writes the segment to mass memory.
(3) Writes the segment to reference tape.

o. When writing of the segment has been completed, the MP acknowledges and releases the segment from memory. When the EOM segment of the message is received, the MP does the following:

(1) Creates the last mass memory link.
(2) Writes the segment to mass memory.
(3) Creates the EOM in-journal entry.
(4) Writes the segment to reference tape.

p. After the EOM segment has been processed, the tables and lists are made available to begin output processing.

q. Should the amount of data or the size of the queues threatens to exceed the allocated capacity of mass memory or memory/memory control unit storage, a message may be routed to overflow tape. The message will remain in overflow tape storage until the level of data in in-transit storage has decreased sufficiently to allow the message to proceed. The MP then transfers the message from overflow tape to mass

memory and resumes normal processing.

r. When a destination is not available to receive a message, the message is routed to intercept tape. The message is read back from intercept tape when the destination becomes available to receive the message. Both routing and readback must, however, be initiated by the supervisor at the ASSC.

s. Once the message has been stored on drum and the EOM segment is acknowledged by the MP, the message is ready for transmission. The priority tables and the LTC output catalog are periodically scanned by the MP to determine whether or not there are messages which can be transmitted on channels available.

t. When the channel is available, message transmission begins. The queue tables are accessed to determine the location of the SOM segment on mass memory. An SOM out-journal entry is made at this time and the segment is transferred from mass memory through the MP to the LTC for outgoing transmission.

(1) If the outgoing message is not a Precedence I message and a Precedence I message happens to arrive for that particular destination while message transmission is in progress, the current outgoing message is interrupted and disregard message (CNCL) procedures are started.

(2) Precedence II or IV messages will not necessarily be interrupted by Precedence II messages.

u. When the LTC receives a segment from the MP, the LTC relays the segment to the LTB in character form. The LTC maintains a catalog indicating how much LTC memory space is available and this catalog information allows the MP to decide when to send the next segment. The LTC also performs translation from ASCII to ITA #2 when necessary.

v. The transmit LTB accepts bit parallel characters from the LTC and transmits data in bit serial form to the communications subsystem. The transmission rate is determined by the LTB timing on synchronous lines and by the timing and step pulses on the asynchronous lines which are encrypted. The output of the send buffer is low-level DC (±6 volts); these output lines pass through the red patch bay. Output lines which are to be encrypted pass through the COMSEC area and output lines which transmit in clear text pass through red/black isolators.

w. COMSEC output signals pass through the black patch bay and through either the modems or the low-to-high level dc converters where the signals are converted to the proper signal-level form for transmission. Finally, the signals pass through the entrance patch bay and through audio isolators, used to suppress frequencies higher than 14 kc, and are then passed on to the message destination.

1-14. ADMSC Network and Terminations

The locations for the ADMSC's comprising AUTODIN Increment II (paragraph 1-7) were selected to provide optimum service and routing to subscribers in the overseas areas. The network configuration for AUTODIN Increment II may be considered in two parts: the configuration for the inter-AUTODIN trunking network and, secondly, the interconnections with AUOTDIN switching centers (electronic, electro-mechanical, and manual relay), directly-connected tributaries, concentrators, and AUTOVON subscribers. A detailed description and analysis of the individual network configurations is described in *DCS AUTODIN Overseas Network Configuration and Validation Requirements (U), dated 29 January 1965.*

a. ADMSC Network. The network of interswitching center trunks for AUTODIN is arranged to interconnect overseas areas and the CONUS system. Each ADMSC in a particular area has 2400-baud trunks to each of the other switching centers within its area. The AUTODIN overseas intercenter trunking is established through the AUTOVON switching centers. Intra-area trunking is accomplished by direct connection with the ADMSC. Emergency high-frequency back-up trunks at 2400 baud can be established for alternate routings in the event of any extended outage.

(1) *Overseas intercenter trunks*. Overseas intercenter trunks serve the geographical areas indicated in DCA Circular 310-D70.

(2) *Gateway trunks*. Each of the overseas areas are connected to CONUS AUTODIN gateway centers. Communication between overseas and CONUS areas is accomplished by means of AUTODIN gateway switching centers located within the continental limits of the United States. trunking from the gateway switches to the overseas areas is routed over commercial submarine cables: emergency high-

frequency back-up trunks are provided between all overseas areas and designated gateway centers.

b. ADMSC Terminations. The stations tributaries, concentrators, and switching centers) serviced by an ADMSC may be grouped into four general categories: direct connection high-traffic volume and designated high-priority users, teletype concentrators, low-traffic volume users, and AUTOVON subscribers.

(1) *High-traffic volume and high priority users*. These subscribers are directly connected over full-time circuits into ADMSC's. Alternate routing capability through AUTOVON is provided to these subscribers in the event of an outage in the normal transmission patch.

(2) *Teletype concentrators*. Teletype concentrators are used at selected locations to reduce the number of terminations at designated ADMSC's. These teletype concentrators have direct Mode I high-speed connections into an ADMSC over full-time circuits.

(3) *Low-traffic volume users*. The low-traffic volume users may be terminated at either major or minor relay stations. Where practical, traffic generated by this category of user will be concentrated prior to entering an ADMSC; where no concentrator exists, direct connections over full-time circuits are used. Tributaries assigned to an ADMSC are terminated at that particular switching center regardless of location or proximity to another ADMSC.

(4) *AUTOVON subscribers.* Each overseas ADMSC has the capability of establishing a communications path with authorized AUTOVON subscribers through AUTODIN-AUTOVON connected switches. AUTOVON-terminated tributaries establish connections through AUTOVON by means of dual-tone multi-frequency signaling and, once connected, automatically pass traffic to the ADMSC. The ADMSC will automatically establish a connection with an AUTOVON-terminated tributary for the transmission of traffic addressed to the AUTOVON subscriber. These latter subscribers (where compatible) will have direct digital traffic exchange capability through AUTOVON. Circuits between these subscribers are established on a circuit switch basis through AUTOVON and function independently of the ADMSC. These tributaries also have alternate voice communication capability through AUTOVON, either between themselves or to other AUTOVON subscribers. (For a detailed description of the AUTODIN-AUTOVON interconnecting equipment, refer to TM 11-5895-415-15.)

1-15. ADMSC Operational Compatibility

a. An ADMSC, when interfaced with various other communications facilities, constitutes an integral portion of a fully automatic, world-wide, store-and-forward message switching system. The ADMSC has the capability of receiving, processing, and distributing digital message traffic from and to the following types of communications stations;

(1) Other ADMSC's.

(2) CONUS-AUTODIN message switching centers (AESC's).

(3) Non-AUTODIN message switching centers:

(*a*) Electronic.

(*b*) Electro-mechanical.

(*c*) Manual relay.

(4) ADMSC tributaries:

(*a*) High-speed multi-media data terminals.

(*b*) Teletypewriter terminals.

(5) Concentrators.

(6) AUTOVON subscribers.

b. In order to provide integrated service to the types of stations listed in paragraph 1-15*a* above, the ADMSC performs format, code, and transmission rate conversions required for the exchange of traffic between terminating equipment utilizing a variety of formats, codes, and transmission rates. Refer to table 1-14 for a summary of overseas AUTODIN transmission characteristics.

1-16. ADMSC Technical Characteristics

The technical characteristics for the ADMSC are briefly summarized in the listing which follows. Technical and physical characteristics for specific equipments of the Automatic Digital Message Switching Group AN/FYA-10(V)1 through AN/FYA-10(V)12 and AN/FYA-10(V)T1; the Communication Group AN/FYA-11 through AN/FYA-22, and AN/FYA-T1; and the Electric Power Plant AN/FJQ-4 through AN/FJQ-15 are found by reference to the data given in the applicable equipment manual.

a. Environmental Conditions:

(1) *Ambient temperature and humidity*. The ADMSC shall operate continuously without de-

gradation of performance in an ambient temperature range of 15° to 27° C (60° to 80° F) and over a relative humidity range of 40 to 65 percent. The ADMSC shall operate without degradation of performance over the ambient temperature range while subjected to a maximum temperature change of 3 degrees per hour.

(2) *Pressure (barometric).* The ADMSC shall operate satisfactorily in atmospheric pressures encountered from sea level (29.92 inches of mercury) to 10,000) feet above sea level.

b. Primary AC Electrical Power Characteristics:

(1) *Voltage (steady state):* three phase, four wire, 120/208 volts ± 10 percent.

Table 1-14. Overseas Autodin Transmission Characteristics

Mode	Operation	Rate	Control	Format	Code	Circuit termination
I	Synchronous, two-way	150-4800	Block-by-block	JANAP 128	ASCII	Multimedia data tributaries AUTODIN centers. Other electronic centers
				JANAP 128 ACP-127	ASCII	Common-user connections
II	Asynchronous, two-way.	45-150	Message sequence numbers	JANAP 128	ASCII ITA No. 2	Teletypewriter tributaries Electro-mechanical centers
				ACP 127	ITA No. 2	Manual relay centers
III	Synchronous, one-way	150-4800	Block-by-block	JANAP 128	ASCII	AUTOVON.
IV	Asynchronous one-way.	45-150	Message sequence Numbers	JANAP 128	ASCII ITA No. 2	Teletypewriter tributaries. Electro-mechanical centers.
				ACP 127	ITA No. 2	Manual relay centers.
V	Asynchronous two-way	45-150	Message-by-message	JANAP 128	ASCII ITA No. 2	Teletypewriter tributaries. Electro-mechanical centers.
				ACP 127	ITA No. 2	Manual relay centers AUTOVON

(2) *Voltage tolerance*: maximum transient, ±15 percent; maximum duration of transient, 500 milliseconds.

(3) *Frequency (steady state*): 50 or 60 cycles per second ±1 cycle per second.

(4) *Frequency tolerance*. maximum transient, 8 percent; maximum duration of transient, 500 milliseconds.

(5) *Power consumption*; approximately 150 kilowatts for nominal 200-line capability (varies with site).

(6) *Power factor*: corrected to at least 0.8.

c. ADMSC Timing and Electrical Interface Characteristics.

(1) *Signal characteristics*, synchronous operation. Traffic is processed at modulation rates of 75 x 2^m baud (where m is an integer such that $0 \leq m \leq 6$). An 8-unit character is used; synchronous signals are normally processed as serial binary stream irrespective of code, format or character interval.

(2) *Signal characteristics*, *asynchronous operation*. Provision for any modulation rate between 45 and 150 baud. Input/output operation using start/stop signals is provided; character interval to include start/stop signals is 7 to 11 units.

(3) *Distortion*. ADMS will accept and accurately interpret input signals with up to 45 percent total distortion; output signals from ADMS will contain no more than one percent total distortion.

d. ADMSC Input/Output Capacity.

(1) *Input capacity*. A fully-equipped 200-line ADMS shall have a sustained (steady-state) input capacity of at least 57,600 bits per second and a peak input capacity of at least 70,000 data bits per second for at least 12 seconds. The probability of the ADMSC limiting the input capacity to less than 10,000 data bits per second shall not be greater than one in 10^5, averaged over 12-second period. (If the ADMSC is not fully equipped, the number of data bits is reduced in proportion to the number of line terminations.)

(2) *Output capacity*. A fully-equipped 200-

line ADMS shall have a sustained (steady state) output capacity of at least 86.400 data bits per second. The probability of the ADMSC limiting the output capacity to less than 15,000 data bits per second shall not be greater than one in 10^5 averaged over a 12 second period. (If the ADMSC is not fully equipped, the number of data bits is reduced in proportion to the number of line terminations.)

e. Message Processing Time.

(1) For a queue of 4480 messages the mean processing time for all messages is less than 4 seconds. Not more than one in 10^3 Precedence I messages shall have a processing time over 6 seconds, and not more than one in 10^3 other messages shall have a processing time over 8 seconds.

(2) For a queue of 7980 messages the mean processing time for Precedence I messages is less than 4 seconds with not more than one in 10^3 messages exceeding 30 seconds. The mean time for other messages shall be less than 20 seconds with not more than one in 10^3 messages exceeding 60 seconds.

(3) For queue lengths up to 11,480 messages the processing time shall not be so great as to reduce the average output rate by more than 10 percent.

AUTOMATIC DIGITAL MESSAGE SWITCHING CENTER (ADMSC)

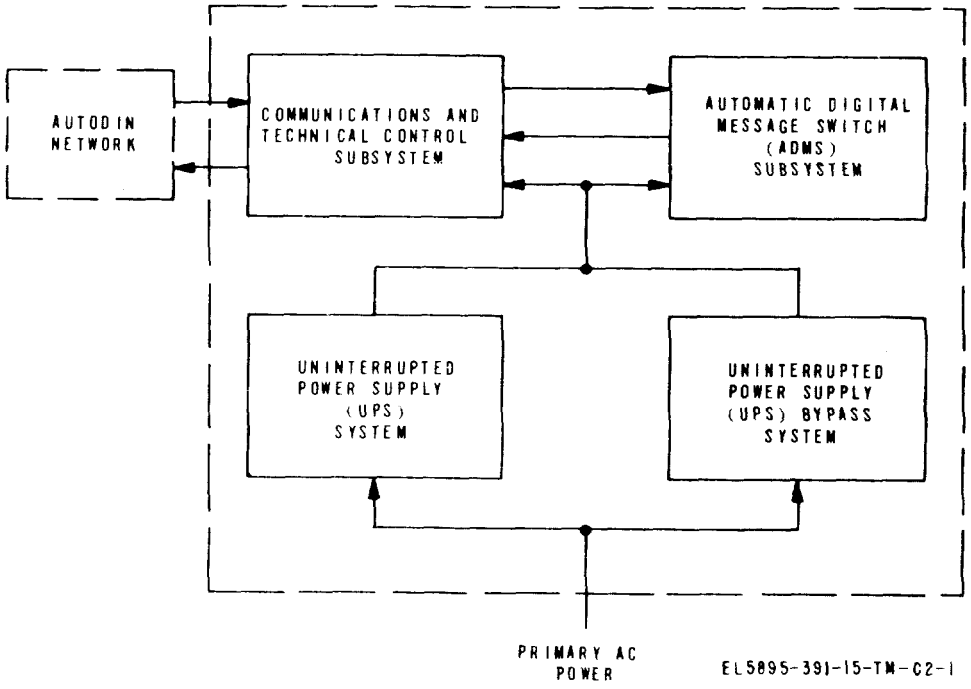


Figure 1-1. ADMSC block diagram

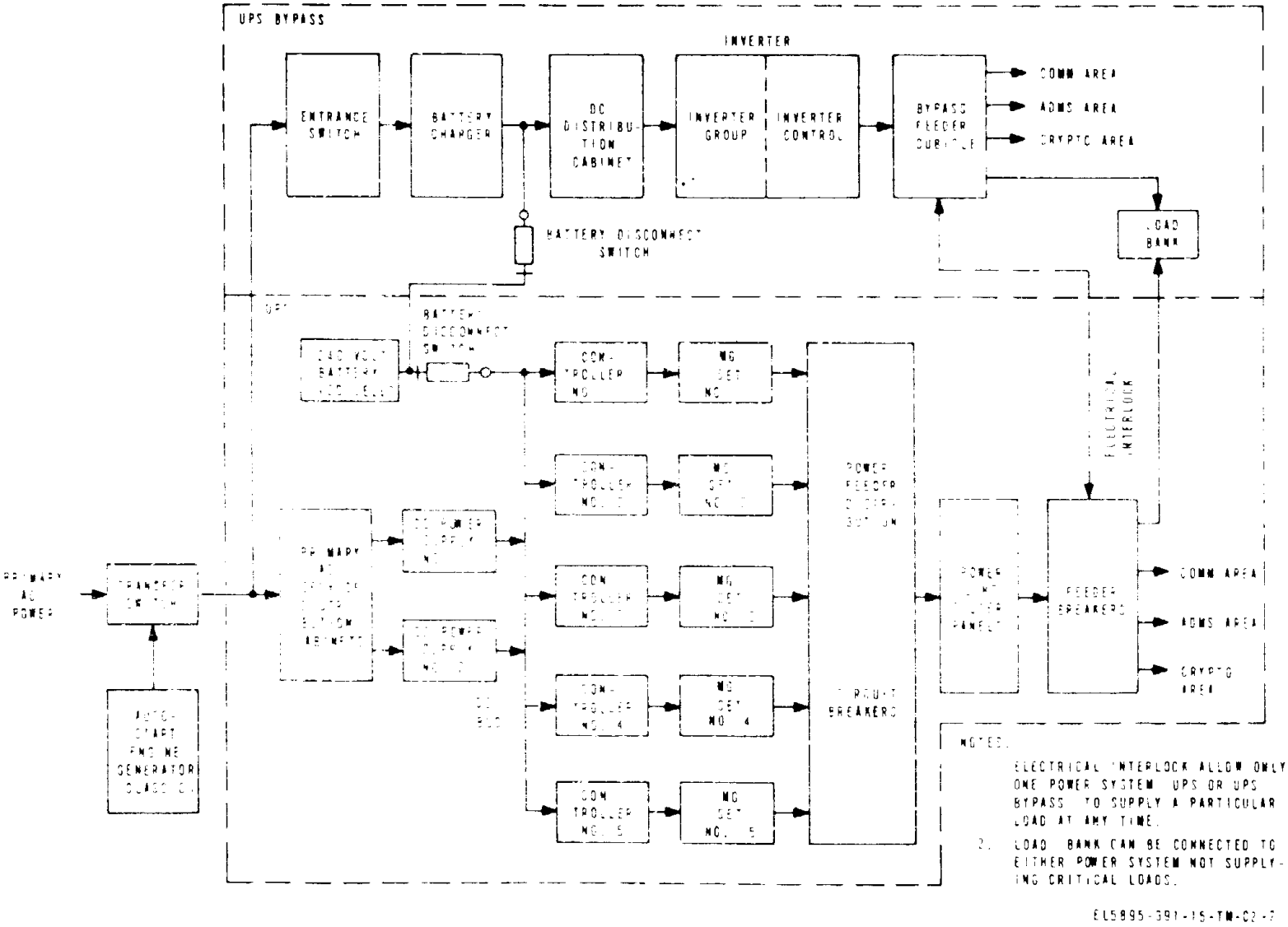


Figure 1-2. Uninterrupted power supply system, block diagram.

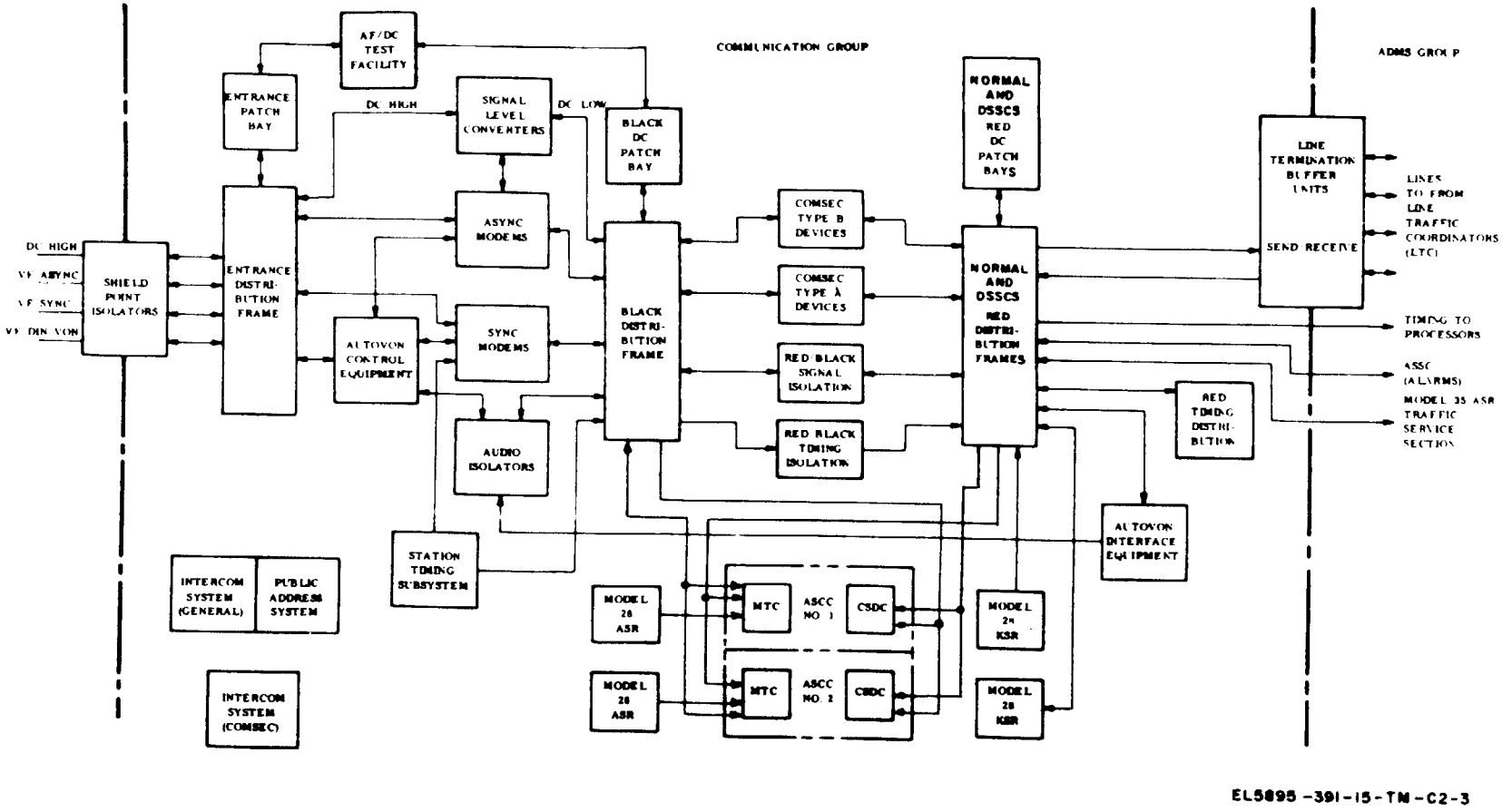


Figure 1-3. Communication group, simplified block diagram.

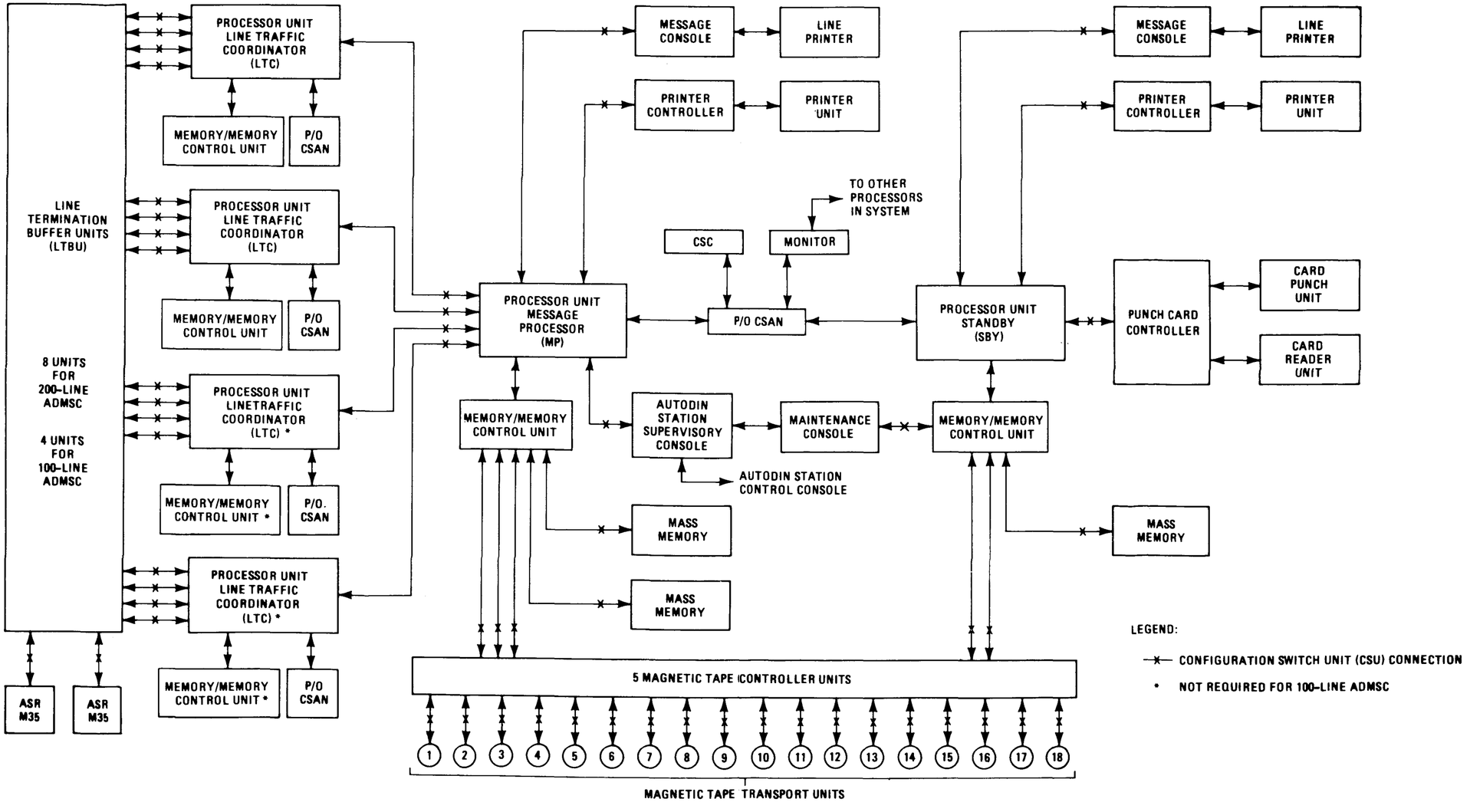


Figure 1-4. ADMS Group, simplified block diagram.

CHAPTER 2
MAINTENANCE

Section I. PREVENTIVE MAINTENANCE

2-1. Introduction

a. Preventive maintenance consists of activities that anticipate, detect, and inhibit potential equipment failures. Preventive maintenance assures that the system, subsystem, and equipments are operating in accordance with applicable specifications and established tolerances. Detailed correlation of preventive maintenance records will aid in preventing, detecting, and correcting any degradation of the system's performance.

b. The type and frequency of preventive maintenance varies with each equipment or subsystem. Each supervisor directs the performance of preventive maintenance for his area of responsibility and takes action as necessary to assure that the maintenance does not degrade the availability and effectiveness of the ADMSC.

c. The major portion of preventive maintenance is related to do the electro-mechanical equipment, such as the magnetic tape units, teletypewriters, motor generator sets, high speed printers, card reader punch, blowers, etc. These are inspected for wear of mechanical parts, and are cleaned, adjusted, and repaired or replaced as necessary. (The storage batteries are maintained in accordance with standard procedures.)

d. The electronic equipment requires very little preventative maintenance. Primarily preventive maintenance consists of monitoring and inspecting the equipment; these inspections are generally performed when the equipment is off-line.

e. Preventative maintenance routines are accomplished as scheduled for each designated equipment, and consist of both electrical and mechanical preventative maintenance.

(1) Electrical preventative maintenance consists of visual observation of meter readings or the actual measurements of voltage, current, frequency, etc.: observations and analysis of printed data, indicator lights, etc: and testing of equipment monitoring devices such as sensors, failure indicators, etc. Electrical preventative maintenance will be accomplished, insofar as is practicable with the equipment off-line and through the use of dynamic testing. The dynamic testing consists of programmed tests, diagnostic routines, or other operations that simulate normal operation of the equipment.

(2) Mechanical preventive maintenance includes equipment cleanliness, which is fundamental principle: periodic lubrication: and the adjustment and alignment of the various electrical, electromechanical, and mechanical devices (including contact openings, card registrations, point settings, etc). Mechanical preventive maintenance will be accomplished with the equipment off-line and by use of either static or dynamic operation, as applicable.

2-2. Preventive Maintenance Schedules

Preventative maintenance schedules for each equipment or subsystem within the ADMSC are given in the applicable manual. (Refer to app. A for a list of reference manuals.)

2-3. Communication Group Systems Preventive Maintenance

a. The ASCC operator/supervisor at the monitor test console (MTC) will perform a systematic routine observation of channel activity on a per shift basis. This observation will be conducted by utilizing the MTC and the black area switching system, and will consist of the following actions:

(1) Sequentially select operational channels.

(2) Measure receive signal average distortion level will be less than 5 present.

(3) Measure receive signal peak distortion level to be less than 10 percent.

(4) Measure send signal peak distortion level to be less than 5 percent.

(5) Measure send signal peak distortion level to be less than 10 percent.

b. Any channel that indicates excessive distortion but remains operational will receive concentrated attention. Coordination will be conducted

with the distant end and intermediary agencies in an effort to localize the problem without interruption to the traffic flow. When the faulty unit is located, a spare equipment will be patched in under direction of the ASSC operator/supervisor at a time that has minimum effect on traffic flow.

Section II. SYSTEM TROUBLESHOOTING INFORMATION

2-4. Introduction

a. This section of the manual contains system troubleshooting information. It consists primarily of maintenance data covering Communication Group AN/FYA-11 through AN/FYA-22 and AN/FYA-T1 and Automatic Digital Message Switching Group AN/FYA-10(V)1 through AN/FYA-10(V)12, and AN/FYA-10(V)T1. Electric Power Plants AN/FJQ-4 through AN/FJQ-15 (uninterrupted power supply) is covered in detail in TM 11-5895-424-14-1 and TM 11-5895-424-15/2 while Power Supply Sets OP-85(V)1/FYQ through OP-85(V)1/;FYQ (UPS bypass) is covered in TM 11-5895-810-14; therefore, troubleshooting information for these equipments is not included here.

b. This section describes ADMSC maintenance priorities and maintenance plans for each of the major equipment groups within the ADMSC. System troubleshooting information for the communication and ADMS groups may be briefly summarized as follows:

(1) *Communication group*. System troubleshooting information for the communication group consists primarily of information related to the basic communications subsystem circuits within an ADMSC which provide signal paths between the af and dc entrance patch bays and interface the line termination buffers (LTB's) at the ADMS. The AUTODIN station control console (ASCC) operating procedures isolate trouble to the defective equipment as a normal course of operational events: however, the possibility still exists that a trouble may occur in the circuit path between access points: therefore. a description of each basic circuit, together with references to block diagrams and application schematics, is given in paragraph 1-8 of chapter 1. This description provides the technician with sufficient background information to troubleshoot all basic types of communication circuits employed in the ADMSC. The application schematics given in section III of this chapter must be used with the ADMSC circuit records document in order to troubleshoot a specific circuit within a particular ADMSC.

(2) *ADMS group*. System troubleshooting information for the ADMS group consists primarily of test and diagnostic programs comprising the AUTODIN maintenance program system (AMPS), described in paragraph 2-12, and sufficient troubleshooting information to enable isolation of a malfunction to an equipment within a subsystem. Once the malfunctioning equipment within the subsystem has been isolated, further troubleshooting is accomplished at the equipment or subsystem manual level.

2-5. Maintenance Priorities

a. General. The priority assigned to corrective maintenance actions, in the event of multiple subsystem failures. is determined by supervisory personnel coordinating their activities and arriving at a mutual understanding of the problem, its effect upon the operation of the ADMSC, and upon ADMSC traffic handling capabilities. Maintenance priorities to be followed in each case of multiple subsystem failure must take into consideration all of the conditions existing at the time the failure occurs. The overall system effectiveness must be the prime consideration in arriving at the supervisory decisions which determine subsystem maintenance priorities.

b. ADMS Priorities. It is not possible to establish firm ADMS subsystem maintenance priorities for all cases of multiple subsystem failures: therefore. the following subsystem priority listing can be used only as a guide and is subject to local conditions:

Processor unit and it's dedicated memory.
Mass Memory Subsystem

Tape transport and controller subsystem Peripheral equipments: punch card subsystem, printer subsystem, and message console and line printer.

(1) Processor unit and related memories If a processor unit and related memory/memory control unit fails and is switched off-line, this subsystem must receive primary consideration for maintenance action. The reason for this maintenance approach is that an operational processor unit is a basic requirement to enable the running of off-line test and diagnostic programs for other failed ADMS subsystems; thus, an operational processor unit which is interfaced with the maintenance console is absolutely necessary to enable off-line corrective maintenance to be performed, utilizing the test and diagnostic programs. One possible exception to this general statement is that the m as s memory subsystem may he interfaced with the mass memory console without the need for a processor unit; however, this subsystem must interface an operational processor unit if test and diagnostic programs are to be run on the mass memory subsystem.

(2) Mass Memory Subsystems The mass memory subsystem should receive the next order of maintenance priority. The reason for this maintenance approach is that failure of two "mass memory" subsystems could cause a potential catastrophic failure, and no data could be processed by the ADMS. The importance of timely repair of a failed mass memory subsystem cannot be overemphasized; however; if no operation processor unit is available, the "mass memory console" and available program documentation may be used for troubleshooting purposes.

(3) (Deleted.)

(4) *Tape transport and controller subsystem*. Tape transports and tape controllers will receive a lower order of maintenance priority than the subsystems mentioned in the subparagraphs above because of the greater redundancy of equipments comprising the subsystems; also, tape transports are subject to considerable preventive maintenance, which reduces the probability of a tape transport failure and increases the likelihood of detecting an impending failure.

(5) *Peripheral equipments*. The punch card subsystem, printer subsystem, and message console and line printer will receive the lowest order of maintenance priority .

c. Communication Priorities. Communication circuit subsystem maintenance priorities cannot be easily established; the maintenance priority for a circuit is determined by its circuit restoration priority. Many communication circuit subsystem malfunctions can be quickly corrected by patching techniques; that is. a communications equipment technician may be directed to patch out a faulty unit and patch in an operational unit to restore the circuit, after which he performs corrective maintenance on the failed unit.

26. Uninterrupted Power Supply (UPS) Maintenance Plan (fig. 21}

a. In the normal operating mode, the power supplied to the ADMSC is supplied by an external source. This external power source is utilized by Electric Power Plants AN/FJQ4 through AN/FJQ15 and Power Supply Sets OP85(V)1/FYQ through 0P85(V)11/FYQ. In addition, standby diesel driven generators are employed as a backup source of power.

b. If a component failure occurs within the

UPS, control circuitry is provided for switching failed units off-line. The nature of the malfunction is indicated by control panel alarm indicators. The power generation specialist may quickly isolate failed components, utilizing the available test equipment and the troubleshooting information given in the applicable technical manual. With some of its equipment inoperative, UPS system reliability is somewhat degraded. For this reason, it may be desired to switch the UPS bypass system on and apply its output to the critical loads. The UPS can then be tested and repaired using the load bank if necessary.

c. If the battery charger fails while the UPS bypass is supplying power to the critical loads, battery power will immediately be applied to the dc distribution cabinet and uninterrupted output power will be maintained. Failure of the dc distribution cabinet or inverter, however, can cause loss of output power or degraded output power. When any UPS bypass equipment fails, it is necessary to switch the UPS system on and apply its output to the critical loads. The UPS bypass can then be tested and repaired using the load bank if necessary.

d. Complete operating and maintenance information for Electric Power Plant AN/FJQ4 through AN/FJQ15 is contained in TM 11-5895-424-14-1 and TM 11-5895-424-15/2. Complete operating and maintenance information for Power Supply Sets OP85(V)1/FYQ through: OP85(V)11/FYQ is contained in TM 11-5895-810-14.

27. Communication Group Maintenance Plans

a. Within each ADMSC, all incoming and outgoing circuit lines enter or leave the ADMSC by means of at and dc entrance patch bays. The connection of these lines is a normal through path. For each line there is a connection from this path to connection jacks on the connection board of the associated patch bay. The function of this circuit wiring is, therefore, to provide an access point for every incoming and outgoing circuit. These access points are used by maintenance personnel as convenient test points for the purpose of either monitoring or insertion of test signals, or both. Moreover, each patch bay provides the capability for operating/maintenance personnel to patch (connect) a send circuit line to a receive circuit, using a patch cord (back to back connection), or, for other situations, to patch either test or operational equipment to any line. Manual patching is performed by operating/supervisory personnel in the communication group whenever a situation arises which is caused by a malfunction; manual patching permits personnel either to test the line or to direct the signal line to an alternate path that is operational.

b. The equipment side of the dc asynchronous lines entering or leaving the dc entrance patch bay has connected to it the low-high or high-low dc/dc signal converters; these dc/dc signal converters are used only to interface high voltage level dc lines to low voltage signal paths which connect the black dc patch bay. The equipment side of the at lines entering or leaving the at entrance patch bay is connected to either a low speed, a high-speed, or an hf modem.

(1) The output and input signal lines associated with these modems which are low-level signals connect the black dc patch bay; however, if the modem output and input signal lines are high-level lines, these lines must pass through high-low and low-high dc/dc signal converters connected between the modem and the black dc patch bay.

(2) The low-speed modems (modulator and demodulator) are utilized to convert (demodulate) modulated sine-wave audio frequencies to dc output signals; they are also utilized to convert dc signals to modulated sine-wave or carrier signals. The high-speed modems are utilized to modulate or demodulate high-speed data at transmission rates from 150 to 2400 bands.

c. From the equipments mentioned in the previous subparagraph, the circuits pass through the black dc patch bays to the communications security (COMSEC) equipment or to red/black isolation units. The function of these patch bays is similar to that of an end trance patch bay in that they provide access points for each circuit. These access points are used by operating/maintenance personnel as

rather than by means of the ADMS or an AUTOVON switch. The number and type of transmission lines, trunks, and circuits entering and leaving a given ADMSC depends upon the particular site, but may range to as many as 50 non-ADMS circuits.

f. The ASSC, frequently referred to as the technical control console, consists of the channel status display console (CSDC) and the monitor test console (MTC). The ASCC operator/supervisor is responsible for monitoring and servicing the communication group. The ASCC contains various circuit status indications for each transmission path within the communication group.

(1) If an abnormal condition exists on a circuit, a common audible alarm and a circuit associated visual alarm indication will be activated on the CSDC. The ASCC operator/supervisor depresses the channel alarm switch faceplate, which silences the audible alarm and, in addition, causes common alarm readout indicators to indicate specific faults existing on the channel.

(2) One of several points in the entrance patch bay, red patch bay, or black patch bay and any piece of built-in test equipment in the MTC may be selected by the ASCC operator/supervisor semiautomatically, by use of a dialing system for the purpose of monitoring and testing the faulty channel. In this manner the source of the trouble is localized.

(3) In addition to the capabilities for trouble isolation offered by the ASCC, personnel may coordinate their activities with subscribers, with other ADMSC ASCC operator/supervisor personnel, and AUTOVON technical controllers by means of model 28 teletypewriter sets or through AUTOVON telephone equipment. Personnel are able to communicate and coordinate their activities within the ADMSC, using the general intercom and paging equipment; personnel may also communicate with COMSEC personnel by means of the COMSEC intercom.

g. The ADMSC is automatically interfaced with the AUTOVON circuit switching system for the purpose of establishing circuit connections to tributaries and to other AUTODIN stations by means of the AUTOVON network.

h. The operation of maintenance COMSEC and SOMSEC auxiliary equipment is performed by COMSEC personnel within a separate secure area in the ADMSC. Personnel within this area are responsible for coordination of activities with their counterparts at other ADMSC's.

i. All ADMS circuit lines leaving the red patch bay, either send or receive, interface with the ADMS processing equipment at the lines termination buffers (LTB'S).

(1) LTB malfunction alarm indications are provided to assist maintenance personnel in localizing troubles. These alarm indications are derived for the asynchronous buffers by an open-circuit detector within the buffer. The synchronous buffers automatically provide a no-transition (inactive) indication to the ADMS data processing equipment. In addition a sense point scanner senses the no-transition alarm on synchronous lines, and an open-line alarm on asynchronous lines.

(2) In the normal mode of operation, when no message is being transmitted or received by the buffers on an asynchronous circuit, a steady MARK condition will exist on the data signal line. On a synchronous circuit, the transmitting buffer generates an idle line character for the purpose of maintaining character synchronization on the circuit.

(3) Although the LTB's are physically located within the ADMS equipment area, the LTB's are directly associated on a one for one basis with a particular circuit line at all times. There is no automatic switching or assignment of an LTB to another path; therefore, if an LTB fails, and there is an equivalent spare (synchronous or asynchronous), the ASCC operator/supervisor directs communication personnel to perform a patch a the red distribution frame to replace the failed LTB with an operationally equivalent LTB.

j. The major part of trouble isolation is accomplished under the control of the ASCC operator/supervisor. When a malfunction occurs within the communication group, a flashing red indication (accompanied by an audible alarm) occurs to alert the ASCC operator/indicator changes the flashing red indication to steady red, and also causes one or more common alarm readout indicators to indicate one or more specific circuit faults. The ASCC operator/supervisor interprets the fault indications and utilizes the information gained to direct the activities.

of supporting maintenance personnel. (See figure 2-2.)

(1) The ASCC operator/supervisor, by using the MTC, can select monitor points in either the black or the red portion of any line (channel). Once the monitor point (signal-send, signal-receive, or timing) is selected, the ASCC operator/supervisor operates the controls of the MTC to connect test equipment to the monitor point. The connect test equipment permits the insertion of signal test patterns in the line at selected points and the monitoring of signal output characteristics; thus, using the MTC, the operator can systematically isolate line (circuit) faults to the equipment level, and in some cases, depending upon the nature of the malfunction, to a replaceable module.

(2) Once the ASCC operator/supervisor has isolated the malfunction to the lowest level possible, the ASCC operator/supervisor assigns further maintenance action to the supporting technician by intercom, and relates to his knowledge of the fault.

(3) The communications equipment technician proceeds with further isolation of the fault, suing maintenance techniques (as directed in the applicable equipment manual) or, in case the faulty module was identified by the actions of the ASCC operator/supervisor , replaces the faulty module with a module known to be good, obtained form maintenance spares. Electronic Systems Test Set AN/FYM-22 (hereinafter referred to as the af/dc test facility), located in the communications area, provides rack-mounted test equipment and a patching facility for generating and inserting test signal into the communication group equipment and a patching facility for generating and inserting test signals into the communication group equipment, and includes measuring equipment for diagnosis of faults to the replaceable unit level. All communications equipment has input, output, and monitor appearances in the red and black de patch bays; thus, the communications equipment, has maxim flexibility in actions required to isolate trouble to a replaceable unit.

k. Verification of corrective maintenance is accomplished after repair, using the same test equipments provided for troubleshooting and failure diagnosis. The capability exists to measure signal characteristics and determine that the failure ha been corrected, after which the equipment may be certified for return to on-line operation.

2-8. Communication Group Ancillary Equipment Maintenance Plans

a. The station timing subsystem supplies the time bases required at each ADMSC for all synchronous and asynchronous equipment. This subsystem is located within the communications area, and is maintained by communications equipment technicians. Operating and maintenance information for the station timing subsystem is contained in TM 11-5895-413-15/1; TM 11-5895-413-15/2, and TM 11-5895-413-15/3.

b. The ADMSC intercom and public address equipments are maintained by communications equipment technicians. These equipments are used for internal voice communication throughout the ADMSC's; operating and maintenance information for Intercommunication Sets AN/FYA-34 and AN/FYA-55 is contained Sets in TM 11-5895-416-15.

c. Dual-tone multi-frequency (DTMF) telephone sets are provided at certain positions within the ADMSC, and are used by station personnel for communications outside the ADMSC through AUTOVON facilities. These telephone sets are maintained by communication group maintenance personnel; operating and maintenance information for Telephone Sets TA-764/FYA and TA-765/G is contained in TM 11-5895-428-15.

d. AUTODIN-AUTOVON interconnecting units are used within ADMSC's to provide nonsecure voice communication between using personnel located in each connected ADMSC and personnel elsewhere in the DCS which are subscribers of AUTOVON. In addition, the interconnecting units interface the ADMS to provide selective short-term connectivity for transfer of digital information to specially equipped subscriber terminals. Operating and maintenance information for AUTODIN-AUTOVON Interconnecting Units AN/FYA-32, AN/FYA-33, AN/FYA-53, AN-FYA-54, ON-41/FYA-19, ON-52/FYA-T1, and ON-53FYA-T1 is contained in TM 11-5895-415-15.

2-9. Communication Group Circuit Restoral

a. Restoring a Failed Circuit. When a circuit has failed, the ASSC operator/supervisor will take the channel out of service. The ASSC operator/supervisor will observe the channel status display and, by use of the monitor test console, localize the failure to a faulty equipment. The ASCC operator/supervisor will then check via the intercom with the ASSC operator/supervisor to

ensure that the channel has been taken out of service prior to patching. A spare equipment avid then be patched into the circuit in place of the faulty unit and synchronization of the COMSEC equipment checked. The ASCC operator/supervisor will then coordinate with the ASSC operator/supervisor and inform him that the channel is ready to be placed back in service.

b. Returning circuit to Normal. After the failed equipment has been validated for service, the ASCC operator/supervisor will coordinate with the ASSC operator/supervisor. This coordination will arrange to have the channel associated with the faulty equipment taken out of service. After notification that the channel is out of service, the ASCC operator/supervisor will remove the patch cords used to bypass the failed equipment. The ASCC operator/supervisor will then coordinate with the COMSEC operator via the COMSEC intercom, and arrange to have the COMSEC equipment synchronized if required. After notification that the COMSEC equipment is synchronized, the ASCC operator/supervisor will notify the ASSC operator/supervisor that tile channel call be put back in service.

2-10. Communication Group Patching

a. General. Patching in the ADMSC: communications area is to be performed only on channels that have been taken out of service by the ASSC operator/supervisor. Patching for equipment substitution is performed between all equipment patch jack and a line patch jack on each of two patch bays (one on each side of the equipment). In addition to the standard patches, tin additional sensor patch is required on either the black patch bay or the entrance dc patch bay. Operation of patch bays is described in TM 11-5895-414-15. Operation of the af/dc test facility is described in TM 11-5895-411-15. The following is a description of the patches required to accomplish equipment substitution and testing of the failed equipments

b. Modem Patching. A modem can be tested, repaired, and validated for service by utilizing the following patch setup. Figure 2-3 shows the patches required to substitute and test a modern. Subparagraphs 3-10b (1) and 3-10b (2) over procedures for substitution patches and test patches.

(1) Substitution patches.

(a) At the entrance at petals bay, place one end of a double plug patch cord into the line-patch jack for channel xxx. Place the other end of the patch cord into the equipment patch jack for the spare modem.

(b) At the black patch bay, place one end off a double-plug patch cord into the line patch jack for the spare modem. Place the other end of the patch cord into the equipment patch jack for channel xxx.

(c) At the black patch bay, place one end of a double-plug patch cord into the line Sensor jack for the spare modem. Place the other end of the patch cord into the equipment sensor jack for channel xxx.

(2) *Test patch.*

(*a*) At the entrance af patch bay, patch from the send equipment monitor jack to the receive equipment monitor jack. This places the send and receive sides of the failed modem back-to-back.

(*b)* At the black patch bay, patch from the 2400-baud receive timing jack to the receive sensor line jack. This places 2400-baud timing into the receive side of the modem.

(*c*) At the black patch bay, patch front the 2400-baud send timing jack to the af/dc test facility trunk.

(*d*) At the af/dc test facility, patch from the trunk to a parallel jack set.

(*e)* At the af/dc test facility, patch from the DAC-7 test generator output to tile parallel jack set.

Note

The timing signal input to the parallel jack set is used to bit-synchronize the test generator as well as the send side of the modem.

(*f*) At the af/dc test facility, patch the output of the parallel jack set containing timing and test signals to a black patch trunk.

(*g*) At tile black patch bay, patch from tile trunk to tile channel xxx send line monitor jack.

(*h)* At the black patch bay, patch from the receive line monitor jack to another af/dc test facility trunk.

(*i)* At the af/dc test facility, patch from the trunk to the DAC-7 analyzer +6 volt input..

c. DC/DC Signal connector Patching. DC/DC signal converter substitution and testing can be accomplished by using the following patch setup. Figure 2-4 shows the patches required to substitute and test a dc/dc signal converter. Subparagraphs 2-10*c* (1) and 2-10*c* (2) cover procedures for substitution patches and test patches.

(1) DC/DC signal converter substitution. Tile following patches are required to replace n faulty dc/dc signal converter. (See figure 2-4) Channel xxx shall be patched to a spare dc/dc signal converter.

(a) On the dc entrance patch bay, patch from the send and receive line patch jacks of channel xxx to the send and receive equipment patch jacks of the spare dc/dc signal converter. For this cases a loop resistor is in the send circuit and other loop resistor is in the receive circuit for loop current adjustments.

Note

no patches are required on the sensor patch panel for the dc/dc signal converter substitution.

(*b*) On the black dc patch bays patch from the send and receive equipment patch jacks of channel xxx to the send and receive line patch jacks of the spare dc/dc signal converter.

(2) *DC/DC signal converter tests*. The dc/dc converter can be tested in many ways in the circuit. Utilizing the patching facilities, each individual converter (lo/hi or hi/lo) can be patched via the trunk circuits to the af/dc test facility. The following description covers tile back-to-back operation of tile lo/hi and hi/lo signal connectors of channel xxx and their connection to the DAC-7 in the af/dc test facility. (See fig. 2.)

Caution

Select the proper voltage level on the DAC7 (low or high). It is also possible to use the mobile DAC-7 for testing the circuits on the patch bays.

(*a)* On the af/dc test facility, patch trunk jack #19 (black patch bay trunk) to the TDMS (out) ±6V jack, and trunk jack #20 to the TDMS (in) ±6V jack.

(*b*) On the black dc patch bay, patch the send and the receive line monitor jack to the #1 and #2 af/dc test facility trunk jack one the black dc patch bay miscellaneous jack panel.

(*c*) On the dc entrace patch bay, patch the equipment monitor jacks to the modem back-to-back jacks on the miscellaneous jack panel (jacks 23 and 24).

Note

The associated receive circuit loop resistor now controls the loop current in the high level back-to-back circuit xxx.

(*d*) COMSEC Patching. COMSEC substitution and testing can be accomplished by using the following patch setup. Figure 2-5 shows the patches required to substitute and test a COMSEC equipment. Subparagraphs 2-10*d* (1) and 2-10*d* (2) cover procedures for substitution patches and test patches.

(1) COMSEC substitution. Figure 2-5 shows the procedures for patching channel xxx to a COMSEC equipment.

(*a*) On the black patch bay, patch the send and receive equipment patch jacks of a spare COMSEC equipment to the send and receive line patch jacks of channel xxx, and from the send and receive line sensor patch jacks of channel xxx to the send and receive equipment sensor patch jacks of the spare COMSEC equipment.

Note

No patches are required on the sensor patch panel when substituting a COMSEC type B.

(b) On the red patch hay (secure or DSSCS), patch from the send and receive equipment patch jacks of channel Iota the send and receive line patch jacks of the spare COMSEC equipment.

(2) COMSEC tests. The CQM5EC A or B equipment, when tested in Station for proper operation, shall he patched back-to-back on the black side, and connected to either the monitor test console (MTC) or the mobile DAC7 on the red side. When the primary monitor test console (MTC) is used to provide or analyze test signals patch the S and R monitor lines to the TEST 1 S and R jacks on the miscellaneous jack panel (secure or DSSCS). The secondary MTC can be used by patching the monitor lines to the TEST 2 jacks on the miscellaneous jack panel. The DAC-7 can be used to test circuits at the red dc patch bay (secure) by making the following patches:

(*a*) For COMSEC A, patch from the SIG/TMG IN and COMM GND jacks on the mobile DAC-7 to the 2400 R and R GND jacks, respectively, on the miscellaneous jack panel in the red dc patch bay. (secure).

Note

Patch SIG TMG IN to 1200 R or 2400 R timing, as required, for the circuit. The COMSEC A will operate wit 1200 or 2400 baud timing.

(*b*) For COMSEC B, patch from the COMM GND jack on the mobile DAC-7 to the R GND jack on the miscellaneous jack panel in

the red do patch bay. Insert one plug of a patch cord into the SIG/TMG IN jack of the mobile DAC7, and let the other plug of the patch cord hang loose. The patch cord in the SIG/TMG IN jack is necessary to provide an output on the SIG OUT jack on the mobile DAC7.

(*c*) Patch from the SIG OUT LOW and SIG MON LOW jacks on the mobile DAC7 to the send and receive line monitor jacks, respectively, on the red dc patch bay (secure).

(*d*) On the black dc patch bay for circuit xxx, patch the send equipment monitor jack to the receive equipment monitor jack.

e. Red/Black Isolator Patching. A red/black isolator can be tested and validated for service by utilizing the following patch setup:

(1) *Substitution patches.*

(*a)* On the black patch bay, place one end of a double-plug patch cord into the line patch jack for channel xxx. Place the other end of the patch cord into the equipment patch jack for the space red/black isolator.

NOTE

Use only the synchronous isolator on synchronous circuits; however, either the synchronous or the asynchronous isolator may be used on an asynchronous circuit.

(*b*) On the red patch bay (unsecure), place one end of a double-plug patch cord into the equipment patch jack for channel xxx. Place the other end of the patch cord into the line patch jack for the spare red/black isolator.

(2) *Test patches (circuit validation).*

(*a*) On the black patch bay, place one end of a single-plug patch cord into the send equipment monitor jack for channel xxx. Place the other end into the receive equipment monitor jack for channel xxx.

(*b*) At the red patch bay (unsecure), place one end of a double-plug patch cord into the line monitor jack for channel xxx. Place the other end of the patch cord into the low level SIG MONSIG OUT jacks on the mobile DAC7. Be certain that the SIG OUT jack is patched to the send monitor jack. Place one end of a single-plug patch cord into the COMM GND jack on the mobile DAC7, and place the other end of the patch cord into the R GND jack on the miscellaneous jack panel. Place one end of a single-plug patch cord into the SIG/TMG IN jack on the mobile DAC7 and let the other end hang free.

f. LTB Patching. LTB substitution and testing can be accomplished by using the following patch setup. Figure 26 shows the patches required to substitute and test an LTB. The procedures for substitution patches and test patches are covered in (1) and (2) below.

(1) *LTB substitution*. The substitution of an LTB must be coordinated with the ADMS station supervisor to insure that the necessary arrangements are made for LTB substitution in the ADMS. The following patches are required in the COMM area to replace a faulty LTB (fig. 26):

(*a*) Channel xxx shall be patched to a spare LTB.

(*b*) On the red patch bay (secure or DSSCS), patch the send and receive line patch jacks of channel xxx to the send and receive equipment patch jacks of the spare LTB.

(2) *LTB tests*. The LTB can be tested in many ways in the circuit, using facilities in the COMM and ADMS areas, which must be coordinated with the ASSC operator/supervisor. It is possible to analyze a test signal from the ADMS on the mobile DAC7 by patching it to the circuit on the red dc patch bay (secure), or by providing a test signal from the mobile DAC7 via the red dc patch bay to the LTB.

(*a*) Test signals can be generated and analyzed using the primary MTG by patching the LTB S and R monitor lines to the TEST 1 S and R jacks on the miscellaneous jack panel (secure or DSSCS). The secondary MTC can be used by patching the LTB monitor lines to the TEST 2 jacks on the miscellaneous jack panel.

(*b*) On the red de patch bay (secure or DSSGS3, patch the send equipment monitor jack to the receive equipment monitor jack of the circuit under test.

g. Landlne Patching. A landline can be tested, repaired, and validated for service by utilizing substitution and test patches. ((1)

and (2) below cover the procedures for substitution and test patches.)

(1) Substitution patches.

(*a*) Coordination is required at the distant end of the landline to effect a similar patch.

(*b*) At the entrance at patch bay, use a doubleplug patch cord and patch from the equipment patch jack of the circuit with the faulty landline to the line patch jack of the spare landline.

(2) *Test patches*.

(*a*) If the distant end is to perform the tests, patch a single-plug patch cord on the entrance at patch bay from the send line monitor jack to the receive line monitor jack for the faulty landline.

(*b*) If testing is to be performed in-house or in conjunction with the distant end, patch a double-plug patch cord on the entrance at patch bay from the line monitor jack to the interbay trunk jacks which terminate at the af/dc test facility. (Refer to TM 11-5895-411-15 for use of Electronic Systems Test Set AN/FYM-22.)

b. Monitor Patching. Monitor patching is used to observe an operational circuit. Caution must be exercised when inserting a patch cord from the monitoring device into an operational circuit, to prevent possible circuit interruption.

(1) The monitor patching sequence to be observed to prevent possible circuit interruption is to complete all required patching to the monitoring device before the actual patch into the monitor jack is made to test the circuit. The last patch plug to be inserted must be the patch made to the monitor jack of the circuit under test.

(2) When the monitoring or testing has been completed, the first patch plug to be moved must be from the monitor jack of the circuit under test to prevent possible circuit interruption. The remaining patch cords may then be removed from the jacks in any sequence desired.

2-11. ADMS Group Maintenance Plans (fig. 27)

a. General. The ADMS is capable of detecting and localizing on-line failure to a single subsystem. Comprehensive alarms and monitoring circuitry provide data regarding the nature, extent, and location of the malfunction so that the malfunctioning subsystem can be switched off-line without interrupting ADMSC operation. Localization of the malfunction to a specific subsystem in the ADMS and the removal of the subsystem from on-line operation is automatic.

(1) Off-line maintenance of the failed subsystem is facilitated by the use of the ADMS maintenance console and test and diagnostic programs used for troubleshooting purposes.

(2) Maintenance techniques have been planned to derive maximum benefit from ADMS off-line maintenance capabilities so that off-line equipment may be rapidly repaired and restored to on-line operational capability. Off-line maintenance (at the equipment level 7) is dependent upon the experience and capabilities of the maintenance personnel and their ability to utilize test and diagnostic programs, test equipment, equipment technical manuals, and similar maintenance aids.

b. ADMS On-Line Maintenance Practices. The ADDS is capable of automatic maintenance action to isolate a malfunction to a subsystem. The operations and functions of the ADMS are directed by the ASSC operator/ supervisor who monitors the ADMSC operations at the AUTODIN station supervisory console. Once a malfunction is isolated to an ADMS equipment or subsystem by: means of operational test programs, sensing and detection devices, or fault indicators, the malfunctioning equipment or subsystem is automatically switched to off-line status. If standby equipment is available for on-line use (equipment in state 1 or 2 and available to the program), the system is automatically reconfigured to incorporate the standby equipment. Since the status of all: ADDS subsystems affected by this automatic reconfiguration is known by the ASSC operator/supervisor as a

result of automatic printouts on the message console and line printer (state 0), other reconfiguration of subsystems can be accomplished by supervisory commands inserted through the message console and line printer. Once the malfunctioning equipment or subsystem is off-line, the ASSC operator/supervisor coordinates his activities with the maintenance console operator/supervisor, and interfaces the malfunctioning equipment or subsystem with the maintenance console to form an off-line equipment configuration.

c. ADMS Off-line Maintenance Practices. The ASSC operator/supervisor, through supervisory commands entered at the message console and line printer places the malfunctioning equipment or subsystem off-line in an equipment configuration which will enable troubleshooting by maintenance personnel. The ADMS maintenance console operator/supervisor, in conjunction with supporting maintenance personnel, will use test and diagnostic programs to exercise the functional characteristics of the malfunctioning equipment or subsystem. After the failed function has been identified, the technician will proceed with troubleshooting and repair, and eventually certify the equipment for on-line operations. The running of test and diagnostic programs requires that an operational processor unit be configured with the maintenance console. If the standby processor unit is unavailable for off-line corrective maintenance, either because of processor unit failure or because the standby processor unit has gone on-line to replace a failed processor unit, the off-line maintenance capability of the ADDS is severely curtailed; in this event, the off-line processor unit must be repaired and made fully operational before corrective maintenance, using test and diagnostic programs, may be performed on failed equipments or subsystems (mass memory, memory, tape, or peripheral subsystems).

2-12. AUTODIN Maintenance Program System (AMPS)

a. General. The AUTODIN maintenance program system (AMPS) consists of test and diagnostic programs used to perform test and evaluation, and a diagnostic analysis of particular subsystems placed off-line and interfaced with the ADMS maintenance console, together with minimal equipment.

(1) The total maintenance program package consists of two distinct but related modes, namely, a test and evaluation mode and a diagnostic analysis mode. Both program modes are composed of sections related to either a subsystem or a part of a subsystem.

(*a*) The test and evaluation mode of a program performs the functional testing, exercising, and evaluation of a particular subsystem or part of a subsystem.

(*b*) The diagnostic analysis mode of a program is executed only after the test and evaluation mode program has pointed to a functional failure within the subsystem or part of a subsystem.

(*c)* The test and evaluation mode of the program tests the device on a functional basis, whereas the diagnostic analysis mode of the program tests the device on a logic basis, with only one device assumed to have a failure at any particular time.

(2) Program sections have been developed to test (and evaluate) the following subsystems or parts of subsystems; items preceded by an asterisk contain diagnostic analysis sections.

*Processor and NSPC.
*Processor input-output control (IOC).
*Memory/memory control unit.
*Mass Memory
*Tape transport and tape controller.
Line termination buffer (LTB), synchronous and asynchronous.
Processor communication assembly (PCA).
Punchcard controller, card punch, and card reader.

Message Console and line printer.

Printer controller and printer.
Monitor.
Configuration switch controller and configuration switch.

b. Program Input Options. The test and diagnostic programs are furnished as both

punched cards and magnetic tapes. The program input is optional, depending upon the equipment available in the off-line configuration, and may include either the punchcard controller and card reader as the input device or a magnetic tape controller and tape transport as the input device. For either input option, cards or tape, the input device must be interfaced in an off-line configuration with the standby processor unit and the ADMS maintenance console.

(1) Once the program has been loaded into memory, a program halt will occur to permit toggle options to be set in accordance with program instructions.

(2) Toggle options selected govern program control; program input is accomplished by the toggle register settings made on the PROCESSOR panel to select or inhibit test sections of the program.

c. Program Output Options. The output from test and diagnostic programs may be either hardcopy output or by means of coded halts displayed on the PROCESSOR panel of the maintenance console.

(1) A toggle option specifies whether the hardcopy output will be typed on the line printer or printed on the high speed printer.

(2) The coded halt output is displayed on the indicators of the PROCESSOR panel located on the maintenance console. This display is present, regardless of whether or not a toggle option has been exercised to inhibit hard" copy output. The coded halt display occurring after the detection of a malfunction enables the maintenance console operator/supervisor to enter the applicable program code edits and obtain significant data to further aid in troubleshooting.

d. AUTQDIN ADMS Program. Programs available for use with the AUTODIN ADMS are as follows:

(1) The test and diagnostic programs available for use with the AUTODIN ADMS are listed in table 2-1. The program identification mnemonic, the program function, and the corresponding reference number in document DCAC 310-D70-36, Description of Test and Diagnostic Routines, are given in the table.

(2) The utility programs available for use with the AUTODIN ADMS are listed in table 2-2. The program name and corresponding reference number in document DCAC 310-D70-41 are given in the table.

(3) The test program portion of a test and diagnostic program is a functional program that exercises and tests the basic operation of the subsystem in a logical manner to verify the integrity of all functions.

(a) The performance tests made to determine the basic operation of the subsystem consist essentially of running the test program with the subsystem off-line and inter faced with a processor unit and maintenance console.

Table 2-1. Test and Diagnostic Programs

Program identification	Program function	DCA Circular reference No.
T102	Processor test and diagnostic	310-D70-36-1
TIOC	IOC test and diagnostic	310-D70-36-2
TAPE	Tape transport and tape controller test and diagnostic	310-D70-36-7
TLTB	Line termination buffer units test and diagnostic	310-D70-36-8
TLTC	Processor communications assembly test and diagnostic	310-D70-36-9
TCAP	High Speed printer, card reader and punch test and diagnostic	310-D70-36-10
TSYS	Processor test and diagnostic	310-D70-36-11
TUMS	CCSU test and diagnostic	310-D70-36-12
TSCT	System command terminal test and diagnostic	310-D70-36-13
TCSC	Configuration switch controller test and diagnostic	310-D70-36-14
TASC	ASSC test and diagnostic	310-D70-36-15
TTOG	Manual configuration test and diagnostic	310-D70-36-16
TCON	Configuration test and diagnostic	310-D70-36-17
TDIS	Disc unit test and diagnostic	310-D70-36-19
Tmem	Processor memory test and diagnostic	310-D70-36
LOAD		310-D70-41
UTIL		310-D70-41

Table 22. Utility Programs

Program name	DCA Circular reference No.
LOAD	310-D70-41
UTIL	310-D70-41

(*b*) The test program insures that the subsystem performs satisfactorily. In the event of a subsystem malfunction during the running of the test program the test program will either produce a programmed halt or enter an associated diagnostic program. The function concerned may be identified by subsequent comparison of the maintenance console PROCESSOR panel register indicators with the code edits supplied as part of the program documentation.

(*c*) The appropriate section(s) of the test program should be run after performing corrective maintenance tasks on the subsystem or equipment to insure that the repaired subsystem is functioning satisfactorily.

(4) The diagnostic program portion of a test and diagnostic program is an extension to the test program described above. The diagnostic program can produce outputs in the form of programmed halts. When an error occurs during type test apportion of the program, the associated diagnostic program may be entered (diagnostics not suppressed by toggle settings) and automatically performed in an attempt to isolate the malfunction to the lowest logic level possible (a single module or a small group of modules).

(*a*) If the diagnostic program is successful in diagnosing the malfunction, the program halts and displays a coded halt on the PROCESSOR panel indicators.

(*b)* The technician interprets the PROCESSOR panel indicators to determine the indicated malfunction, and enters the program code edit document to determine the defective module or group of modules. Corrective maintenance may then be performed to isolate the defective module at the equipment level.

(5) Code edits are provided as an integral part of each test and diagnostic program in the AUTODIN maintenance program series (AMPS). The code edits consist of a, complete printout of all instructions in the program, together with printouts of register content (PROCESSOR panel indicator displays) at significant points in the program. The code edits also contain initializing and loading instructions for the program, instructions for inserting or modifying data and instructions at programmed halts, and an explanation of the action and intent of the instructions in the form of comments printed alongside the instructions themselves.

(a) The code edits are among the most valuable tools for troubleshooting. A comparison between the actual content of registers which is Printed out and the ideal content as indicated by the code edits can reveal the exact point in the program at which a malfunction occurs, and can give valuable clues to the identification of the hardware (module or group of modules) causing the malfunction.

(b) The operating instructions given on the opening pages of the code edit furnish maintenance personnel with significant information about the test to be performed; how to set the toggles on the PROCESSOR panel of the maintenance console to suppress any portion(s) of the test, including the diagnostic program; and what action to take when the program is halted automatically by: the detection of a malfunction.

(c) It is essential that the maintenance technician closely study the program code edits that he will use, and be aware of the implications when discrepancies exist between the PROCESSOR panel indicator display and the code edits at various points in the program.

(d) It should be noted that some of the items included in the code edit printout are provided for use of a programming specialist, and have no particular significance to maintenance personnel.

(e) Refer to the typical troubleshooting procedures given in TM 11-5895-406-15/1 for Processor Unit OL-9/FYA-10(V); these procedures, involving fault localization within the

processor unit, illustrate the use of typical program code edits. For full details concerning a particular test and diagnostic program, refer to document DD4, Description of Test and Diagnostic Routines.

2-13. ADMS Off-line Maintenance Configuration

a. Figure 28 illustrates many possible off-line configurations normally available for maintenance purposes. The actual off-line configuration which is necessary in order to run a particular test and diagnostic program will vary, depending upon the failed subsystem, off-line equipment available, and the particular program to be run.

b. For simplicity, the configuration switches themselves have not been shown in the block diagram of figure 2-8, except to indicate by means of an x the functional connection to achieve the desired subsystem or equipment interface.

c. Supervisory commands (E1 through E5) are entered through the ASSC operator/supervisor message console; these commands are used to configure and provide minimal off-line equipments interfaced with the standby processor unit and the maintenance console.

2-14. ADMS Off-line Corrective Maintenance

a. Table 2-3 provides information to enable the ASSC operator/supervisor and the ADMS maintenance console operator/supervisor to mutually determine off-line subsystem and equipment needs, as may be governed by system priorities, and to determine maintenance aids in the form of program documentation (tape reels, card decks, code edits, and technical manuals) required to accomplish the maintenance task.

b. The failed subsystem must be placed in an off-line configuration prior to the running of test and diagnostic programs to isolate trouble to the malfunctioning equipment level.

c. Once the malfunctioning equipment has been determined through the use of test and diagnostic programs, the applicable equipment technical manual is used to further isolate trouble and effect corrective maintenance at the equipment level.

d. Table 2-3 assumes that the malfunctioning subsystem has been switched off-line and is to be interfaced with the ADMS maintenance console. All reconfiguration of subsystems off-line is made by supervisory commands and by mutual consent and agreement between the ASSC operator/supervisor and the ADMS operator/supervisor; this coordination is necessary so that tests or corrective maintenance procedures currently in progress will not be adversely affected.

(1) The equipments within the subsystem to be tested are listed in the table, together with the minimal equipment to be configured off-line in order to accomplish: the tests. The maintenance console equipment configuration must also Include a means of entering themes gram, either an operational off-line card reader or tape transport, together with the equipments listed in the column as necessary to run the test and diagnostic program.

(2) The program mnemonic title is given in the table for each applicable subsystem, together with a document reference number (found on tape reel and card deck), which identifies the particular test and diagnostic program.

Table 2-3. ADMS Off-Line Maintenance Chart

Subsystem off-line	Equipment to be tested	Maintenance console equipment configuration	Program(s) to be run	*DCA Circular* program ref	Equipment manual ref
Processor	Processor unit	1-Processor unit	T102	310-D70 36-1	TM 11-5895-406-15/1
	Input-output control assembly (IOC)	1-Processor unit:	TIOC	310-D70-36-2	TM 11-5895-406-15/1
	Processor communication assembly (PCA)	2-Processor units (SB and LTC)	TLTC	310-D70-36-9	TM 11-5895-406-15/1
	NSPC	1- Processor Unit	TNSP	310-D70-36-18	TM 11-5895 -406-15/1
	Memory/memory control unit (MCA, MSA)	1-Processor	TMEM	TBS	TM 11-5895-1016-14
Magnetic tape	Tape transport Tape controller	1-Processor unit 1-to 4-Tape transports 1-Tape controller	TAPE	310-D70-36-7	TM 11-5895-418-15 TM 11-5895-408-15/1
Punch card	Punchcard controller Card punch unit Card reader unit	1-Processor unit 1-Punchcard controller 1-Card punch unit 1-Card reader unit	TCAP	310-D70-36-10	TM 11-5895-420-15/1 TM 11-5895-421-15/1 TM 11-5895-422-14-2
Printer	Printer controller Printer	1-Processor unit 1-Printer controller 1-Printer	TCAP	310-D70-36-10	TM 11-5895-420-15/1 TM 11-5895-423-15

Table 2-3. ADMS Off-line Maintenance Chart-Continued

Subsystem off-line	Equipment to be tested	Maintenance console equipment configuration	Program(s) to be run	*DCA Circular* program ref	Equipment manual ref
Control sensing monitor	Configuration control and sensing unit (CCSU)	1-Processor unit 1-Configuration control and sensing unit (monitor)	TUMS	310-D70-36-12	TM 11-5895-405-15/1
SCT	SCT	1- Processor unit 1-SCT	TSCT	310-D70-36-13	TM 11-5895-838-14 TM 11- 5895-839-14-1 TM 11-5895-839-14-2
Disc memory	Disc memory unit and controller	1- Processor Unit 1- Disc unit and controller	TDIS	310-D70-36-19	TM 11-5895-840-14-1 TM 11-5895-540-14-2

Subsystem off-line	Equipment to be tested	Maintenance console equipment configuration	Program(s) to be run	*DCA Circular* program ref	Equipment manual ref
Configuration switch controller	Distribution switching unit Configuration switching unit Configuration switch controller	Entire system	TCSC	310-D70-36-14	TM 11-5895-405-15/1 TM 11-5895-425-14
Line termination buffer unit	Line termination buffer units (synchronous and asynchronous)	1-Processor unit 1-Magnetic core storage unit 1 to 14-Synchronous LTBU's 1 to 14-Asynchronous LTBU's	TLTB	310-D70-36-8	TM 11-5895-407-15/1

a. Deleted

b. Deleted

c. The TCSC program will destroy the contents of memory, making it necessary to reload service routines after completion of test and diagnostics.

(3) The applicable equipment technical manual is referenced in the table to enable the technician to further isolate trouble within the equipment. The applicable technical manual, together with program code edits, logic flow charts, and schematics, complete the data package available to the technician for troubleshooting at the equipment level.

e. The following are general ADMS trouble isolation procedures:

(1) *Processor unit.* A malfunctioning processor unit, when switched off-line, is placed under the control of the maintenance console. Through the use of supervisory commands entered by the ASSC operator/supervisor at the message console, the processor unit is interfaced with the off-line equipments necessary for the running of test and diagnostic programs. The off-line equipment configuration consists of the equipment necessary to load the program and to receive printouts.

(*a*) The maintenance console operator/supervisor utilizes the PROCESSOR panel and either the card reader or the tape transport to load test and diagnostic programs into the processor memory. These programs test and evaluate the logic circuitry within the processor unit in systematic sequences which isolate a malfunction to a small group of plug-in modules.

(*b*) The diagnostic mode of the program provides an indication, by printout or by display indicators on the PROCESSOR panel, of the nature and location of detected failures By using the code edits provided by the program documentation and maintenance information given in the processor unit technical manual, the technician can isolate the trouble.

(2) (Deleted)

(3) Mass Memory subsystem. A mass memory subsystem when switched off-line may be interfaced with an operational standby processor under the control of the maintenance console, or may be directly interfaced with the mass memory console, depending upon the status of off-line equipments necessary to enable off-line configuration.

(*a*) Normally, the mass memory subsystem is interfaced with the standby processor unit. The maintenance console operator/supervisor utilizes the PROCESSOR panel and either the card reader or the tape transport to load test and diagnostic programs into the processor memory.

(*b*) The diagnostic mode of the program provides an indication, by printout or by display indicators on the PROCESSOR panel, of the nature and location of detected failures. By using the code edits provided with the program documentation and maintenance information given in the applicable mass memory technical manuals, the technician can isolate the trouble.

(c) When the mass memory subsystem is interfaced with the MASS MEMORY console, the code edits provided by the program documentation enable write-read checks to be made, which aid the technician in detailed final troubleshooting.

(4) *Magnetic tape subassembly.* The malfunctioning tape subsystem (tape transport and tape controller), when switched off-line, is interfaced with a standby processor unit under the control of the maintenance console. Through supervisory commands entered by the ASSC operator/supervisor at the message console and line printer, up to four tape transports and a tape controller are interfaced with the off-line equipments necessary to enable the running of test and diagnostic programs.

(a) The maintenance console operator/supervisor utilizes the PROCESSOR panel and either the card reader or an available operational tape transport to load test and diagnostic programs into the processor memory.

(b) Failures in tie magnetic tape subsystem are quickly isolated to either the tape transport unit or to the electronics of the tape controller, after which the technician utilizes the maintenance information given in the applicable equipment technical manual to isolate the trouble within the failed equipment.

(5) *Line termination buffer units.* Line termination buffer units, either synchronous or asynchronous, are placed off-line by patching in the communications area. In this case, the trouble is isolated to a particular circuit at the equipment level. However, in order to run a test and diagnostic program on this unit, it is necessary to interface from one to fourteen- line termination buffer units with an operational processor unit, and other off-line equipments necessary to enable the running of the test and diagnostic program.

(*a*) The technician must establish loop-back connectivity at the LTB's to be checked prior to running the test and diagnostic program The FTB units to be checked are wired back-to-back; that is, the serial data output line of an LTB transmitter is connected to the serial data input line of an LTB receiver (para 2-10*f*). Procedures for accomplishing the loop-back by means of LTB strap-boards (mode and address cards) are given in the applicable technical manual (TM 11-5895-407-15/1 and TM 11-5895-407-15/2) for the line termination buffer unit.

(*b*) The maintenance console operator/supervisor utilizes the PROCESSOR panel and either the card reader or the tape transport to load the test and diagnostic program into the processor memory. The tests used are executed sequentially to provide a comprehensive check of the operational status, type of LTB, and baud rate of each LTB on the selected channel, after which special tests are made to establish the reliability of special functions in each LTB.

(6) *Peripheral equipments.* Peripheral equipments, including the punch card subsystem, printer subsystem, and teletypewriter subsystem,

as well as associated input-output buffers and controllers, are witched off-line as subsystems. These subsystems are placed under the control of the maintenance console by supervisory commands entered by the ASSC operator/supervisor at the message console.

(*a*) The subsystem is interfaced with an operational standby processor unit and off-line equipments necessary for the running of test and diagnostic programs.

(*b*) The maintenance console operator/supervisor utilizes the PROCESSOR panel and either an operational card reader or a tape transport to load test and diagnostic programs into the processor memory. The program will enable the determination of the failed equipment, after which the technician will utilize the applicable equipment technical manual to further isolate the trouble within the faulty equipment.

2-15. Deleted

Section III. DIAGRAMS AND DRAWINGS

2-16. Drawings and Application Schematics

The drawings and application schematics included in this section are related to general and detailed system descriptions, given in Chapter 1 of this manual, and are also related to troubleshooting information, given in Chapter 2 of this manual; the drawings and application schematics are listed, together with their titles, as follows:

Drawing number	*Title*
100000170 (sheet 1 of 11)	Communications Subsystem Block Diagram-Asynchronous Circuits (Audio and DC Input).
100000170 (sheet 2 of 11)	Communications Subsystem Block Diagram-Synchronous Circuit (Audio Input).
100000170 (sheet 3 of 11)	Communications Subsystem Block Diagram - AUTOVON/AUTODIN Synchronous / Asynchronous circuit.
100000170 (sheet 4 of 11)	Communications Subsystem Block diagram-AUTOVON Access Trunks and DTMF Telephone.
100000170 (sheet 5 of 11)	Communications Subsystem Block Diagram-Data Timing Subsystem.
100000170 (sheet 6 of 11)	Communications Subsystem Block Diagram-Channel Status Displays (ASCC Alarm Circuits).
100000170 (sheet 7 of 11)	Communications Subsystem Block Diagram-Console and Switching System (ASCC Monitor and Test Circuits).
100000170 (sheet 8 of 11)	Communications Subsystem Block Diagram AF/DC Test Facility and Miscellaneous Circuits.
100000170 (sheet 9 of 11)	Communications Subsystem Block Diagram-Station Intercom and Public Address Facility.
100000170 (sheet 10 of 11)	Communications Subsystem Block Diagram-Signal Ground Configuration.
100000170 (sheet 11 of 11)	Communications Subsystem Block Diagram-Teletypewriter Coordination Circuits.
100000610	Communications Subsystem Application Schematic-Asynchronous Circuits.
100000611	Communications Subsystem Application Schematic-Synchronous Circuits.
100000612 (2 sheets)	Communications Subsystem Application Schematic-AUTOVON/AUTO DIN Synchronous and Asynchronous Circuits.
100000613	Communications Subsystem Application Schematic-AUTOVON Access Trunks and DTMF Telephone.
100000614	Communications Subsystem Application Schematic-Data Timing Distribulation.
100000615 (2 sheets)	Communications Subsystem Application Schematic-Channel Status Displays (ASCC).
100000616	Communications Subsystem Application Schematic-Monitor Test Console and Switching.
100000617	Communications Subsystem Application Schematic-AF and DC Test Facility.
100000618 (2 sheets)	Communications Subsystem Application Schematic-Miscellaneous Test and Service Circuits.
100000619 (2 sheets)	Communications Subsystem Application Schematic-Station Intercom and Public Address Facility.

2-17. Figures

Figures 2-1 through 2-8 are placed after the drawings and application schematics. The titles of these figures are given in the List of Illustrations of this manual.

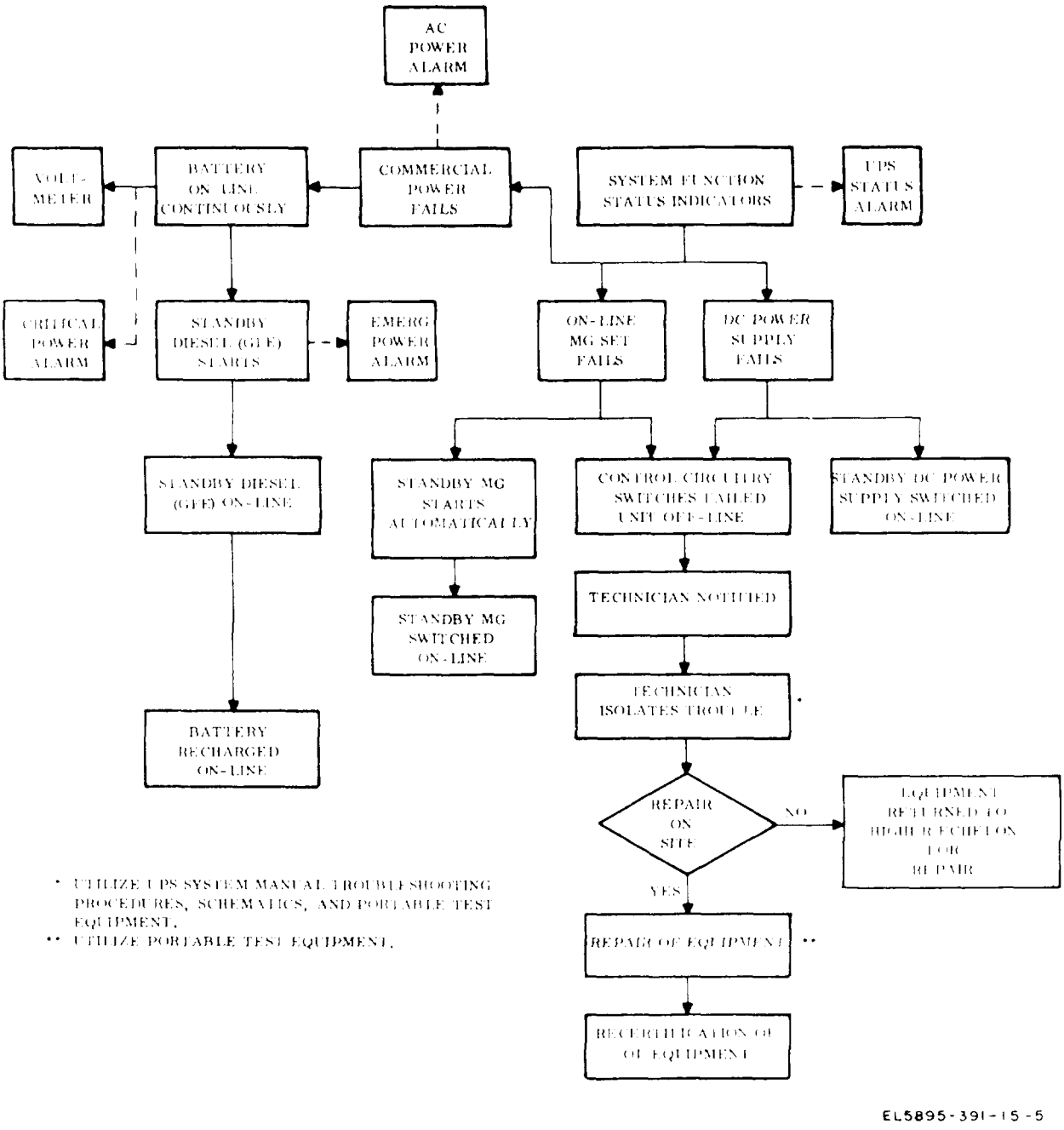


Figure 2-1. Uninterrupted power supply (UPS) maintenance flow chart.

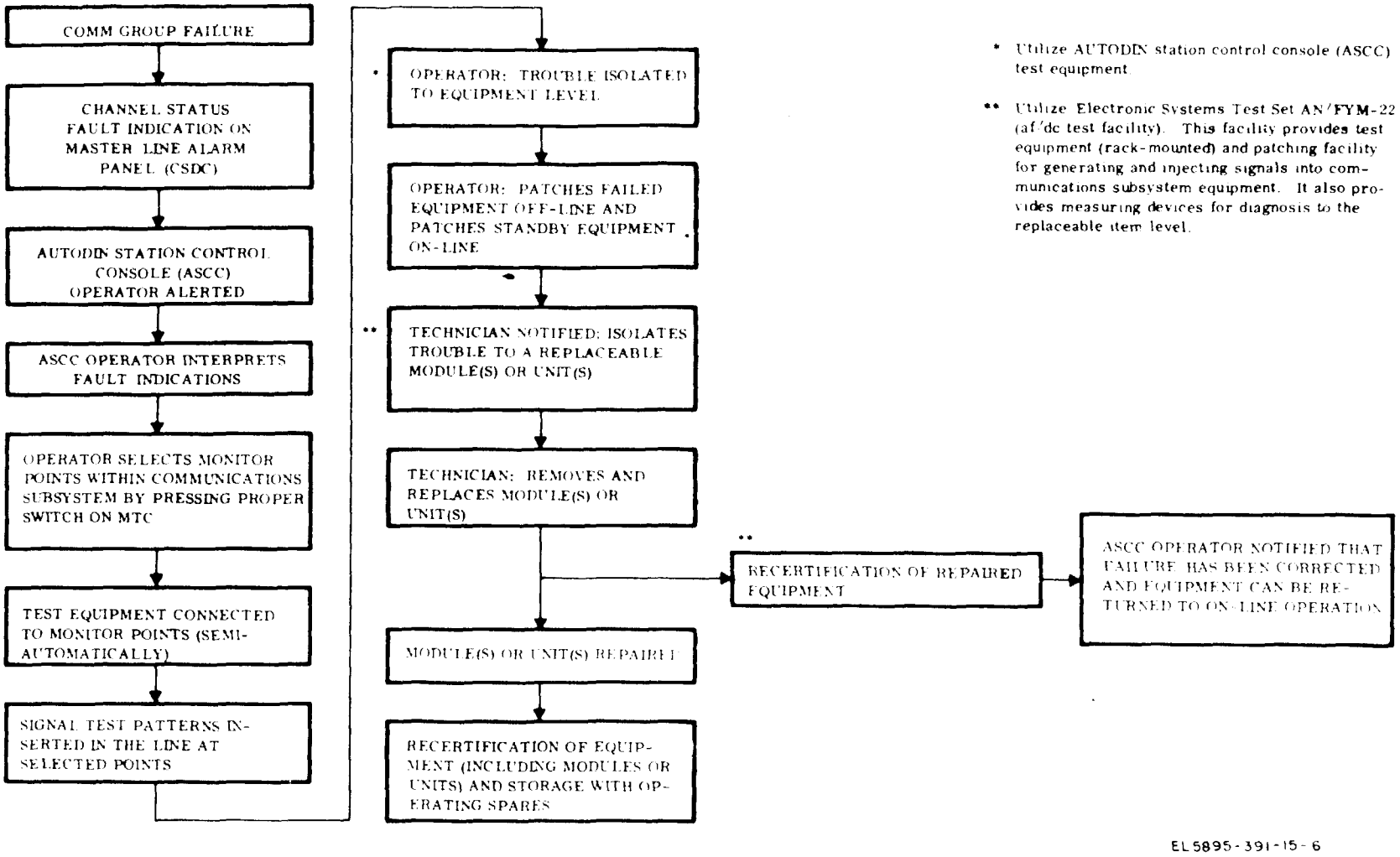


Figure 2-2. Communications group maintenance flow chart.

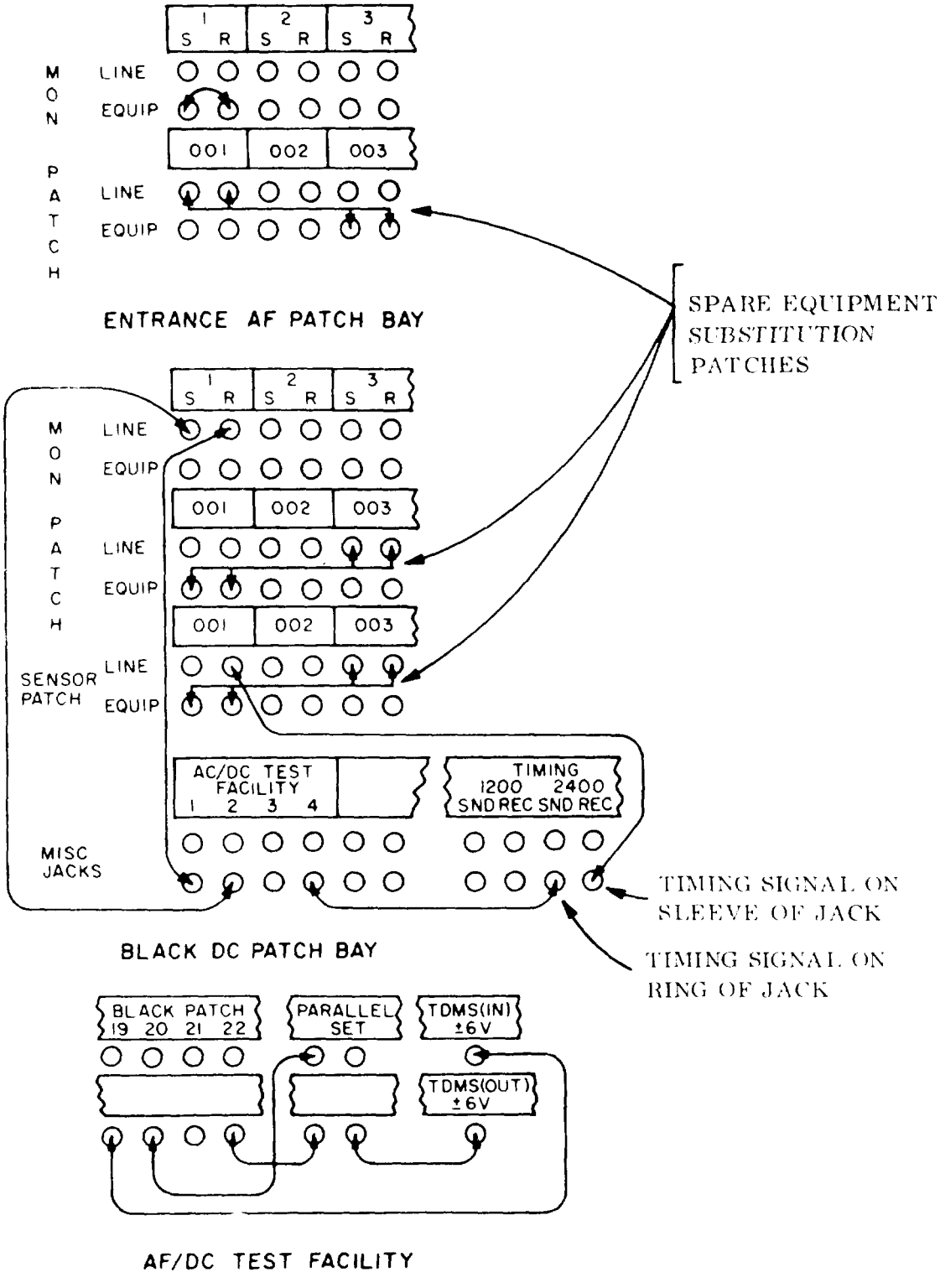
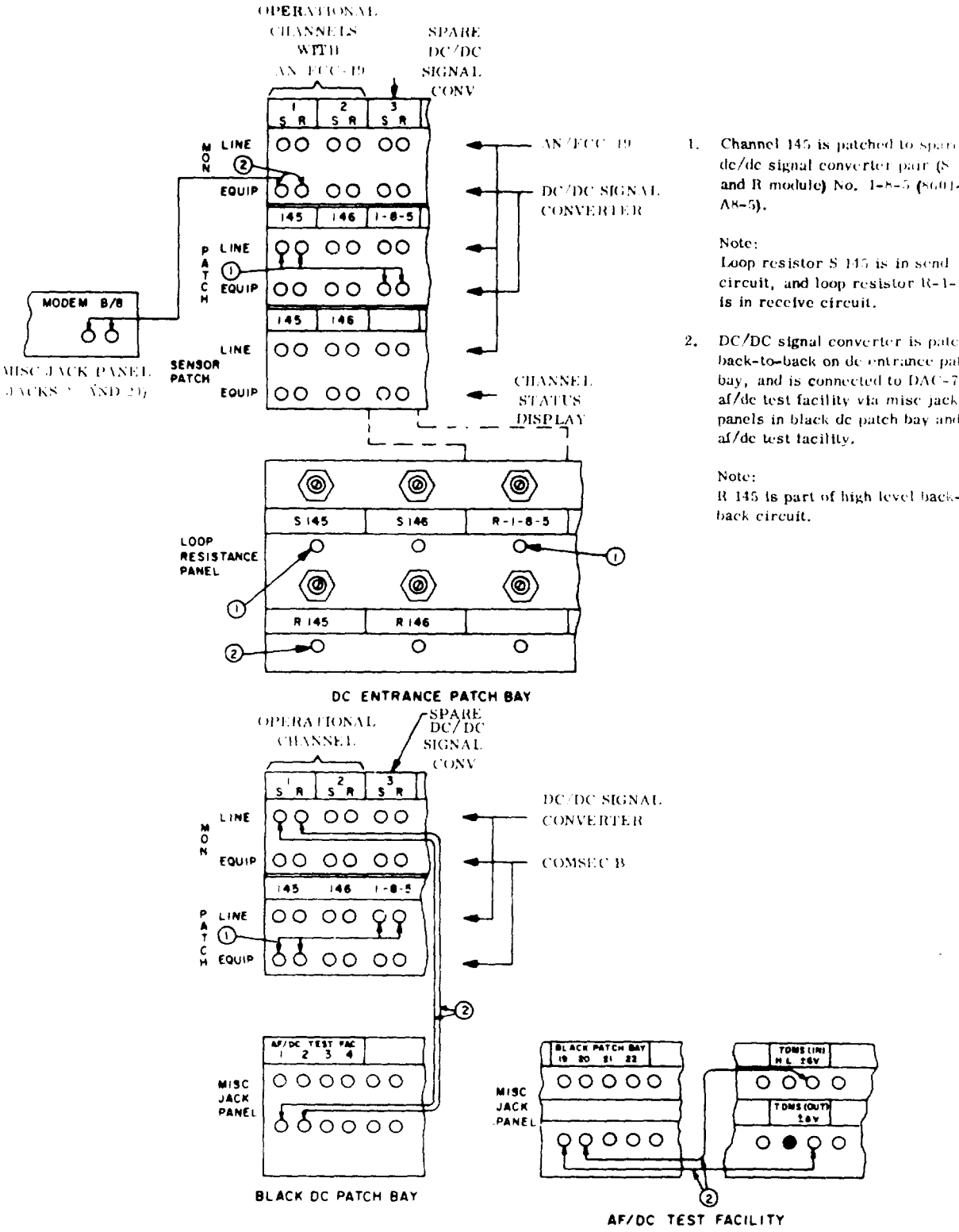


Figure 2-3. Patching for modem substitution and tests.



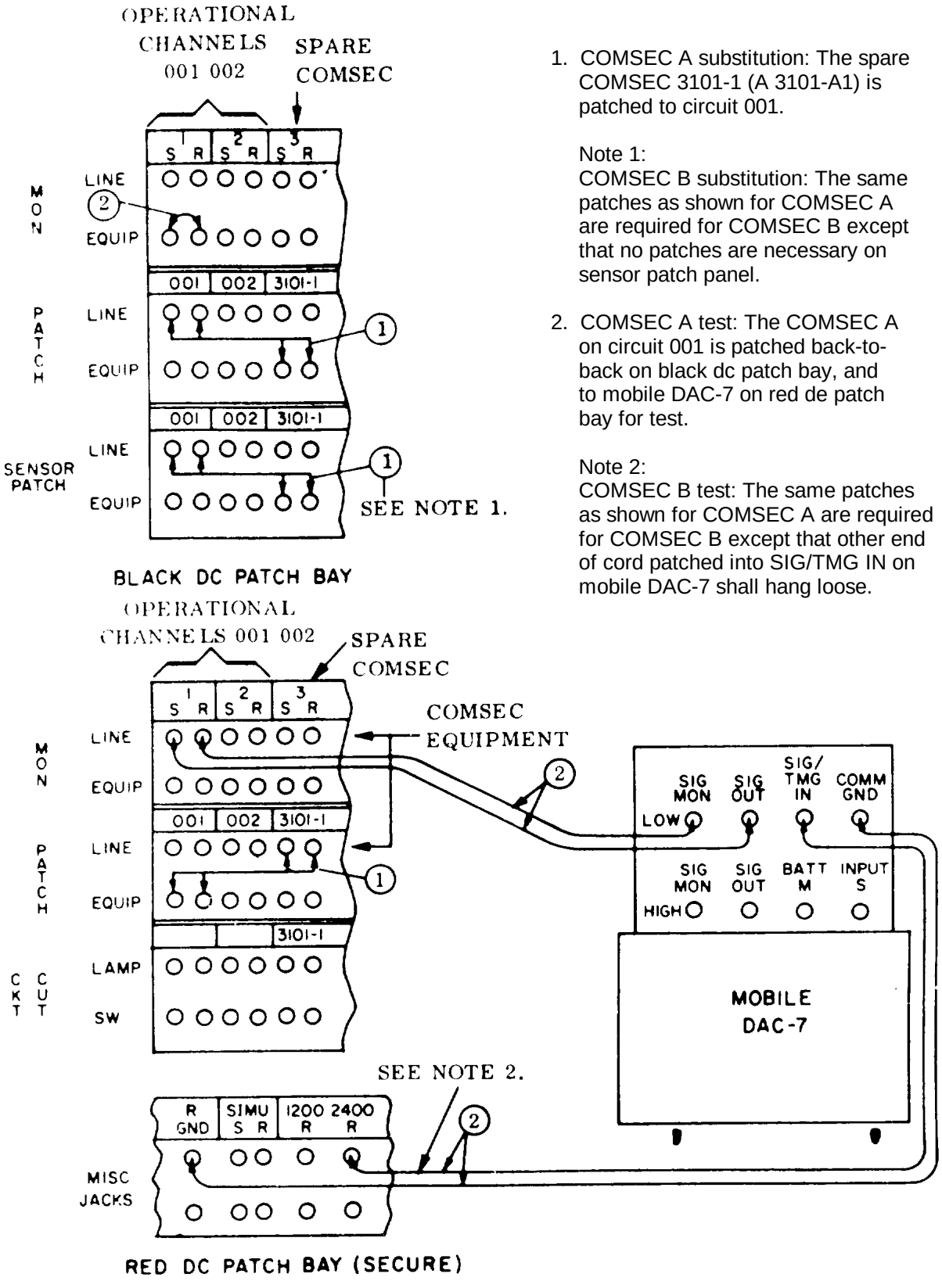
1. Channel 145 is patched to spare dc/dc signal converter pair (S and R module) No. 1-8-5 (S601-A8-5).

   Note:
   Loop resistor S 145 is in send circuit, and loop resistor R-1-8-5 is in receive circuit.

2. DC/DC signal converter is patched back-to-back on dc entrance patch bay, and is connected to DAC-7 in af/dc test facility via misc jack panels in black dc patch bay and af/dc test facility.

   Note:
   R 145 is part of high level back-to-back circuit.

Figure 2-4. Patching for DC/DC converter substitution and tests.



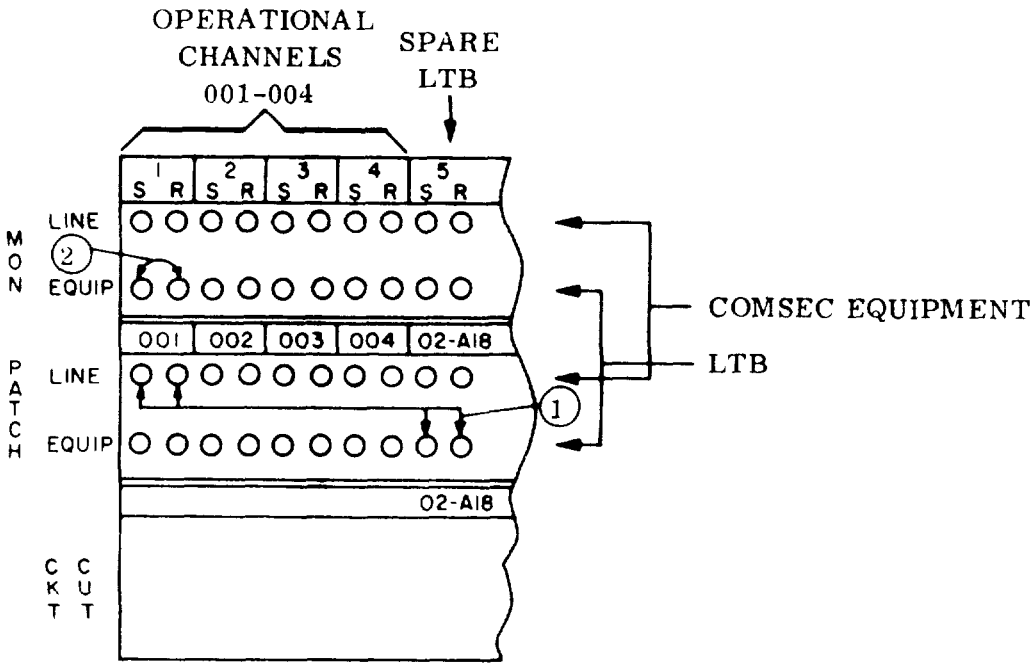
1. COMSEC A substitution: The spare COMSEC 3101-1 (A 3101-A1) is patched to circuit 001.

   Note 1:
   COMSEC B substitution: The same patches as shown for COMSEC A are required for COMSEC B except that no patches are necessary on sensor patch panel.

2. COMSEC A test: The COMSEC A on circuit 001 is patched back-to-back on black dc patch bay, and to mobile DAC-7 on red de patch bay for test.

   Note 2:
   COMSEC B test: The same patches as shown for COMSEC A are required for COMSEC B except that other end of cord patched into SIG/TMG IN on mobile DAC-7 shall hang loose.

Figure 2-5. Patching for COMSEC equipment substitution and tests.



RED DC PATCH BAY (SECURE OR DSSCS)

1. LINE 001 IS PATCHED TO SPARE LTB (02-A18).

2. LTB ON 001 IS PATCHED BACK-TO-BACK FOR TEST PURPOSES.

EL5895-391-15-TM-CI-10

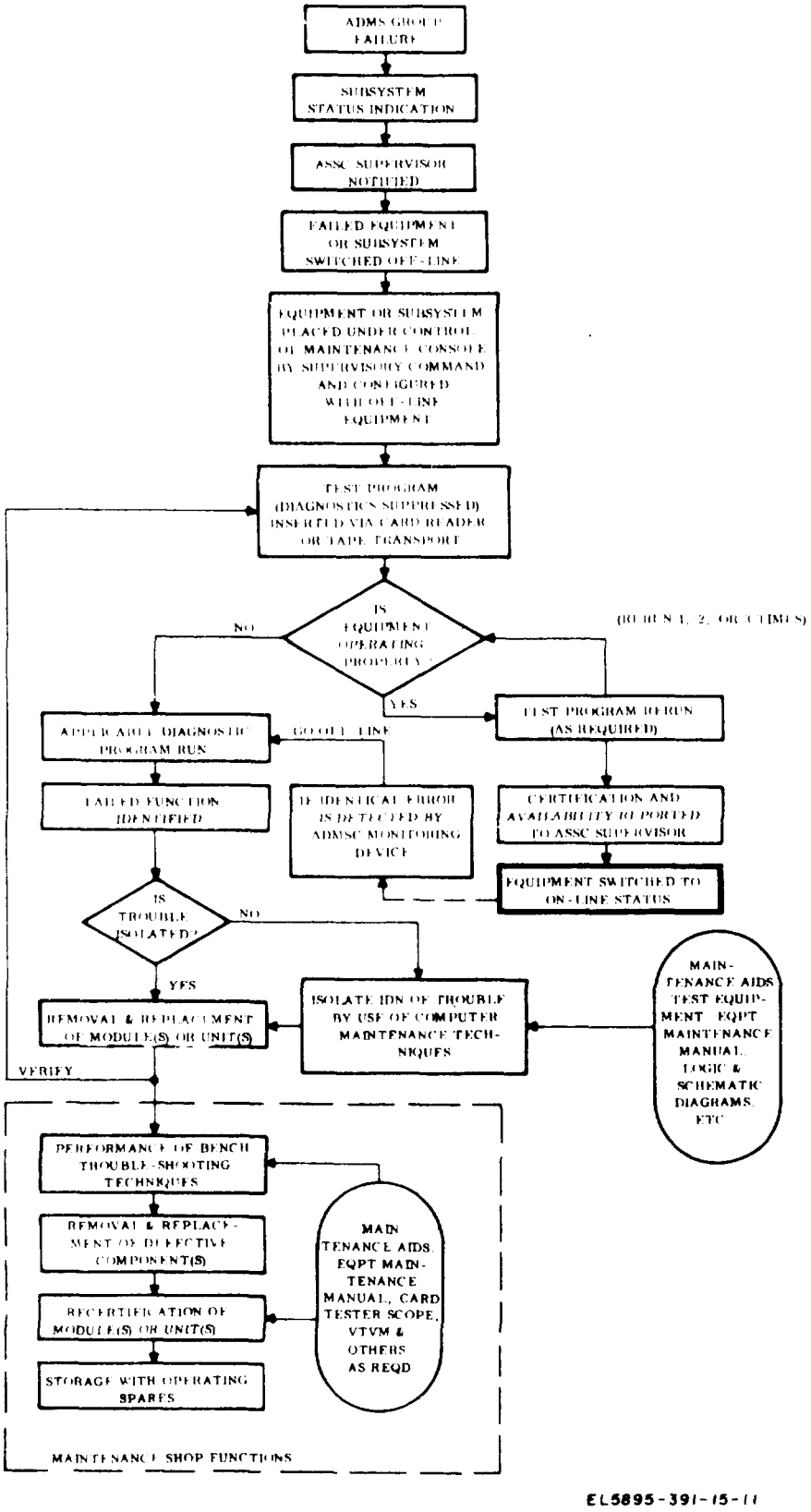


Figure 2-7. ADMS group maintenance flow chart.

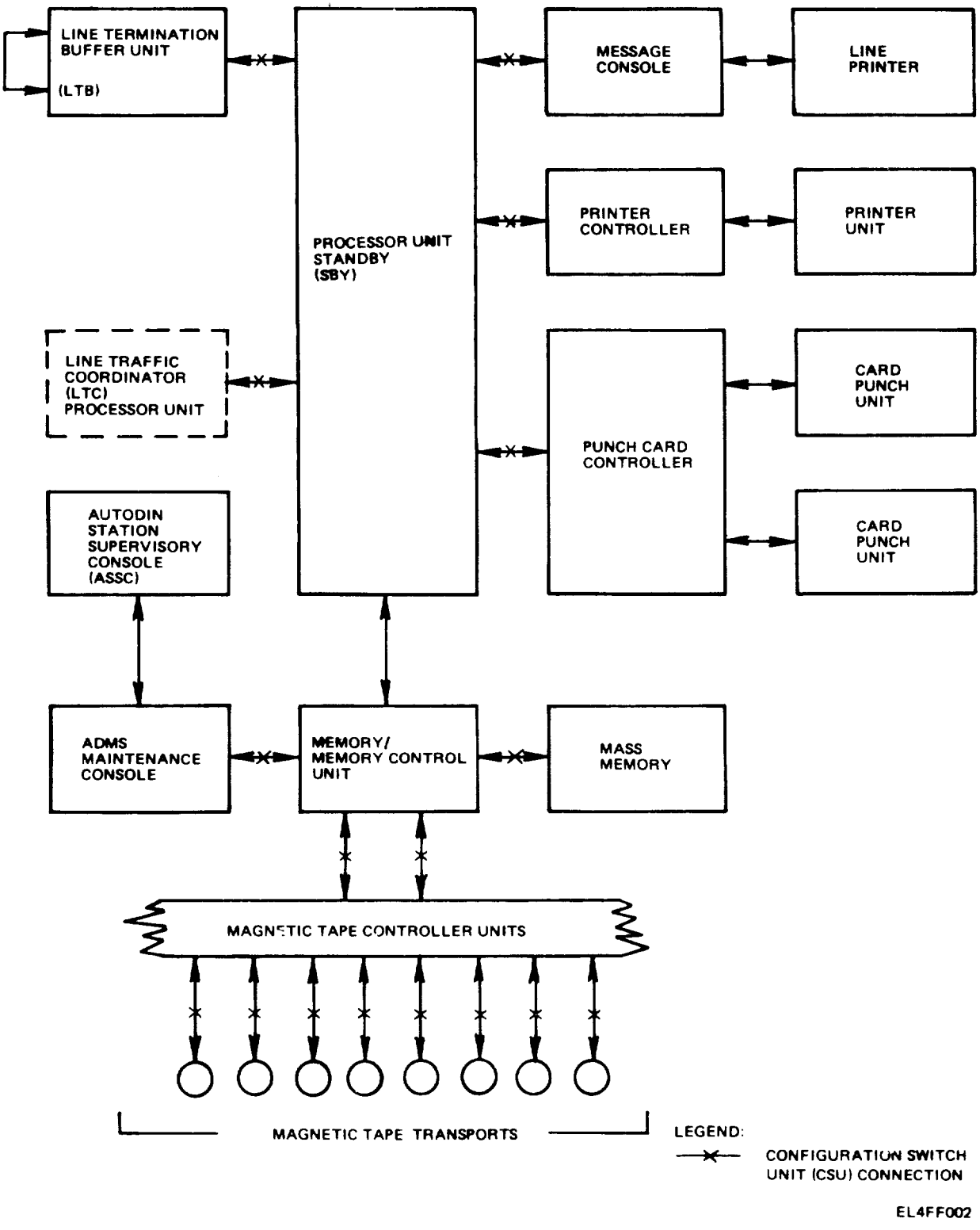


Figure 2-8. ADMS off-line maintenance configuration.

CHAPTER 3

COMSEC B ALARM SYSTEM

Section I. DESCRIPTION AND DATA

3-1. Purpose and Use

a. The purpose of the alarm sub unit and the alarm master unit is to provide the aural and visual portions of the COMSEC B alarm system.

b. The sub unit is used to indicate by means of a red lamp, and the master unit by means of a red lamp and an audible alarm, when a malfunction occurs in a. monitored equipment in the COMSEC area.

3-2. Leading Particulars

The COMSEC area equipments are monitored by the COMSEC: B alarm system. This system can have as many as 10 COMSEC B alarm units connected to each alarm sub unit, and there can be as many as 20 sub units connected to one alarm master unit. Table 3-1 lists the leading particulars of the COMSEC B alarm unit, the alarm sub unit, and the alarm master unit.

Table 3-1. Leading Particulars

	COMSEC B UNIT
Number required	1-10 per sub unit.
	SUB UNIT
Number required	1-20 per master unit.
Alarm indicator	Red incandescent lamp, 25w, 125v.
AC power requirements	120v, 60 cps.
	MASTER UNIT
Number required	1.
Alarm indicators:	
Visual	Red incandescent lamp, 25w, 125v.
Aural	AC buzzer.

3-3. Description of Equipment

a. COMSEC B Unit. The COMSEC B unit is part of each equipment to be monitored.

b. Sub Unit.

(1) The sub unit is 4 inches high, 7 inches wide, and 2 9/16 inches deep; it consists of a dc relay, it red incandescent. alarm lamp, a neon indicator, a fuse, a switch, and a taper pin block containing 10 cavities.

(2) All of the electrical components are fastened to the front panel with the exception of the alarm lamp receptacle, which is mounted on top of the enclosing case. The front panel is fastened to the case with four screws.

(3) Tile sub unit is mounted o01 the top of the cabinet o01 the aisle edge of the group of equipment to be monitored.

c. Master Unit.

(1) The master unit is 5 inches high, 8 inches wide, and 399/16 inches deep; it consists of the same components as the sub unit plus an ac relay, an ac ringer, a 6 vdc power supply, and a taper pin block containing four 20-cavity strips. In each strip the cavities are all internally common.

(2) Item (2) under the sub unit description above is also applicable to the master unit.

(3) The master unit is mounted on a partition in such a position that it is in view of, and accessible to, the operator.

Section II. OPERATION

3-4. Controls and Indicators

a. Table 3-2, which is given on the following page, provides a list and description of the functions of the controls and indicators located on the panels of each sub unit and the master unit.

b. Figure 3-1 is the front view of a COMSEC B sub unit, showing the locations of the operating controls and indicators.

c. Figure 3-2 is the front view of the COMSEC B master unit, showing the locations of the operating controls and indicators.

Table 3-2. Operating controls and indicators

Name of control or indicator	*Designation*	*Function*
SUB UNIT (See fig. 3-1.)		
ON-OFF power switch (spst toggle).	S1	Applies ac power.
AC power ON indicator (neon).	I1	Lights when dc power is applied.
Alarm indicator lamp (red incandescent lamp).	I2	Lights when alarm contacts in monitored equipment close.
MASTER UNIT (See fig. 3-2.)		
ON-OFF power switch	S1	Same as sub unit.
AC power ON indicator	I1	Same as sub unit.
Alarm indicator lamp	I2	Lights when K1 in sub unit actuates.
Audible alarm disable switch (momentary push.).	S2	Actuates K2 to disable audible alarm.

3-5. Operating Procedures

a. Preliminary Instructions.

(1) The power switches of the master unit and all sub units should be in the OFF position.

(2) The equipment to be monitored must be operating with incoming transitions from the line.

(3) AC power must be available at the input of the master unit and all sub units.

b. Starting Procedure.

(1) Place the power switch of the master unit in the ON position, and note that the neon indicator on the front panel lights.

(2) Place the power switch of each sub unit that is going to be used in the ON position, arid note that the neon indicator on the front panel lights.

c. Operating Procedure.

(1) The operating procedure for the master unit consists of monitoring the alarm indicator lamp and the audible alarm; the lamp lights and the alarm sounds when relay K1 in any sub unit closes, because of the closure of related monitor contacts.

(2) The audible alarm is disabled by pressing the non-locking, normally open push switch on the front panel of the master unit; the lamp remains lit as long as the alarm condition exists.

(3) The operating procedure for the sub units consists Of monitoring the alarm indicator lamp on each sub unit; the lamp will light (and remain lit) while the malfunction is occurring, causing the monitor contacts to close in its associated equipment.

d. Stopping Procedure. The stopping procedure consists of placing the power switch, of each unit in the OFF position.

3-6. Operation Principles

a. Refer to figure 3-3 for the circuits of the alarm units and their interconnections. The master unit contains a full-wave rectifier and filter capacitor, providing plus 6 vdc for operation of relay K1 in the master unit and K1 in the sub unit. The circuit ground return is through terminal E2 of COMSEC B.

b. A malfunction in the monitored equipment results in normally open contacts B11 and B12 of COMSEC B being shortened. This completes the circuit to signal ground and operates relay K1 of the sub unit, and provides a no transition alarm to. the channel status display console. The COMSEC B also includes normally open relay contacts B7 and B8 and A7 and A8 to provide send and receive CAU and local alarms to the channel status display console.

c. One set of contacts of relay K1 close the ac circuit to the incandescent lamp (I1), causing the lamp to light and remain lit until the fault is cleared. The other set of contacts completes the circuit of K1 of the master unit to signal ground, operating the relay.

d. The closing of the contacts of this relay completes the ac circuit through the lamp (I2) And the ringer (DS1) via the normally closed contacts of K3, causing the lamp to light and the alarm to sound.

e. To disable the audible alarm, switch S2 is pressed, energizing K2 and causing the normally closed contacts to open, breaking the ac circuit through the ringer. The normally open contacts close and complete the ac circuit, in parallel with S2. Thus, when S2 is released, K2 remains closed and the alarm is silent.

f. When the fault is cleared and the monitor contacts of COMSEC B open, K1 at the-.sub unit opens, causing the lamp to extinguish an(deenergizing master unit relay K1. When K1 is deenergized, the lamp is extinguished and K2 is deenergized.

g. The connection of the diodes in a reverse

bias direction across the coils of the dc relays (K1 in the sub unit and K1 in the master unit) absorbs the inductive surge current when the circuit to the coil is interrupted.

Section III. MAINTENANCE

3-7. General

This chapter. contains -instructions for preventive and corrective maintenance of the alarm sub unit and the alarm master unit.

Section I provides an introduction to this chapter. Section II provides 'the preventive maintenance schedules. and, procedures.

Section III provides corrective maintenance and parts location information for components of the sub unit and the master unit.

a. Test Equipment Required. The only test equipment required is Multimeter AN/PSM-6 (Simpson model 260), which, is used during corrective maintenance.

b. Preventive Maintenance Schedule. The preventive maintenance schedule for the alarm sub unit and the alarm master unit consists of wiping the panel clean occasionally and performing the alarm operation check. This check exercises all components of the COMSEC B alarm system.

3-8. Alarm Operation Check

a. Complete the circuit of a COMSEC B alarm to ground; the following sequence of events should occur:

(1) The alarm indicator lamp should light at the associated sub unit.

(2) The alarm indicator lamp should light and the audible alarm, should sound at the master, unit.

(3) Momentary operation of the cutoff switch should silence the alarm,.

(4) The lamps should remain lit until the circuit of the COMSEC B alarm is opened.

b. Repeat this procedure for each COMSEC B alarm.

3-9. Corrective Maintenance

a. Corrective maintenance is unscheduled maintenance which is required to correct an equipment malfunction or failure.

b. No calibration or alignment is required for the COMSEC B alarm system'

c. Parts location for the components of the sub unit and the master unit is shown at the end of this section.

d. Figure 3-3 shows that the master unit, in conjunction with one to twenty sub units, comprises the indicating portions of the .COMSEC B alarm system. Each sub unit is connected to one to ten normally open alarm contacts in parallel.

Warning: 120 vac is present on TB2 and other internal points of the alarm sub unit and the alarm master unit. Use caution when working on the panel assembly when it is removed from the case.

e. To obtain access to any of the components or cable connections within either unit, remove the screws from the front panel to permit withdrawal.

f. To replace a relay. pull the retaining spring to one side by exerting an upward and sideways pressure, and pull the relay from the socket.

g. To remove th6 panel, assembly completely, unfasten the connections to the screw terminals, and extract the taper pins from their wells. Remove the alarm lamp and unscrew the collar of the receptacle from the top of the case.

h. Corrective maintenance can be performed on the sub unit and the master unit in-circuit by simulating an alarm condition. Figure 3-3 shows that jumping terminals 1 and 5 of sub unit terminal board TB1 completes the sub unit dc relay K1 circuit to ground, initiating the alarm sequence.

i. Table 3-3 lists a methodical procedure for corrective maintenance that will quickly isolate the trouble to the dc or ac port ions of the alarm units.

j. Refer to figures 3-4 and 3-5 for the sub unit and the master unit parts locations.

Table 3-3. Corrective Maintenance Procedure

Symptom	*Cause*	*Remedy*
A. Sub unit ac indicator (neon lamp) I1 does not light when power switch SI is placed in ON position.	(1) No ac power	Check for ac at TB2 pins 1 and 2.
	(2) Open fuse F1	Replace.
	(3) Faulty neon lamp I1	Replace.
	(4) Open 33K resistor or faulty wiring.	(a) Check for 120 vac between TB2 terminal No. 1 through both sides of 33K resistor to one side of I1. (b) Take appropriate action.
	(5) Faulty switch S1 or faulty wiring.	(a) Check for 120 vac between TB2 terminal No. 2 through both sides of S1 and F1 to one side of I1 and one side of I2. (b) Take appropriate action.
B. Sub unit alarm indicator lamp I2 does not light under alarm condition.	(1) Lamp burned out	Replace lamp.
	(2) Relay K1 not energized	(a) Replace relay. (b) Check for 6 vdc between terminals 3 and 4 of TB1I. If there is no voltage, the trouble is in alarm master unit diode CR1 or the COMSEC B alarm.
	(3) Diode CR1 shorted	(a) Place S1 in OFF position; then remove relay and taper pins 1 and 3 of TB1, and make continuity check across diode (use R x 100 scale). (b) If diode is faulty, replace.
	(4) Faulty COMSEC B alarm	Short contact 1 of TB1 to ground. If the indicator lights, the trouble is in the COMSEC equipment or the wiring between the COMSEC B alarm and the sub unit.
C. Master unit ac indicator (neon lamp) does not light when power switch S1 is placed in ON position.	Same as items A(1) through A (5) of sub unit.	
D. Master unit alarm indicator lamp I2 does light and ringer DS1 does not ring under an alarm condition.	(1) Relay KI not energized	(a) Replace relay. (b) Check for 6 vdc between No. 2 block (red) and No. 3 block (orange) of TB1, and between No. 1 block (brown) and No. 2 block. (c) If there is no 6 vdc, check rectifier. (d) Complete ground return by shorting No. 1 block of TB1 to ground. If the relay closes and the ringer and indicator lamp operate, the trouble is in the sub unit.
	(2) Diode CR1 shorted	(a) Place S1 in OFF position; then remove relay K1 and remove taper pins connecting K1 to TB1. (b) Make resistance check across diode (use R x 100 scale). (c) If diode is faulty, replace.
	(3) Faulty rectifier (no output voltage).	(a) Check for 120 vac input. (b) Place S1 in OFF position; then make resistance check across diodes (use R x 100 scale). (c) If diodes are faulty, replace. (d) Make resistance check across capacitor C1 (use R x 1000 scale). (e) If capacitor is faulty, replace. (f) Make resistance check of transformer T1.
E. Alarm is not silenced when push-button switch S2 is pressed.	Relay K2 not energized	(a) Replace relay. (b) Short contacts of S2. (c) If relay actuates, replace switch.

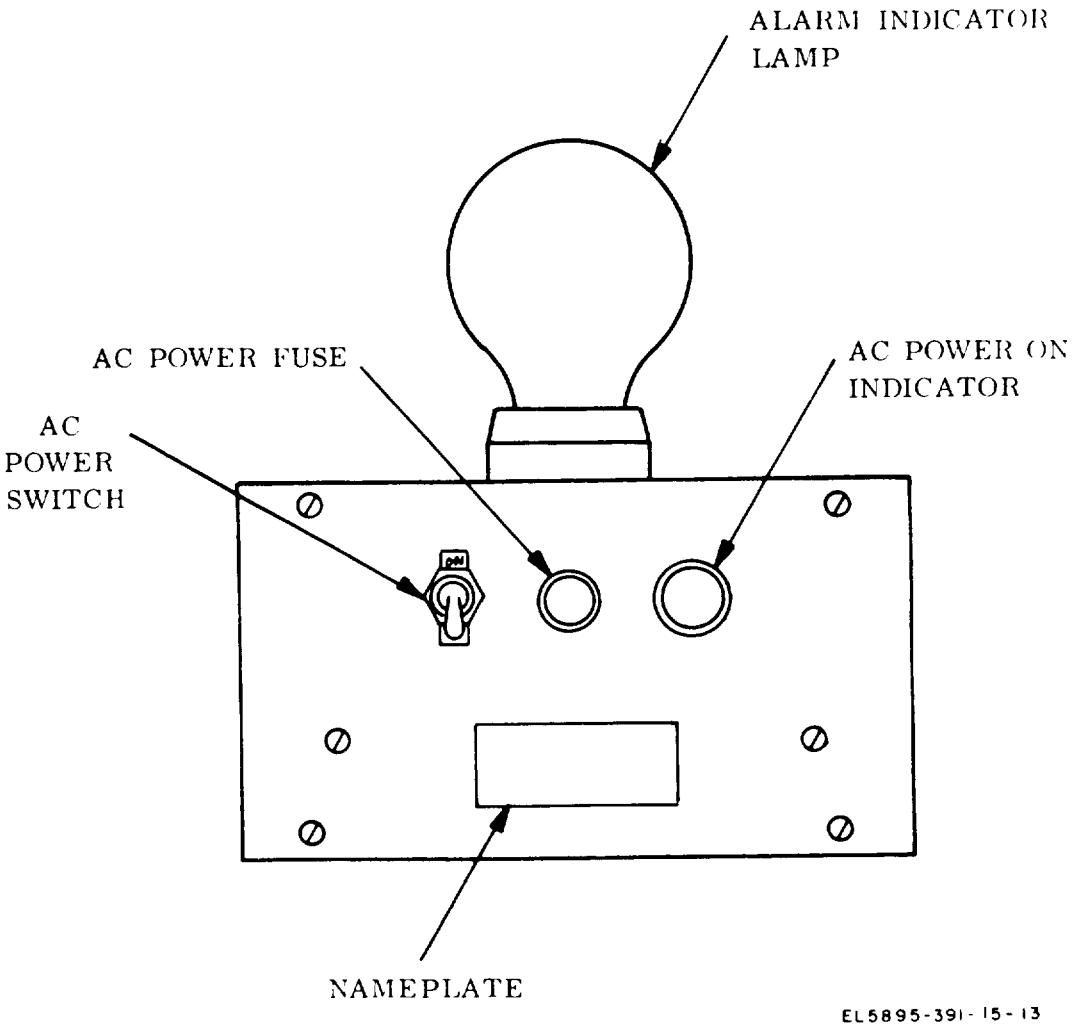


Figure 3-1. COMSEC B alarm system, sub unit, front view.

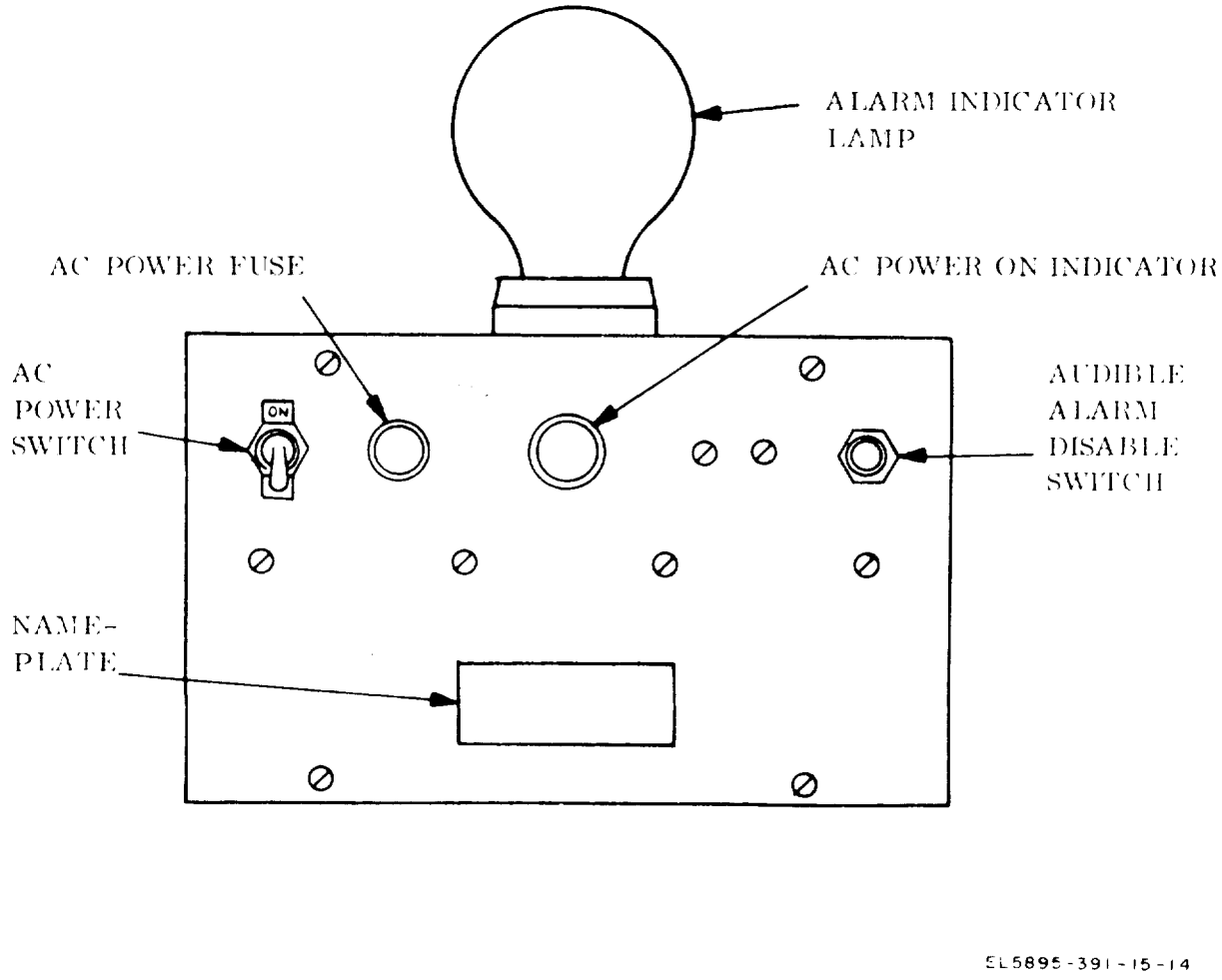
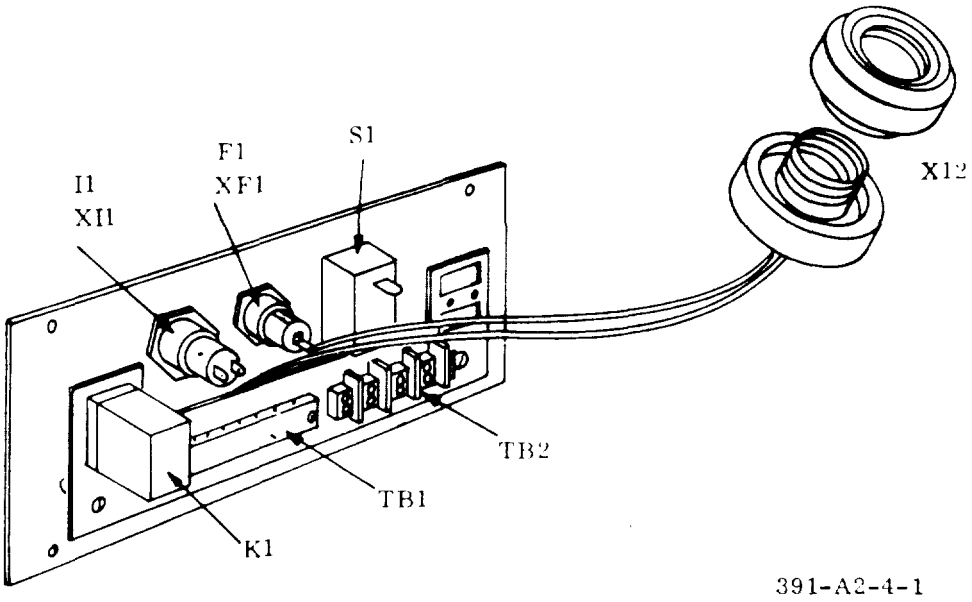


Figure 3-2. COMSEC B alarm system, master unit, front view.



Designation	Component description
F1	Fuse, quick-blowing type, 1.0 amp, 250 volts, 1/4" dia x 1-1/4" long
K1	Relay, plug-in, miniature, dustproof, coil resistance 390 ohms ±5%; must operate 13.0 ma 2 form 2 contacts
I1	Lamp, neon, miniature bayonet base
S1	Switch, toggle, spst
TB1	Terminal connector block, taper-pin, 10 cavities, insulated
TB2	Terminal strip, barrier type, 3 #5-40 binder head' screw terminals spaced 3/8"- with rear solder lugs
XF1	Fuse holder (1/4" x 1-1/4" fuse); with extractor post
XI1	Indicator light holder
XI2	Lamp socket, medium screw base, wire leads

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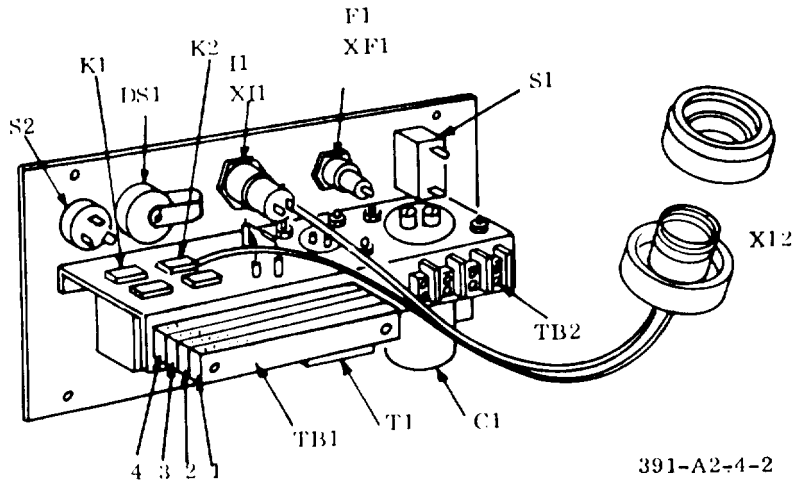
Figure 3-4. COMSEC B alarm system, ,sub unit, parts location.



Designation	Component description
C1	Capacitor, fixed electrolytic, 3200 μf, 10 vdc
DSI	Buzzer, ac-operated
F1	Same as sub unit
K1	Same as sub unit
K2	Relay, plug-in, miniature, dustproof, 115-vac coil. 2 form C contacts
I1	Same as sub unit
S1	Same as sub unit
S2	Push switch, non-locking, normally open
T1	Power transformer, primary 120 volts 110%, 60 cps 12.5%; secondary to produce 6.6 vdc at 30 ma via full-wave rectifier & center tap, with single capacitor filter, 3200 μf
TB1	Terminal connector block, taper-pin, 20 cavities, all common (brown, red, orange, yellow)
TB2	Same as sub unit
XI1	Same as sub unit
XI2	Same as sub unit
XF1	Same as sub unit

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Figure 3-5. COMSEC B alarm system, master unit, parts location.

APPENDIX A

REFERENCES

ACP-117	Allied Routing Indicator Book.
ACP-121	Communications Instruct ions-General.
ACP-127	Communications Instructions Tape Relay Procedures.
ACP-127, US SUPP-1	Communications Instructions Tape Relay Procedures.
ACP-127, US SUPP-2	Communications Instructions Tape Relay Procedures.
ACP-131	Communications Instruct ions-Operating Signals.
AFM 66-1	Maintenance Management.
AR 320-50	Authorized Abbreviations and Brevity Codes.
Commercial Literature	Test Equipment for Automatic Digital Message Switching Centers AN/ FYQ-42 (V) 1 through AN/FYQ42 (V) 12 and AN/FYQ-42 (V) T1.
DA Pam 310-4	Index of Technical Manuals, Technical Bulletins, Supply Manuals (types 7, 8, and 9), Supply Bulletins and Lubrication Orders.
DA Pam 310-7	U.S. Army Equipment. Index of Modification Work Orders.
DCAC 55-5	Operational Direction Manual of the Defense Communications System (DCS).
DCA CIRCULAR 310-D70	DCS AUTODIN General Description.
DCAC 310-D70-36	DCS Autodin Description of the Test and Diagnostic Program
DCAC 310-D70-41	DCS Autodin Utility Programs
DECEO ENGR PUB H500-3-65	DCS AUTODIN Interface and Control Criteria.
DD1 Manual.	Automatic Digital Message Switch (ADMS) Programer's Reference
DD-2, -3	Utility Programs, Utility System, Service Routines, Shal-a Assembly Program.

DDG	Data Dictionary.
DD7	Detailed Description of the Operational Program.
DD8	Off-Line Routines Operating Instructions.
DD9	Program Listings (Code Edits).
DD10a Part I and II	Operational Program Flowcharts.
DD10b	Utility Programs Flowcharts.
JANAP 128	Digital Network (AUTODIN) Operating Procedures.
TM 11-5895-402-15/1 NAVSHIPS 0967-301-0505 TO 31S5-2FY A10-11-1	Operator, Organizational, DS,GS, and Depot Maintenance Manual, Printed Circuits for Automatic Digital Message Switching, Groups AN-/FYA.-10(V)1 Through AN/FYA-10(V)7 and AN/FYA-10 (V)3T1 (Pat I of II).
TM 11-5895-402-15/2 NAVSHIPS 0967-301-5060 TO31S5-2FYA10-11-2	Operator, Organizational, DS, GS, and Depot Maintenance Manual, Printed circuits for Automatic Digital Message Switching. Groups AN/FYA-10(V) 1 Through AN/FYA-10(V)7 and AN/FYA-10 (V)T1 (Part II of II).
TM 11-5895-404-15/1 NAVSHIPS 0967-301-5090 TO 31S5-2FYA10-31-1	Operator, Organizational, DS, GS, and Depot Maintenance Manual, Console, Maintenance OK-50,/FYA 10(V) (Part I of II).
TM 11-5895-404-15/2 NAYSHIPS 0967-301-5110 TO 31S5-2FYA10-31-2	Operator, Organizational, DS, GS, and Depot Maintenance Manual, Console, Maintenance OK-50,/FYA 10(V) (Part II of II).
TM 11-5895-405-15/1 NAVSHIPS 0967-301-5110 TO 31S5-2FYA10-41-1	Operator, Organizational, DS, GS, and Depot Maintenance Manual, Monitor Assemblies, Control-Sensing OK-33/FYA 10(V) and OK-38/FYA-10(V) and Switching Unit Distribution SA-1537/FYA-10(V) (Part I of II).
TM 11-.5895-405-15/2 NAVSHIPS 0967-301-5120 TO 31S5-2FYA10-41-2	Operator, Organizational, DS, GS, and Depot Maintenance Manual, Monitor Assemblies, Control-Sensing OK-33/FYA 10(V) and OK-38/FYA-10(V) and Switching Unit Distribution SA-1537/FYA-10(V) (Part II of II).

TM 11-5895-406-15/1 NAVSHIPS0967-301-5130 TO 31S5-2FYA10-51-1	Operator, Organizational, DS, GS, and Depot Maintenance Manual, Processor Unit OL-9/FYA-10(V)(Part I of II).
TM 11-5895-406-15/2 NAVSHIPS0967-301-5140 TO 31S5-2FYA10-15/2	Operator, Organizational, DS, GS, and Depot Maintenance Manual, Processor Unit OL-9/FYA-10(V)(Part II of II).
TM 11-5895-407-15/1 NAVSHIPS0967-301-5150 TO 31S5-2FYA10-61-1	Operator, Organizational, DS, GS, and Depot Maintenance Manual, Line Termination Buffer Unit OA-8299(P)/-FYA-10(V)(Part I of II).
TM 11-5895-407-15/2 NAVSHIPS0967-301-5160 TO 31S5-2FYA10-61-2	Operator, Organizational, DS, GS, and Depot Maintenance Manual, Line Termination Buffer Unit OA-8299(P)/-FYA-10(V)(Part II of II).
TM 11-5895-408-15/1 NAVSHIPS0967-301-5170 TO 31S5-2FYA10-71-1	Operator, Organizational, DS, GS, and Depot Maintenance Manual. Control Groups, Magnetic Tape OK-30/FYA-10(V) and OK-36/FYA-10(V)T1 (Part I of II).
TM 11-5895-408-15/2 NAVSHIPS0967-301-5180 TO 31S5-2FYA10-71-2	Operator. Organizational, DS, GS, and Depot Maintenance Manual, Control Groups, Magnetic Tape OK-30/FYA-10(V) and OK-36/FYA-10(V)T1 (Part II of II).
TM 11-5895-410-15 NAVSHIPS0967-301-5190 TO 31S5-2FYQ42-151	Operator, Organizational, DS, GS, and Depot 'Maintenance Manual, Filter, Isolation, and Converter Units for Automatic Digital Message Switching Centers AN/FYQ-42(V)1 Through AN/FYQ-42(V)12 and AN/FYQ-42(V)T1.
TM 11-5895-411-15 NAVSHIPS 0967-301-5200 TO 31S5-2FYM22-1	Operator, Organizational, DS, GS, and Depot Maintenance Manual, Test Set, Electronics AN/FYM-22.
TM 11-5895-413-15/1 NAVSHIPS 0967-301-5210 TO 31S5-2FYQ42-161-1	Operator, Organizational, DS, GS, and Depot Maintenance Manual, Station Timing Units TD-863/FYA-11, TD-865/-FYA-12, TD-866/FYA-13, TD-867/FYA-14, TD-868/-FYA-15, TD 870/FYA 16, TD-871/FYA-17, TD 872/FYA-31, TD-873/FYA-19, TD-P76/FYA-20, TD-877/FYA-21, TD-878/FYA-22, and TD-879/FYA-T1, Overall Functional Description (Part I of III).
TM 11-5895-413-15/2 NAVSHIPS 0967-301-5220 TO 31S5-2FYQ42-161-2	Operator, Organizational, DS, GS, and Depot Maintenance Manual, Station Timing Units TD-863/FYA-1, TD-865/-FYA-12, TD-866/FYA-13, TD-867/FYA-14, TD-868/-FYA-15, TD-870/FYA-16, TD-871/FYA-17, TD-872/-FYA-18, TD-873/FYA-19, TD-876/FYA-20, TD-877/-FYA-21, TD-878/FYA-22, and TD-879/FYA-T1, Operation and Maintenance (Part II of III).
TM 11-5895-413-15/3 NAVSHIPS 0967-301-5230 TO 31S5-2FYQ42-161-3	Operator, Organizational, DS, GS, and Depot Maintenance Manual, Receiver-Phase Comparator CM-364/G (Part III of III).
TM 11-5895-414-15 NAVSHIPS 0967-301-5260 TO 31S5-2FYQ42-171	Operator, Organizational, DS, GS, and Depot Maintenance Manual, System Distribution and Patching Equipment for Automatic Digital Message Switching Centers AN/FYQ-42(V)1 Through AN/FYQ-42(V)12 and AN/FYQ-42(V)T1.
TM 11-5895-415-15 NAVSHIPS 0967-301-5270 TO 31S5-2FYA-111	Operator, Organizational, DS, GS, and Depot Maintenance Manual, Interconnecting Units, AUTODIN-AUTOVON AN /FYA-:32, AN/FYA-33, AN/FYA-53, AN/FYA-54, ON-41/FYA-19, ON-52/FYA-T1 and ON-53/FYA-T1.
TM 11-5895-116-15 NAVSHIPS 0967-301-5280 TO 31S5-2FYA-131	Operator, Organizational, DS, GS, and Depot Maintenance Manual, Intercommunication Sets AN/FYA-34 and AN/-FYA-55.

TM 11-5895-417-15 NAVSHIPS0961-301-5290 TO 31S5-2FY-111	Operator, Organizational, DS, OS, and Depot Maintenance Manual, :Consoles, Monitor-test AN/FYM-23, AN/FYM-24. AN/FYM-25, and OJ-57/FYA-T1 and Switching Units, Monitor-Test Console SA-1560/FYA, SA-1561/FYA, and SA-1565/FYA-10(V).
TM 11-5895-418-15 NAVSHIPS0967-301-5300 TO 31S5-2FYA10-81	Operator, Organizational, .DS, GS, and Depot Maintenance Manual'Recorder-Reproducer, Signal Data R-D-304/-PYA-10(V).
TM 11-5895-419-15 NAVSHIPS0967-3601-5310 TO 31S5-4-57-1	Operator, Organizational, .DS, GS, and Depot, Maintenance Manual, Signal Level Converters (Philco Part Nos. 100000175, 100000176, and 100000177) for Teletypewriter Set Models 28 ASR (Teletypewriter Set AN/FGC-131), 28 KSR Fixed) (Teletypewriter Set AN/FGC-1321. And 28 KSR (Mobile) (Teletypewriter Set .AN/FGC-130).
TM 11-5895-420-15/1 , NAVSHIPS0967-301-5320 TO 31S5-2FYA10-91-1	Operator, Organizational, DS, GS, and Depot Maintenance Manual, Control Group. Peripheral Input-Output -OK-31/-FYA-10(V) and OK-37/FYA-10(V)T1 (Part I of II).
TM 11-5895-420-15/2 NAVSHIPS0967-301-5330 TO 3195-2FYA10-91-2	Operator, Organizational, DS, GS, and Depot Maintenance Manual. Control Group.Peripheral Input-Output OK-31/-FYA-10(V) and OK-37/FYA-10(V)T1 (Part II of II).
TM 11-5895-421-15/1 NAVSIIPS0967-301-5340 TO 31S5-2FYA 10-101-1	Operator, Organizational, DS, GS, and Depot Maintenance Manual, Card Punch Unit RO-328/FYA-10(V)(Part I of II).
TM 11-5895-421-15/2 NAVSHIPS0967-301-5360 TO 31S5-2FYA10-101-2	Operator, Organizational, DS, GS, and Depot -Maintenance Manual, Card Punch Unit RO-328/FYA-10(V)(Part II of II).
TM 11-5895-422-15/1 NAVSHIPS0967-301-5360 TO 31S5-2FYA10-111-1	Operator, Organizational, DS, GS, and Depot Maintenance Manual, Card Reader Unit RP-165/FYA-10(V)(Part I of II).
TM 11-58956-422-15/2 NAVSHIPS0967-301-5370 TO 31S5-2FYA10-111-2	Operator, Organizational DS, GS, and Depot Maintenance Manual, Card Reader Unit RP-165/FYA-10(V)(Part II of II).
TM 11-5895-423-15 NAVSHIPS0967-301-5380 TO 31S5-2FYA10-121	Operator Organizational DS, GS, and Depot Maintenance Manual, Printer Unit RP-164/FYA-10(V).
TM 11-5895-424-14-1 NAVSHIPS0967-301-5390 TO 31S5-2FJQ-101-1	Operator, Organizational, DS, GS, and Depot Maintenance Manual Power Plants, Electrical AN/PJQ-4 Through AN/FJQ 15. (Part I of II).
TM 11-5895-424-15/2 NAVSHIPS0967-301-5400 TO 31S5-2FJQ-101-2	Operator, Organizational, DS, GS, and Depot Maintenance Manual, Battery Sets BB-631/FJQ and BB-632 /FJQ (Part II of II)
TM 11-5895-495-15 NAVSHIPS0967-301-5420 TO 31S5-2FYA10-131	Operator, Organizational, DS, GS, and Depot Maintenance Manual. Switching Units for Automatic Digital Message Switching Groups AN/FYA-10(V) 1 Through AN/FYA-10(V)7 and AN/FA10(V)T1.
TM 11-5895-426-15 NAVSHIPS0967-301-5430 TO 31S5-2FYA-141	Operator, Organizational, DS, GS, and Depot Maintenance Manual, Power Supply Sets OP-20/FYA-11, OP-24/FYA-12. OP-22/FYA-13 OP-27/FYA-14, OP-28/FYA-15. OP-29/FYA-19, AN/FYA-59, AN/FYA-62 and Power Supplies PP-4827/G and PP 4828/G.
TM 11-5895-127-15 NAVSHIPS0967-301-5440	Operator, Organizational, DS, GS, and Depot Maintenance Manual, Signal Level Converters (Philco Part Nos. 100000178

TO 31S5-4-58-1	and 100000559) for Teletypewriter TD-47D/UG, Teletypewriter Set -Model 35 ASR, and Teletypewriter Sets AN/FGC-58 and AN/FGC-79.
TM 11-5895-428-15 NAVSHIPS 0967-301-5450 TO 31S5-2FYA-101	Operator, Organizational, DS. GS, and Depot Maintenance Manual, Telephone Sets TA-764/FYA and TA-765/G.
TM 11-5895-512-15/1 NAVSHIPS 0967-301-5460 TO 31S5-2FYA10-141-1	Operator, Organizational, DS, GS, and Depot Maintenance Manual, Consoles, Station Supervisory OJ-49/FYA-10(V) and OJ-51/FYA-10(V)(Part I of II).
TM 11-5895-512-15/2 NAVSHIPS0967-301-5470 TO 31S5-2FYA10-141-2	Operator, Organizational, DS, GS, and Depot Maintenance Manual, Consoles, Station Supervisory OJ-49/FYA-10(V) and OJ-51/FYA-10(V)(Part II of II).
TM 11-5895-513-15/1 NAVSHIPS 0967-301-5480 TO 31S5-2FYA10-151-1	Operator, Organizational, DS, GS, and Depot Maintenance Manual, Control Group Magnetic Drum OK-32/FYA-10(V) and Magnetic Drum OA-8285/FYA-10(V)1 (Part I of II).
TM 11-5895-513-15/2 NAVSHIPS0967-301-5490 TO 31S5-2FYA10-151-2	Operator, Organizational, DS, GS, and Depot Maintenance Manual, Control Group Magnetic Drum OK-32/FYA-10(V) and Magnetic Drum OA-8285/FYA-10(V)(Part II of II).
TM 11-5895-527-15 NAVSHIPS 0967-301-5500 TO 31S5-2FYA-121	Operator, Organizational, DS, GS, and Depot Maintenance Manual, Consoles, Channel Status Display AN/FYA-36, AN/FYA-37, AN/FYA-45, AN/FYA-46, and OJ-56/FYA-T1.
TM 11-5895-552-15/1 NAVSHIPS0967-301-5510 TO 31S5-2FYA10-161-1	Operator, Organizational, DS, GS, and Depot Maintenance Manual, Power Supplies, for Automatic Digital Message.; Switching Groups AN/FYA-10(V)1 Through AN/FYA-10(V)7 and AN/FYA-10OV)T1 (Part I of III).
TM 11-5895-552-15/2 NAVSHIPS0967-301-5520 TO 31S5-2FYA10-161-2	Operator, Organizational, DS, GS, and Depot Maintenance Manual, Power Supplies for Automatic Digital Message Switching Groups AN/FYA-10(V)1 Through AN/FYA-10(V)7 and AN/FYA-10(V)T1 (Part II of III).
TM 11-5895-552-15/3 NAVSHIPS0967-301-5530 TO 31S5-2FYA10-161-3	Operator, Organizational, DS, GS, and Depot Maintenance Manual, Power Supplies for Automatic Digital Message-Switching Groups AN/FYA-10(V)1 Through AN/FYA-10(V)7 and AN/FYA-10(V)T1 (Part III of III).
TM 11-5895-554-15/1 NAVSHIPS0967-301-5540 TO 31S5-2FYA10-171-1	Operator, Organizational, DS, GS, and Depot Maintenance Manual, Printed Circuit Card Tester for Automatic Digital Message Switching Groups AN/FYA-10(V)1 Through AN/-FYA-10(V)7 and AN/FYA-10(V)T1 (Part I of III).
TM 11-5895-554-15/2 NAVSHIPS0967-301-5550- TO 31S5-2FYA10-171-2	Operator, Organizational, DS, GS, and Depot Maintenance Manual, Printed Circuit Card Tester for Automatic Digital Message Switching Groups AN/FYA-10(V)1 Through AN/-FYA-10(V)7 and AN/FYA-10(V)T1 (Part II of III).
TM 11-5895-554-15/3 NAVSHIPS 0967-301-5560 TO 31S5-2FYA10-171-3	Operator, Organizational, DS, GS, and Depot Maintenance Manual, Printed Circuit Card Tester for Automatic Digital Message Switching Groups AN/FYA-10(V)1 Through AN/-FYA-10(V)7 and AN/FYA-10(V)T1 (Part III of III).
TM 11-5895-734-15 NAVSHIPS 0967-878-2010 TO 31W2-1-451	Operator, Organizational, DS, GS, and Depot Maintenance Manual, Console Maintenance OJ-175/FYA-10(V)
TM 11-5895-747-15/1 NAVSHIPS0967-372-7010 TO 31S5-2FYQ42-181-1	Operator's, Organizational, DS, GS, and Depot Maintenance Manual Data and Wiring List for Automatic Digital Message Switching Groups AN/FYA-10(V)1 Through AN/FYA-10(V)7 and AN/FYA-10(V)T1 of Automatic Digital Message Switching Centers AN/FYQ-42(V)1 Through AN/FYQ-42(V)12 and

	AN/FYQ-42(V)T1 (Part I of II).
TM 11-5895-747-15/2 NAVSHIPS967-372-7020 TO 31S5-2FYQ42-181-2	Operator's, Organizational, DS, GS, and Depot maintenance, Manual Data and Wiring List for Automatic Digital Message Switching Groups AN/FYA-10(V)1 Through AN/FYA 10(V)7 and AN/FYQ-10(V)T1 of Automatic Digital Message Switching Centers AN/FYQ-42(V)1 Through AN/FYQ-42(V)12 AN/FY-42(V)T1 (Part II of II).
TM 11-589510-14 NAVELEX 0967-454-0020/ TO 31S5-2FYQ-191	Operator, Organizational, DS, and GS Maintenance Manual, Power Supply Sets OP-85(V)1/FYQ Through OP-85(V)11/FYQ and Electrical Dummy Load DA-649/FYQ
TM 11-5895-838-14	Operator's, Organizational, Direct Support, and General Support Maintenance Manual Printer, Line RP-224/U
TM 11-5895-839-14	Operator's, .Organizational, Direct Support, and General Support Maintenance Manual Console, Message OJ-347/FYA 10(V)
TM 11-5895-840-14	Operator's, Organizational, Direct Support, and General Support Maintenance Manual; Disc Memory Unit MU-61 7/FYA-10(V)
TM 11-5895-841-14	Operator's, Organizational, Direct -Support, and General Support, Maintenance Manual, Console, Maintenance Support OJ-346/ FYA-10(V)
TM 11-5895-1016-14/1	Operator's, Organizational, Direct Support, and General Support: Maintenance Manual, Memory Storage and Control Group OA-8945/FYA-10(V)
TM 11-5895-101 6-14/2	Operator's, Organizational, Direct Support, and General Support Maintenance Manual, Memory Storage and Control Group OA-8945/FYA-10(V),.
TM 38-750	The Army maintenance Management System (TAMMS).
TO-00-25-234	General Shop, Practice Requirements for the Repair, Maintenance and Tests of Electronic Equipment.
TO-0-1-01N	Numerical Index and Requirements Tables; Numerical Index, Alphabetical Indexes and Cross Reference Table Technical Orders (ADP Category, 00).
TO-31-1-75	Maintenance .Engineering Standard General Maintenance Practices
398-10375-10	Assembly Program, 200 SHAL-D.

APPENDIX B

MAINTENANCE ALLOCATION

Section I. INTRODUCTION

B-1. General

This appendix summarizes maintenance operations covered in the equipment literature for Automatic Digital Message Switching Centers AN/FYQ42 (V)1 through AN/FYQA42 (V) 12 and AN/FYQ42 (V)T1. It defines the level of maintenance to be performed on-site and the tools and test equipment required to support this level of maintenance.

B-2. Explanation of Format for Tool and Test Equipment Requirements

a. Tools and Test Equipment. The tools and test equipment listed in Section III have been issued to each Automatic Digital Message Switching Center (ADMSC) site to support, on-site maintenance by the U.S. Army, U.S. Navy, or U.S. Air Force operating organizations. Specific tools and test equipment required for maintenance of equipment required for maintenance of equipment end items in the ADMS are detailed in the technical literature covering the end item.

b. Site Requirements. These columns indicate the number of tools and test, equipments placed on each site as initial issue.

Section II. MAINTENANCE ALLOCATION

B-3. ADMSC Equipment

On-site maintenance of Automatic Digital Message Switching Centers AN/FYQA2(V)1 through AN/FYQ-42(V)12and AN/FYQ-42 (V)T1 (contractor furnished equipment) will be performed by assigned maintenance personnel to include functions equivalent to General Support level, utilizing authorized tools and test equipment listed iii Section III. The scope of maintenance includes test, adjustment, alignment, repair and ,of equipments, and components thereof, comprising the AN/FYQ42(V)1 through AN/FYQ,A-42(V)12 and A/FYQ42(V)T1, as indicate in the applicable technical literature. Highly specialized subassemblies or equipment requiring overhaul by the original manufacturer will be replaced on-site and evacuated to a depot for return to the manufacturers in accordance with procedures outlined in the Autodin Overseas Logistic Support Plan (LSP).

B-4. General Purpose Equipment

The general purpose equipment Government, Furnished Equipment (GFE)) installed at ADMSC sites will be maintained through General Support level in accordance with applicable technical literature, utilizing authorized tools and test equipment listed in Section III. Repairables reing depot overhaul will be evacuated to mission support depots as indicated in the LSP.

SECTION III - TOOL AND TEST EQUIPMENT REQUIREMENTS (Continued)

ITEM NO.	DESCRIPTION	MANUFACTURER		FEDERAL STOCK NUMBER	ADMSC SITE REQUIREMENTS												
		NAME	PART/MODEL/TYPE NUMBER		AN/FYQ-42(V)1	AN/FYQ-42(V)2	AN/FYQ-42(V)3	AN/FYQ-42(V)4	AN/FYQ-42(V)5	AN/FYQ-42(V)6	AN/FYQ-42(V)7	AN/FYQ-42(V)8	AN/FYQ-42(V)9	AN/FYQ-42(V)10	AN/FYQ-42(V)11	AN/FYQ-42(V)12	AN/FYQ-42(V)T1
	TEST EQUIPMENT COMPLEMENT																
1	Oscilloscope DC to 35 MC	Tektronix	555		2	2	2	2	2	2	2	2	2	2	2	2	2
2	Plug-In Unit	Tektronix	Type 1A2		4	4	4	4	4	4	4	4	4	4	4	4	4
3	Plug-In Unit	Tektronix	Type W		2	2	2	2	2	2	2	2	2	2	2	2	2
4	Adjustable Probe	Tektronix	010-0167-00		2	2	2	2	2	2	2	2	2	2	2	2	2
5	Plug-In Unit	Tektronix	Type 1M1		1	1	1	1	1	1	1	1	1	1	1	1	1
6	Power Supply and Amplifier	Tektronix	015-0051-00		2	2	2	2	2	2	2	2	2	2	2	2	2
7	Probe and Passive Termination	Tektronix	011-074-00		4	4	4	4	4	4	4	4	4	4	4	4	4
8	Probe Tip	Tektronix	206-0061-00		10	10	10	10	10	10	10	10	10	10	10	10	10
9	Probe Tip	Tektronix	206-0052-00		10	10	10	10	10	10	10	10	10	o0	10	10	10
10	Passive Prove	Tektronix	010-0146-00		6	6	6	6	6	6	6	6	6	6	6	6	6
11	Oscilloscope DC to 85 MC	Tektronix	585A		2	2	2	2	2	2	2	2	2	2	2	2	2
12	Plug-In Unit	Tektronix	Type 82		2	2	2	2	2	2	2	2	2	2	2	2	2
13	Plug-In Unit	Tektronix	Type 84		1	1	1	1	1	1	1	1	1	1	1	1	1
14	Viewing Hood	Tektronix	016-001-00		3	3	3	3	3	3	3	3	3	3	3	3	3
15	Autodin Card Tester	Philco	325		1	1	1	1	1	1	1	1	1	1	1	1	1
16	Test Unit	Philco	398-8260		2	2	2	2	2	2	2	2	2	2	2	2	2
17	Test Unit	Philco	398-8261		2	2	2	2	2	2	2	2	2	2	2	2	2
18	Test Unit	Philco	398-B262		2	2	2	2	2	2	2	2	2	2	2	2	2
19	Test Unit	Philco	398-8263		2	2	2	2	2	2	2	2	2	2	2	2	2
20	Test Unit	Philco	398-8264		2	2	2	2	2	2	2	2	2	2	2	2	2
21	Teledata Analysis System w/Modified Cart (Jack Strip, Philco P/N 398-7996 added)	Stelma	DAC-78		1	1	1	1	1	1	1	1	1	1	1	1	1
22	AC Vacuum Tube Voltmeter (ME-30A/U)	Hewlett-Packard	400D	6625-669-0742	2	2	2	2	2	2	2	2	2	2	2	2	2
23	Bridging Transformer	Hewlett-Packard	11005A		2	2	2	2	2	2	2	2	2	2	2	2	2
24	Cable Assembly	Hewlett-Packard	11000A		2	2	2	2	2	2	2	2	2	2	2	2	2
25	Cable Assembly	Hewlett-Packard	11003A		2	2	2	2	2	2	2	2	2	2	2	2	2
26	Lab Cart	Philco			1	1	1	1	1	1	1	1	1	1	1	1	1
27	Wide Range Oscillator (0-1025/U)	Hewlett-Packard	200CD	6625-518-4659	2	2	2	2	2	2	2	2	2	2	2	2	2
28	Test Lead	Hewlett Packard	11002A	2	2	2	2	2	2	2	2	2	2	2	2	2	2
29	Cable Assembly	Hewlett-Packard	11001A	2	2	2	2	2	2	2	2	2	2	2	2	2	2

(a)

SECTION III - TOOL AND TEST EQUIPMENT REQUIREMENTS (Continued)

ITEM NO.	DESCRIPTION	MANUFACTURER		FEDERAL STOCK NUMBER	ADMSC SITE REQUIREMENTS												
		NAME	PART/MODEL/TYPE NUMBER		AN/FYQ-42(V)1	AN/FYQ-42(V)2	AN/FYQ-42(V)3	AN/FYQ-42(V)4	AN/FYQ-42(V)5	AN/FYQ-42(V)6	AN/FYQ-42(V)7	AN/FYQ-42(V)8	AN/FYQ-42(V)9	AN/FYQ-42(V)10	AN/FYQ-42(V)11	AN/FYQ-42(V)12	AN/FYQ-42(V)T1
30	Attenuator Network (CN-1000/G)	Hewlett-Packard	350D	6625-217-8511	2	2	2	2	2	2	2	2	2	2	2	2	2
31	Vacuum Tube Voltmeter (ME-26A/U)	Hewlett-Packard	410B	6625-542-6407	2	2	2	2	2	2	2	2	2	2	2	2	2
32	Electronic Counter	Hewlett-Packard	5223L	6625-776-0428	1	1	1	1	1	1	1	1	1	1	1	1	1
33	Transistor Tester (TS-1836A/U)	Sierra	219C	6625-926-6996	2	2	2	2	2	2	2	2	2	2	2	2	2
34	Scope Mobile Cart	Mtl. Dynamics	61056-DM-11		4	4	4	4	4	4	4	4	4	4	4	4	4
35	Multimeter, AN/USM-210	Simpson	260	6625-019-0815	8	8	8	8	8	8	8	8	8	8	8	8	8
36	Tube Tester	Hickok	539C	6625-918-5953	2	2	2	2	2	2	2	2	2	2	2	2	2
37	Power Supply	Power Design	5005R		2	2	2	2	2	2	2	2	2	2	2	2	2
38	Variac Auto Transformer	General Radio	W5MT3VM		2	2	2	2	2	2	2	2	2	2	2	2	2
39	Megger	J.G. Biddle	7676-1		1	1	1	1	1	1	1	1	1	1	1	1	1
40	Multimeter Hook On Type, AN/USM-33	Bruno	UM33	6625-648-9172	1	1	1	1	1	1	1	1	1	1	1	1	1
41	Electronic Stroboscope	General Radio	1531A	6680-799-7616	2	2	2	2	2	2	2	2	2	2	2	2	2
42	Extender Card Switch	Philco	398-5589-1		4	4	4	4	4	4	4	4	4	4	4	4	4
43	Differential Voltmeter (ME-202A/U)	Fluke	803B 6625-709-0288		1	1	1	1	1	1	1	1	1	1	1	1	1
44	Oscilloscope Camera	Fairchild	1453A-1		2	2	2	2	2	2	2	2	2	2	2	2	2
45	Bezel	Fairchild	4551A		2	2	2	2	2	2	2	2	2	2	2	2	2
46	Bezel	Fairchild	4561		2	2	2	2	2	2	2	2	2	2	2	2	2
47	Polaroid Film Holder	Fairchild	4520B		2	2	2	2	2	2	2	2	2	2	2	2	2
48	Voltmeter DC	Weston	281		1	1	1	1	1	1	1	1	1	1	1	1	1
49	Chest Bracket	Philco			1	1	1	1	1	1	1	1	1	1	1	1	1
50	Test Lead Sets	Birnbach	421		2	2	2	2	2	2	2	2	2	2	2	2	2
51	Maintenance Support Accessories	Philco			1	1	1	1	1	1	1	1	1	1	1	1	1
52	Test Kit, Load Comparison Control	Philco			1	1	1	1	1	1	1	1	1	1	1	1	1
53	Test Kit, UPS Input Monitor	Philco			1	1	1	1	1	1	1	1	1	1	1	1	1
54	Power Supply Extender Circuit Card Assembly	Philco	368-43259-1		1	1	1	1	I	1	1	1	1	1	1	1	1
55	Diode Sub-Module	Philco	368-43417-1		1	1	1	1	1	1	1	1	1	1	1	1	1
56	Multi Range DC Ammeter	Weston	931		1	1	1	1	1	1	1	1	1	1	1	1	1
57	Multi Range AC Ammeter	Weston	433		1	1	1	1	1	1	1	1	1	1	1	1	1
58	DC Millivoltmeter (DC Ammeter)	Weston	2931		1	1	1	1	1	1	1	1	1	1	1	1	1
59	Shunt, 150 AmpereWeston	41226			1	1	1	1	1	1	1	1	1	1	1	1	1
60	Test Leads, 5 Ft Weston	9858			1	1	1	1	1	1	1	1	1	1	1	1	1

(b)

SECTION III - TOOL AND TEST EQUIPMENT REQUIREMENTS (Continued)

ITEM NO.	DESCRIPTION	MANUFACTURER		FEDERAL STOCK NUMBER	ADMSC SITE REQUIREMENTS												
		NAME	PART/MODEL/TYPE NUMBER		AN/FYQ-42(V)1	AN/FYQ-42(V)2	AN/FYQ-42(V)3	AN/FYQ-42(V)4	AN/FYQ-42(V)5	AN/FYQ-42(V)6	AN/FYQ-42(V)7	AN/FYQ-42(V)8	AN/FYQ-42(V)9	AN/FYQ-42(V)10	AN/FYQ-42(V)11	AN/FYQ-42(V)12	AN/FYQ-42(V)T1
61	Variable Transformer, 20A, 120 V, with Integral Voltmeter	Sup. Elec.	V136B		1	1	1	1	1	1	1	1	1	1	1	1	1
62	Power Rheostat, 0-10 Ohms, 100 Watts with Knob	Ohmite	K-10		1	1	1	1	1	1	1	1	1	1	1	1	1
63	Power Rheostat, 0-25 Ohms, 150 Watts with Knob	Ohmite	L-25		1	1	1	1	1	1	1	1	1	1	1	1	1
66	Power Rheostat, 0-3 Ohms, 225 Watts with Knob	Ohmite	P-3		1	1	1	1	1	1	1	1	1	1	1	1	1
65	Power Rheostat, 0-5 Ohms, 225 Watts with Knob	Ohmite	P-5		1	1	1	1	1	1	1	1	1	1	1	1	1
66	Power Rheostat, 0-15 Ohms, 225 Watts with Knob	Ohmite	P-15		1	1	1	1	1	1	1	1	1	1	1	1	1
67	Power Rheostat, 0-12.5 Ohms, 500 Watts with Knob	Ohmite	R-12.5		1	1	1	1	1	1	1	1	1	1	1	1	1
68	Power Rheostat, 0-5 Ohms, 500 Watts with Knob	Ohmite	R-5		1	1	1	1	1	1	1	1	1	1	1	1	1
69	Power Rheostat, 0-1 Ohms, 750 Watts with Knob.	Ohmite	T-1		1	1	1	1	1	1	1	1	1	1	1	1	1
70	Power Rheostat, 0-8 Ohms, 750 Watts with Knob	Ohmite	T-8		1	1	1	1	1	1	1	1	1	1	1	1	1
71	Power Rheostat, 0-0.5 Ohms, 1000 Watts with Knob	Ohmite	R-1-F10-T2		1	1	1	1	1	1	1	1	1	1	1	1	1
72	Power Rheostat, 0-0.5 Ohms, 2000 Watts with Knob	Ohmite	U-1-F10-T2		1	1	1	1	1	1	1	1	1	1	1	1	1
73	Power Rheostat, 0-2.5 Ohms, 2000 Watts with Knob	Ohmite	U-5-F10-T2		1	1	1	.1	1	1	1	1	1	1	1	1	1
74	Power Rheostat, 0-12.5 Ohms, 2000' Watts with Knob	Ohmite	U-12.5-F10-T2		1	1	1	1	1	1	1	1	1	1	1	1	1
	ADMS TOOLS																
75	Screwdriver, Offset, Ratchet	Yankee	3400	5120-204-0672	5	5	5	5	4	5	4	5	5	5	5	5	4
76	Screwdriver, Offset, Ratchet	Yankee	385		5	5	5	5	4	5	4	5	5	5	5	5	4
77	Handle, Spinner	Stevens-Walden	3118		5	5	5	5	4	5	4	5	5	5	5	5	4
78	Wrench Set, Spintite	Stevens-Walden	3800A12		5	5	5	5	4	5	4	5	5	5	5	5	4
79	Wrench Set, Internal	Stevens-Walden	98K111		5	5	5	4	5	4	4	5	5	5	5	5	4
80	Screwdriver, 10 In.	Stanley	20-10		5	5	5	5	4	5	4	5	5	5	5	5	4
81	Screwdriver Set, Jewelers with Case	Starrett	555-6	5120-473-6459	5	5	5	5	4	5	4	5	5	5	5	5	4
82	Screwdriver, Phillips, 3 In; No. 1 Pt.	Stanley	2501		5	5	5	5	4	5	4	5	5	5	5	5	4

(c)

SECTION III - TOOL AND TEST EQUIPMENT REQUIREMENTS (Continued)

ITEM NO.	DESCRIPTION	MANUFACTURER		FEDERAL STOCK NUMBER	ADMSC SITE REQUIREMENTS												
		NAME	PART/MODEL/TYPE NUMBER		AN/FYQ-42(V)1	AN/FYQ-42(V)2	AN/FYQ-42(V)3	AN/FYQ-42(V)4	AN/FYQ-42(V)5	AN/FYQ-42(V)6	AN/FYQ-42(V)7	AN/FYQ-42(V)8	AN/FYQ-42(V)9	AN/FYQ-42(V)10	AN/FYQ-42(V)11	AN/FYQ-42(V)12	AN/FYQ-42(V)T1
83	Screwdriver, Phillips, 4 in. No. 2 Pt.	Stanley	2502		5	5	5	5	4	5	4	5	5	5	5	5	4
84	Screwdriver, Phillips, 6 in. No. 3 Pt.	Stanley	2703		5	5	5	5	4	5	4	5	5	5	5	5	4
85	Screwdriver, Phillips, 8 in. No. 4 Pt.	Stanley	2704		5	5	5	5	4	5	4	5	5	5	5	5	4
86	Screwdriver, Offset, Ratchet, Phillips	Yankee	3412		5	5	5	5	4	5	4	5	5	5	5	5	4
87	Screwdriver, Offset,.Ratchet, Phillips	Yankee	3423		5	5	5	5	4	5	5	5	5	5	5	5	4
88	Wrench Set, Hex Key	Allen	6075		5	5	5	5	4	5	4	5	5	5	5	5	4
89	Key, 5/64 in. Kit 6	Sps Maint	15		5	5	5	5	4	5	4	5	5	5	5	5	4
90	Wrench Set, Midget Open End	Williams	1142PR		5	5	5	5	4	5	4	5	5	5	5	5	4
91	Wrench Set, Open End	Williams	1025BR		5	5	5	5	4	5	4	5	5	5	5	5	4
92	Wrench Set, 12 Pt. Box	Williams	7006AB		5	5	5	5	4	5	4	5	5	5	5	5	4
93	Screwdriver, Stubby Blade 1/4 x 1 In.	Xcelite	SX-141		5	5	5	5	4	5	4	5	5	5	5	5	4
94	Screwdriver, Stubby Phillips No. 2 Pt. 1/4 x 1-3/8 In.	Xcelite	SX-102		5	5	5	5	4	5	4	5	5	5	5	5	4
95	Wire Stripper	Hunter	WS-1		5	5	5	5	4	5	4	5	5	5		5	4
96	Punch, Drive Pin, 8 In.	Starrett	5248		5	5	5	5	4	5	4	5	5	5	5	5	4
97	Hammer, Soft Face	Stanley	593		5	5	5	5	4	5	4	5	5	5	5	5	4
98	Pliers, Diagonal Cutting, 4 In.	Utica	41-4		5	5	5	5	4	5	4	5	5	5	5	5	4
99	Pliers, Needle Nose, 6 In.	Wayne	SK1661-6		5	5	5	5	4	5	4	5	5	5	5	5	4
100	Pliers, Curved Needle Nose, 5-1/2 In.	Krauter	1631		10	10	10	10	8	10	8	10	10	10	10	10	8
101	Screwdriver, 2-112 In.	Stanley	20-2-1/2		5	5	5	5	4	5	4	5	5	5	5	5	4
102	Screwdriver, 4 In.	Stanley	20-4		5	5	5	5	4	5	4	5	5	5			4
103	Screwdriver, 6 In.	Stanley	20-6		5	5	5	5	4	5	4	5	5	5	5	5	4
104	Screwdriver, 8 In.	Stanley	20-8		5	5	5	5	4	5	4	5	5	5	5	5	4
105	Thickness Gauge with T.L.	Starrett	66T		10	10	10	10	8	10	8	10	10	10	10	10	8
106	Wrench, Adjustable, 4 In.	Crescent			5	5	5	5	4	5	4	5	5	5	5	5	4
107	Wrench, Adjustable, 6 In.	Crescent			5	5	5	5	4	5	4	5	S	5	5	5	4
108	Wrench, Adjustable, 10 In.	Crescent	AT110		5	5	5	5	4	5	4	5	5	5	5	5	4
109	Wrench Set, Allen	Allen	1752-2		5	5	5	5	4	5	5						4
110	Pliers, Channel Lock, S Position, 1-1/2 In. Cap., 9-1/2 in. Long	Champion	420	5120-859-1518	5	5	5	5	4	5	5	5	5	5	5	5	4
111	Pliers, Comb. 6 in. (2 Position Slip Joint)	Utica	8-6		5	5	5	5	4	5	4	5	5	5	5	5	4
112	Pliers, Diagonal Cutting, 6 In.	Krauter	4600		5	5	4	5	5	5	5	5	5	5	5	5	4

(d)

SECTION III - TOOL AND TEST EQUIPMENT REQUIREMENTS (Continued)

ITEM NO.	DESCRIPTION	MANUFACTURER		FEDERAL STOCK NUMBER	ADMSC SITE REQUIREMENTS												
		NAME	PART/MODEL/TYPE NUMBER		AN/FYQ-42(V)1	AN/FYQ-42(V)2	AN/FYQ-42(V)3	AN/FYQ-42(V)4	AN/FYQ-42(V)5	AN/FYQ-42(V)6	AN/FYQ-42(V)7	AN/FYQ-42(V)8	AN/FYQ-42(V)9	AN/FYQ-42(V)10	AN/FYQ-42(V)11	AN/FYQ-42(V)12	AN/FYQ-42(V)T1
113	Screwdriver	Stevens	99M204		5	5	5	5	4	5	4	5	5	5	5	5	4
114	Wrench Set, Hex, Pocket	Walsco	564		5	5	5	5	4	5	4	5	5	5	5	5	4
115	Universal Joint, 1/4 Drive	Snap-On	TMU8		5	5	5	5	4	5	4	5	5	5	5	5	4
116	Inspection Mirror	Ulmann	E2		5	5	5	5	4	5.	4	5	5	5	5	5	4
117	Screwdriver, Screwholding SM 2-7/8 in. Long	Walsco	2568		5	5	5	5	4	5	4	5	5	5	5	5	4
L18	Screwdriver, Screwholding SM 7 in. Long	Walsco	2569		5	5	5	5	4	5	4	5	5	5	5	5	4
119	Solder Aid Tool, Wire Brush, Forked End, 8In.	Walsco	2529		5	5	5	5	-4	5	4	5	5	5	5	5	4
120	Solder Aid Tool, Curved Hook, Forked End, 8 In.	Walsco	2530		5	5	5	5	4	5	4	5	5	5	5	5	4
121	Tweezers, Heavy Duty, Slide Lock, 6-1/2 In.	Walsco	571		5	5	5	5	4	5	4	5	5	5	5	5	4
122	Pliers,. Extra-,Long Chain, Nose 7 In.	Wayne	SK1781-7		5.	5	5	5	4	5	4	5	5	5	5	5	4
123	Wrench Set, Stevens	Stevens-Walden	1/4S18		5	5	5	5	4	5	4	5	5	5	5	5	4
124	Screw Starter	Snap-On	GA13N		5	5	5	5	4	5	4	5	5	5	5	5	4
125	Screw Starter	Snap-On	GA12N	5120-293-3344	5	5	5	5	4	5	4	5	5	5	5	5	4
126	Screw Starter	Snap-On	GA11N	5120-293-3343	5	5	5	5	4	5	4	5	5	5	5	5	4
127	Flexible Grip-It Tool	Snap-On	GA265		5	5	5	5	4	5	4	5	5	5	5	5	4
128	Straight Trimmers	Clause	1216		5	5	5	5	4	5	4	5	5	5	5	5	4
129	Wire Stripper	Ideal Master	45-171		5	5	5	5	4	5	4	5	5	5	5	5	4
130	Midjet Cutters	Utica	46-4		15	15	15	15	12	15	12	15	15	15	15	15	12
131	Soldering Iron Midget Handle Tip and Cord Set	GE	6A203		10	10	10	10	8	10	8	10	10	10	10	10	8
132	Tip, Chisel	GE	6A217		10	10	10	10	8	10	8	10	10	10	1	10	8
133	Transformer, Soldering Iron, 4 Heat Tap	GE	6A364G2		10	10	10	10	8	10	8	10	10	10	10	10	8
134	Screwdriver, 6-1/2 In.	Stanley	4595-6		10	t0	10	10	8	10	8	10	10	10	10	10	8
135	Screwdriver, 10-1/2 In.	Stanley	4595-10		5	5	5	5	4	5	4	5	5	5	5	5	4
136	Burnishing Tool and Kit	Neuses	CB-5		5	5	5	5	4	5	5	5	5	5	5	5	4
137	Screwdriver	Stanley	20102		10	10	10	10	8	10	8	10	10	0	10	10	8
138	Flashlight	Eveready	1251		5	5	5	5	5	5	4	5	5	5	5	5	4
139	Battery, Flashlight 2 Cell	Eveready	950	6135-120-1020	10	10	10	10	8	10	8	10	10	10	10	10	8
140	Wrench Set, Spline Driver, 3/-64 to 1/8 In.	Hunter	9B		5	5	5	5	4	5	4	5	5	5	5	5	4
141	Tool, Box	Kennedy	520		5	5	5	5	4	5	4	5	5	5	5	5	4

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SECTION III - TOOL AND TEST EQUIPMENT REQUIREMENTS (Continued)

ITEM NO.	DESCRIPTION	MANUFACTURER NAME	MANUFACTURER PART/MODEL/TYPE NUMBER	FEDERAL STOCK NUMBER	ADMSC SITE REQUIREMENTS AN/FYQ-42(V)1	AN/FYQ-42(V)2	AN/FYQ-42(V)3	AN/FYQ-42(V)4	AN/FYQ-42(V)5	AN/FYQ-42(V)6	AN/FYQ-42(V)7	AN/FYQ-42(V)8	AN/FYQ-42(V)9	AN/FYQ-42(V)10	AN/FYQ-42(V)11	AN/FYQ-42(V)12	AN/FYQ-42(V)T1
	TTY MAINTENANCE TOOLS																
142	Spring Scales: 8 Oz.	Teletype	110443		2	2	2	2	2	2	2	2	2	2	2	2	2
143	Gram Scale: 70 Grams		152223		2	2	2	2	2	2	2	2	2	2	2	2	2
144	Spring Scales: 32 Oz.		110444	5815-561-2581	2	2	2	2	2	2	2	2	2	2	2	2	2
145	Spring Scales: 64 Oz.		82711	6670-171-3987	2	2	2	2	2	2	2	2	2	2	2	2	2
146	Spring Scales: 15 Lb.		135059	5220-329-8822	2	2	2	2	2	2	2	2	2	2	2	2	2
147	Tammy Wrench		6617	5120-448-3718	2	2	2	2	2	2	2	2	2	2	2	2	2
148	Tammy Wrench		73404	5815-370-1289	2	2	2	2	2	2	2	2	2	2	2	2	2
149	Abrasive Stone, Square, 4 x 1/2 x 1/2 In.		87698	5345-238-9987	2	2	2	2	2	2	2	2	2	2	2	2	2
150	Spring Hook-Push		75503	5120-448-3924	2	2	2	2	2	2	2	2	2	2	2	2	2
151	Spring Hook-Pull		151959	5815-091-9552	2	2	2	2	2	2	2	2	2	2	2	2	2
152	Spring Hook-Pull		75765	5120-448-3927	2	2	2	2	2	2	2	2	2	2	2	2	2
153	Spring Hook-Pull		151351	5815-370-1299	2	2	2	2	2	2	2	2	2	2	2	2	2
154	Contact Burnisher (3-5/8 in. Long)		88993	5120-247-1725 5120-369-8864 Alt.	2	2	2	2	2	2	2	2	2	2	2	2	2
155	Contact File (3-1/16 in. Long)		91117		2	2	2	2	2	2	2	2	2	2	2	2	2
156	Punch Block Cleaning Tool		99947	5120-448-2082	2	2	2	2	2	2	2	2	2	2	2	2	2
157	Armature Clip (28 Printer)		152292	5815-091-9568	2	2	2	2	2	2	2	2	2	2	2	2	2
158	Screw Holder with Blades		151384	5815-370-1241	2	2	2	2	2	2	2	2	2	2	2	2	2
159	Hexagon Key Wrench (0.05 in. No. 4 Set Screw)		104457		2	2	2	2	2	2	2	2	2	2	2	2	2
160	Hexagon Key Wrench (1/16 in. No. 6 Set Screw)		124682		2	2	2	2	2	2	2	2	2	2	2	2	2
161	Hexagon Key Wrench (5/64 in. No. 8 Set Screw)		110271		2	2	2	2	2	2	2	2	2	2	2	2	2
162	Hexagon Key Wrench (3/32 in. No.10 Set Screw)		159841		2	2	2	2	2	2	2	2	2	2	2	2	2
163	Maintenance Kits with 135060 Leatherette Tool Roll		113756		2	2	2	2	2	2	2	2	2	2	2	2	2
164	Screwdrivers -2 22		95368	5120-369-9961	2	2	2	2	2	2	2	2	2	2	2	2	2
165	Socket Wrench (3/16 in. Hex)		125752		2	2	2	2	2	2	2	2	2	2	2	2	2
166	Case for Small Tools, Tool Set		77618	5140-448-3967	2	2	2	2	2	2	2	2	2	2	2	2	2
167	Tool Kit with 135675 Leatherette Tool Roll		113777		2	2	2	2	2	2	2	2	2	2	2	2	2
168	Tweezers	Teletype	151392		2	2	2	2	2	2	2	2	2	2	2	2	2

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SECTION III - TOOL AND TEST EQUIPMENT REQUIREMENTS (Continued)

ITEM NO.	DESCRIPTION	MANUFACTURER NAME	MANUFACTURER PART/MODEL/TYPE NUMBER	FEDERAL STOCK NUMBER	ADMSC SITE REQUIREMENTS AN/FYQ-42(V)1	AN/FYQ-42(V)2	AN/FYQ-42(V)3	AN/FYQ-42(V)4	AN/FYQ-42(V)5	AN/FYQ-42(V)6	AN/FYQ-42(V)7	AN/FYQ-42(V)8	AN/FYQ-42(V)9	AN/FYQ-42(V)10	AN/FYQ-42(V)11	AN/FYQ-42(V)12	AN/FYQ-42(V)T1
169	Tape Gauge	Teletype	95-960	5816-125-4850	2	2	2	2	2	2	2	2	2	2	2	2	2
170	Magnifier with Case		73408	5815-412-59M8	2	2	2	2	2	2	2	2	2	2	2	2	2
171	Screwdriver (10 in. Blade)		129848		2	2	2	2	2	2	2	2	2	2	2	2	2
172	Screwdriver (90° Offset)		94645	5120-241-3162 5120-596-4161 Alt.	2	2	2	2	2	2	2	2	2	2	2	2	2
173	Screwdriver (30° Offset)		94644	5120-596-4160	2	2	2	2	2	2	2	2	2	2	2	2	2
174	Gauge Set with 117375 Case		117761		2	2	2	2	2	2	2	2	2	2	2	2	2
175	Spring Hook-Pull		142554	5120-873-4006	2	2	2	2	2	2	2	2	2	2	2	2	2
176	Spring Hook-Push		142555	5815-370-1301	2	2	2	2	2	2	2	2	2	2	2	2	2
177	Hand Wheel Assembly		161430		2	2	2	2	2	2	2	2	2	2	2	2	2
178	Key Lever Remover		151383-		2	2	2	2	2	2	2	2	2	2	2	2	2
179	Rod		151627		4	4	4	4	4	4	4	4	4	4	4	4	4
180	Post		152258		8	8	8	8	8	8	8	8	8	8	8	8	8
181	Clamps		153808		2	2	2	2	2	2	2	2	2	2	2	2	2
182	Posts		153807		2	2	2	2	2	2	2	2	2	2	2	2	2
183	Flat Washers		7002		8	8	8	8	8	8	8	8	8	8	8	8	8
184	Screws (6/40 x 3/8 Fil.)		150040		8	8	8	8	8	8	8	8	8	8	8	8	8
185	Supporting Post Assembly		153609		2	2	2	2	2	2	2	2	2	2	2	2	2
187	Tape Lid Gauge		156743	5815-790-3718	2	2	2	2	2	2	2	2	2	2	2	2	2
188	Top Plate Adjusting Gauge		159133	5815-784-0319	2	2	2	2	2	2	2	2	2	2	2	2	2
189	Punch Bail Arm Gauge with Pin		159926	5815-784-0317	2	2	2	2	2	2	2	2	2	2	2	2	2
190	Tape Gauge with Pin		156011		2	2	2	2	2	2	2	2	2	2	2	2	2
191	Truarc Puller Pliers		160396		2	2	2	2	2	2	2	2	2	2	2	2	2
192	Oil (1 Qt.)		88970		2	2	2	2	2	2	2	2	2	2	2	2	2
193	Grease (1 Lb.)		88973		2	2	2	2	2	2	2	2	2	2	2	2	2
194	Orangewood Stick		94646		2	2	2	2	2	2	2	2	2	2	2	2	2
195	Screwdriver,3-1/2 In.		94647		2	2	2	2	2	2	2	2	2	2	2	2	2
196	Screwdriver, 10 in.		100704		2	2	2	2	2	2	2	2	2	2	2	2	2
197	Screwdriver, 6 In.		100982		2	2	2	2	2	2	2	2	2	2	2	2	2
198	Oil Can	Teletype	103625		2	2	2	2	2	2	2	2	2	2	2	2	2

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SECTION III - TOOL AND TEST EQUIPMENT REQUIREMENTS (Continued)

ITEM NO.	DESCRIPTION	MANUFACTURER		FEDERAL STOCK NUMBER	ADMSC SITE REQUIREMENTS												
		NAME	PART/MODEL/TYPE NUMBER		AN/FYQ-42(V)1	AN/FYQ-42(V)2	AN/FYQ-42(V)3	AN/FYQ-42(V)4	AN/FYQ-42(V)5	AN/FYQ-42(V)6	AN/FYQ-42(V)7	AN/FYQ-42(V)8	AN/FYQ-42(V)9	AN/FYQ-42(V)10	AN/FYQ-42(V)11	AN/FYQ-42(V)12	AN/FYQ-42(V)T1
199	Longnose Pliers	Teletype	108285		2	2	2	2	2	2	2	2	2	2	2	2	2
200	Cutting Pliers	Teletype	108286		2	2	2	2	2	2	2	2	2	2	2	2	2
201	Tape Lid Gauge	Teletype	170283		2	2	2	2	2	2	2	2	2	2	2	2	2
202	Hand Wheel	Teletype	305033		2	2	2	2	2	2	2	2	2	2	2	2	2
203	Tool Box	Kennedy	CS 19	5140-331-5496	2	2	2	2	2	2	2	2	2	2	2	2	2
	MISCELLANEOUS TOOL AND EQUIPMENT LIST																
204	General Stenciling Kit	P.K. Neuses	N231		1	1	1	1	1	1	1	1	1	1	1	1	1
205	Forceps Hemostat, 6-1/4 in. Straight	H. Boker & Co.	H.F., 6-1/4 in.	6515-682-6863	4	4	4	4	4	4	4	4	4	4	4	4	3
206	Plier Set, Retaining Ring (Truarc)	Waldes	10018, 1, 2, 3, 4 5, and 6		1	1	1	1	1	1	1	1	1	1	1	1	
207	Thickness Gage (2 ft. Long 0.004 + 0.028 In.)	Starrett	666		1		1	1	1	1	1	1	1	1	1	1	1
208	Thickness Gage (1 ft. Long 0.028 In.)	Starrett	667		1	1	1	1	1	1	1	1		1	1	1	1
209	Hacksaw Frame	Millers	99		4	4	4	4	4	4	4	4	4	4	4	4	3
210	Blade, Hacksaw, 12 in. Long, 24 Teeth/In.	C.L. Presser	1224F	5110-228-3189	8 PKS	8 PKS	8 PKS	8 PKS	8 PKS	8 PKS	8 PKS	8 PKS	8 PKS	8 PKS	8 PKS	8 PKS	6 PKS
211	Blade, Hacksaw, 12 in. Long, 32 Teeth/In.	C.L. Presser	1232F	5110-221-0252	8 PKS	8 PKS	8 PKS	8 PKS	8 PKS	8 PKS	8 PKS	8 PKS	8 PKS	8 PKS	8 PKS	8 PKS	6 PKS
212	Tube Extractor (Scissor Type, Padded Prongs)	General Cement	5092	5120-498-8903	4	4		4	4	4	4	4	4	4		4	4
213	Lamp Extractor	WECo	553A		3	3	3	3	3	3	3	3	3	3	3	3	
214	Pulse Puller Fibre, Plier Type 0-200A Fed.Spec.W.P. 796, Class A Sec. 11	General Cement	9356		4	4	4	4	4	4	4	4	4	4	4	4	3
215	Micrometer Depth Gage with Case	Starrett	440-3L		2	2	2	2	2	2	2	2	2	2	2	2	2
216	Adapter, 3-Wire Grounding Type with Ground Lead	Hubbel	5273-L		12	12	12	12	12	12	12	12	12	12	12	12	8
217	Brush, Flat, 1 in.	Baker	2610	8020-245-4509	4	4	4	4	4	4	4	4	4	4	4	4	3
218	Brush, Wire	Osborn	1784		4	4	4	4	4	4	4	4	4	4	4	4	3
219	Spring Scale (0-18 Oz.)	Cenco	5700		2	2	2	2	2	2	2	2	2	2	2	2	2
220	Spring Scale (0-15 Lb.)	Teletype	135059		2	2	2	2	2	2	2	2	2	2	2	2	2
221	Vacuum Gage (0-25 in. Water)	Meriam Inst. Co.	30EB25, Type W		2	2	2	2	2	2	2	2	2	2	2	2	2
222	Fitting	Meriam Inst. Co.	D1295		2	2	2	2	2	2	2	2	2	2	2	2	2
223	Taper Pin Insertion Tool	AMP	380306-3		3	3	3	3	3	3	3	3	3	3	3	3	2

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SECTION III - TOOL AND TEST EQUIPMENT REQUIREMENTS (Continued)

ITEM NO.	DESCRIPTION	MANUFACTURER		FEDERAL STOCK NUMBER	ADMSC SITE REQUIREMENTS												
		NAME	PART/MODEL/TYPE NUMBER		AN/FYQ-42(V)1	AN/FYQ-42(V)2	AN/FYQ-42(V)3	AN/FYQ-42(V)4	AN/FYQ-42(V)5	AN/FYQ-42(V)6	AN/FYQ-42(V)7	AN/FYQ-42(V)8	AN/FYQ-42(V)9	AN/FYQ-42(V)10	AN/FYQ-42(V)11	AN/FYQ-42(V)12	AN/FYQ-42(V)T1
224	Taper Pin Extraction Tool	AMP	380306-1		3	3	3	3	3	3	3	3	3	3	3	3	2
225	Commutator Dressing Stone	Ideal Ind.	80-353		1	1	1	1	1	1	1	1	1	1	1	1	-
226	Oiler, 1/3 Pt. Cap. Steel, 9 in. Spout Fed.Spec. RR-0-376 a Type 1 Class A	Eagle Mfg. Co.	139C		4	4	4	4	4	4	4	4	4	4	4	4	3
227	Micrometer, I in. Fed.Spec. GGG-C-105	Starrett	436 RL		2	2	2	2	2	2	2	2	2	2	2	2	2
228	Goggles, Rubber Frame	Duckson	385-02		3	3	3	3	3	3	3	3	3	3	3	3	-
229	Gloves, Rubber	Fisher	11-394-30		3	3	3	3	3	3	3	3	3	3	3	3	-
230	Apron, Rubber	Fisher	1-357		2	2	2	2	2	2	2	2	2	2	2	2	-
231	Boots, Rubber	Alden	MB801		3	3	3	3	3	3	3	3	3	3	3	3	-
232	Extension Cord, 3-Wire, 50 Ft.) H.D.	Damco	P-186		15	15	15	15	15	15	15	15	15	15	15	15	10
233	Trouble Lame with 25 ft. Cord, H.D.	Woodhead	2560		7	7	7	7	7	7	7	7	7	7	7	7	6
234	Vise, Machinist, 4 in. Jaw	Parker	954		3	3	3	3	3	3	3	3	3	3	3	3	3
235	Mechanical Hoist	Economy Engr.	WECo #RB-2667		1	1	1	1	1	1	1	1	1	1	1	1	1
236	Card Extractor	Philco C 6& E	OR-5441-2		4	4	4	4	4	4	4	4	4	4	4	4	4
237	Demagnetizer	Robbins Device Inc.	HD6		1	1	1	1	1	1	1	1	1	1	1	1	1
238	Screwdriver, Hex Head Cap	Snap-On	TKA-3		1	1	1	1	1	1	1	1	1	1	1	1	1
239	Bit, Long Hex	Snap-On	TMAL-3-2		1	1	1	1	1	1	1	1	1	1	1	1	1
240	Vacuum Cleaner	Chicago American	380-6		1	1	1	1	1	1	1	1	1	1	1	1	1
241	Tap and Die Set	Hanson	S21		3	3	3	3	3	3	3	3	3	3	3	3	2
242	Wire Wrap Gun Gardner	Denver	14XA2B		2	2	2	2	2	2	2	2	2	2	2	2	2
243	Wire Wrapping BitGardner	Denver	26263		2	2	2	2	2	2	2	2	2	2	2	2	2
244	Wire Wrapping Sleeve	Gardner Denver	18840		2	2	2	2	2	2	2	2	2	2	2	2	2
245	Measural Tape Rule, 6 Ft.	C.L. Presser	MYT6		3	3	3	3	3	3	3	3	3	3	3	3	3
246	Steel Rule, 6 In.	Starrett	C604RE	5120-273-1965	3	3	3	3	3	3	3	3	3	3	3	3	3
247	File Half Round Bastard Cut, 4 In.	Delta	2		2	2	2	2	2	2	2	2	2	2	2	2	2
248	File Half Round Bastard Cut, 8 In.	Delta	2		2	2	2	2	.2	2	2	2	2	2	2	2	2
249	File Half Round Bastard Cut, 12 In.	Delta	2		2	2	2	2	2	2	2	2	2	2	2	2	2
250	File Round Tapered Bastard, 4 In.	Delta	2		2	2	2	2	2	2	2	2	2	2	2	2	2
251	File Round Tapered Bastard, 8 In.	Delta	2		2	2	2	2	2	2	2	2	2	2	2	2	2
252	File Round Tapered Bastard, 12 In.	Delta	2		2	2	2	2	2	2	2	2	2	2	2	2	2
253	File Set XF Swiss Pattern, 4 In.	Nicholson	41		2	2	2	2	2	2	2	2	2	2	2	2	2

SECTION III - TOOL AND TEST EQUIPMENT REQUIREMENTS (Continued)

ITEM NO.	DESCRIPTION	MANUFACTURER		FEDERAL STOCK NUMBER	ADMSC SITE REQUIREMENTS												
		NAME	PART/MODEL/TYPE NUMBER		AN/FYQ-42(V)1	AN/FYQ-42(V)2	AN/FYQ-42(V)3	AN/FYQ-42(V)4	AN/FYQ-42(V)5	AN/FYQ-42(V)6	AN/FYQ-42(V)7	AN/FYQ-42(V)8	AN/FYQ-42(V)9	AN/FYQ-42(V)10	AN/FYQ-42(V)11	AN/FYQ-42(V)12	AN/FYQ-42(V)T1
254	Soldering Iron, 300 W	Vulcan	80		2	2	2	2	2	2	2	2	2	2	2	2	2
255	Drill Bit Set, 3/8 In.	New Process	21		3	3	3	3	3	3	3	3	3	3	3	3	3
256	Soldering Outfit, Elect. Temp. Controlled		TL-705/U	3439-853-8760	3	3	3	3	3	3	3	3	3	3	3	3	3
257	Hammer, Ball Peen	Plumb	371		3	3	3	3	3	3	3	3	3	3	3	3	3
258	Electric Drill, 3/8 In.	Black & Decker	854		2	2	2	2	2	2	2	2	2	2	2	2	2
259	Adjusting Tool	WECo			2	2	2	2	2	2	2	2	2	2	2	2	2
260	Roll Pin Press	Uptime	10117		2	2	2	2	2	2	2	2	2	2	2	2	2
261	Bearing Puller	Uptime	10147		2	2	2	2	2	2	2	2	2	2	2	2	2
262	Spanner Wrench	Uptime	10209		2	2	2	2	2	2	2	2	2	2	2	2	2
263	External Snap Ring Plier	Uptime	70040		2	2	2	2	2	2	2	2	2	2	2	2	2
264	Internal Snap Ring Plier	Uptime	70041		2	2	2	2	2	2	2	2	2	2	2	2	2
265	Wax (Can)	Uptime	70256		2	2	2	2	2	2	2	2	2	2	2	2	2
266	1/2 Extension, 6 In.	Snap-On	SX-5		2	2	2	2	2	2	2	2	2	2	2	2	2
267	1/2 Dr-15/16 Socket	Snap-On	S-301		2	2	2	2	2	2	2	2	2	2	2	2	2
268	Headset	Trim	70-4K		2	2	2	2	2	2	2	2	2	2	2	2	2
269	- Hand Crimp Tool	AMP	90115		2	2	2	2	2	2	2-	2	2	2	2	2	2
270	Insertion/Test Tool	AMP	380310-3		2	2	2	2	2	2	2	2	2	2	2	2	2
271	Crimping Tool	AMP	90090-2		2	2	2	2	2	2	2	2	2	2	2	2	2
272	Hand Crimp Tool	AMP	69525-1		2	2	2	2	2	2	2	2	2	2	2	2	2
273	Mandrel for Hand Tool	AMP	69411-4		2	2	2	2	2	2	2	2	2	2	2	2	2
274	Extraction Tool	AMP	69357-1		2	2	2	2	2	2	2	2	2	2	2	2	2
275	Tubes	North Electric	7001864		2	2	2	2	2	2	2	2	2	2	2	2	2
276	Connector	North Electric	RNV7121-A-2		10	10	10	10	10	10	10	10	10	10	10	10	10
277	Ratchet Handle, 6 in. 3/8 Drive	Snap-On	F-7LM		1	1	1	1	1	1	1	1	1	1	1	1	1
278	Deep Socket, 9/16 in. 3 x 8 Drive	Snap-On	S-FS-181		1	1	1	1	1	1	1	1	1	1	1	1	1
279	Allen Wrench, 3/16 in. 3 x 8 Drive	Snap-On	FAL-6		1	1	1	1	1	1	1	1	1	1	1	1	1
280	Allen Wrench, 1/32 In, 1/4 Drive	Snap-On	TMA-7		1	1	1	1	1	1	1	1	1	1	1	1	1
281	Kit Bag	Snap-On			1	1	1	1	1	1	1	1	1	1	1	1	1
282	Wrench	Snap-On	AWL-12		1	1	1	1	1	1	1	1	1	1	1	1	-
283	Wrench	Snap-On	OEX-36		1	1	1	1	1	1	1	1	1	1	1	1	-
284	Extraction Tool, Dual Latch	AMP	91003-1		2	2	2	2	2	2	2	2	2	2	2	2	2

(j)

SECTION III - TOOL AND TEST EQUIPMENT REQUIREMENTS (Continued)

ITEM NO.	DESCRIPTION	MANUFACTURER		FEDERAL STOCK NUMBER	ADMSC SITE REQUIREMENTS												
		NAME	PART/MODEL/TYPE NUMBER		AN/FYQ-42(V)1	AN/FYQ-42(V)2	AN/FYQ-42(V)3	AN/FYQ-42(V)4	AN/FYQ-42(V)5	AN/FYQ-42(V)6	AN/FYQ-42(V)7	AN/FYQ-42(V)8	AN/FYQ-42(V)9	AN/FYQ-42(V)10	AN/FYQ-42(V)11	AN/FYQ-42(V)12	AN/FYQ-42(V)T1
285	Extraction Tool, AMP Leaf	AMP	465195-2		2	2	2	2	2	2	2	2	2	2	2	2	2
286	Hand Crimp Tool	AMP	90072		2	2	2	2	2	2	2	2	2	2	2		
287	Hand Crimp Tool	AMP	47043		2	2	2	2	2	2	2	2	2	2	2	2	2
288	Insertion Tool	AMP	380306-6		2	2	2	2	2	2	2	2	2	2	2	2	2
289	Insertion Tip	AMP	395142		2	2	2	2	2	2	2	2	2	2	2	2	2
2o0	Insertion Tool	AMP	1380306-5		2	2	2	2	2	2	2	2	2	2	2	2	2
291	Insertion Tip	AMP	395005-2		2	2	2	2	2	2	2	2	2	2	2	2	2
292	Hand Crimp Tool	AMP	90028		2	2	2	2	2	2	2	2	2	2	2	2	2
293	Hand Crimp Tool	AMP	90100		2	2	2	2	2	2	2	2	2	2	2	2	2
294	Insertion Tip	AMP	395042		2	2	2	2	2	2	2	2	2	2	2	2	2
295	Hand Crimp Tool	Amphenol	294-136		2	2	2	2	2	2	2	2	2	2	2	2	2
296	Insertion/Extraction Tool	Amphenol	1294-155		2	2	2	2	2	2	2	2	2	2	2	2	2
297	Hand Crimp Tool	AMP	59275		2	2	2	2	2	2	2	2	2	2	2	2	2
298	Extraction Tool	Elec-Controls	8601-61		2	2	2	2	2	2	2	2	2	2	2	2	2
299	Hand Crimp Tool	Elec-Controls	8601-51		2	2	2	2	2	2	2	2	2	2	2	2	2
300	Extender Card Assembly (DC/DC Converter)	Philco	398-8981		2	2	2	2	2	2	2	2	2	2	2	2	2
301	Clip Test Tool	AMP	169358-2		1	1	1	1	1	1	1	1	1	1	1	1	1
302	1/4 in. Socket Set	Snap-On	120-TM-B		2	2	2	2	2	2	2	2	2	2	2.	2	2
303	Torque Wrench Set	Snap-On	TQ-32		2	2	2	2	2	2	2	2	2	2	2	2	2
304	Bearing Puller	Bryant	CAD077		2	2	2	2	2	2	2	2	2	2	2	2	2
305	Wrench Head, 3/16 In.	Armstrong	1112		2	2	2	2	2	2	2	2	2	2	2	2	2
306	Crimp Tool	Burndy	MIOS-1		2	2	2	2	2	2	2	2	2	2	2	2	2
307	Die Set	Burndy	S22		2	2	2	2	2	2	2	2	2	2	2	2	2
308	Bushing Stop	Burndy	SL47		2	2	2	2	2	2	2	2	2	2	2	2	2
309	Die Set	Burndy	S37		2	2	2	2	2	2	2	2	2	2	2	2	2
310	Bushing Stop	Burndy	SL66		2	2	2	2	2	2	2	2	2	2	2	2	2
311	H4 Tool	Burndy	M8ND		2	2	2	2	2	2	2	2	2	2	2	2	2
312	Flattening Dies	Burndy	N24F-1		2	2	2	2	2	2	2	2	2	2	2	2	2
313	Extraction Tool	Burndy	RX20-25		2	2	2	2	2	2	2	2	2	2	2	2	2
314	Heat Gun	Rayclad	MOD 500		1	1	1	1	1	1	1	1	1	1	1	1	1
315	Jumper Cable Special	Philco	491-4770		2	2	2	2	2	2	2	2	2	2	2	2	2

(k)

SECTION III - TOOL AND TEST EQUIPMENT REQUIREMENTS (Continued)

ITEM NO.	DESCRIPTION	MANUFACTURER		FEDERAL STOCK NUMBER	ADMSC SITE REQUIREMENTS												
		NAME	PART/MODEL/TYPE NUMBER		AN/FYQ-42(V)1	AN/FYQ-42(V)2	AN/FYQ-42(V)3	AN/FYQ-42(V)4	AN/FYQ-42(V)5	AN/FYQ-42(V)6	AN/FYQ-42(V)7	AN/FYQ-42(V)8	AN/FYQ-42(V)9	AN/FYQ-42(V)10	AN/FYQ-42(V)11	AN/FYQ-42(V)12	AN/FYQ-42(V)T1
316	Crimping Tool	Elco	56-067515-01		2	2	2	2	2	2	2	2	2	2	2	2	2
317	Extraction Tool	Elco	56-061877-02		2	2	2	2	2	2	2	2	2	2	2	2	2
318	Thickness Gauge	Philco	398-7997		2	2	2	2	2	2	2	2	2	2	2	2	2
319	Unwrapping Tool	Gardner-Denver	500130		2	2	2	2	2	2	2	2	2	2	2	2	2
320	Gun Lever Hand	Alemite	4031		1	1	1	1	1	1	1	1	1	1	1	1	1
321	Hose Assembly	Alemite	6652A		1	1	1	1	1	1	1	1	1	1	1	1	1
322	1/2 in. Slide Bar Handle	Snap-On	S-12L		2	2	2	2	2	2	2	2	2	2	2	2	2
323	Bit, Wire Wrap	Gardner-Denver	26699		2	2	2	2	2	2	2	2	2	2	2	2	2
324	Sleeve, Wire Wrap	Gardner-Denver	18640		2	2	2	2	2	2	2	2	2	2	2	2	2
325	Gauge, Card	IBM	450550		1	1	1	1	1	1	1	1	1	1	1	1	1
326	Wire Stripper	Ideal	45-187		2	2	2	2	2	2	2	2	2	2	2	2	2
327	Dymo Embossing Tool	S.H. Qunit	M-24		1	1	1	1	1	1	1	1	1	1	1	1	1
328	Embossing Wheel	S.H. Qunit	7313		1	1	1	1	1	1	1	1	1	1	1	1	1
329	Tape Vinyl	Dymo	158-06		10	10	10	10	10	10	10	10	10	10	10	10	10
330	Tape Vinyl	Dymo	5201-6		10	10	10	10	10	10	10	10	10	10	10	10	10
331	Tool Kit	North Electric	543261		1	1	1	1	1	1	1	1	1	1	1	1	1
332	Wire Guide	North Electric	7001863		1	1	1	1	1	1	1	1	1	1	1	1	1

APPENDIX C
GLOSSARY OF TERMS AND ABBREVIATIONS

ABS	Absolute.
ACK or ACK 1	Acknowledge Character.
ACK 2	Acknowledgment in alternating sequence: answer a cancel.
ACP 127	Allied Communications Procedures 127.
ADMS	Automatic Digital Message Switch.
ADMSC	Automatic Digital Message Switching Center.
ADU	Accumulation and Distribution Unit.
AESC	Automatic Electronic Switching Center.
AF DATACOM	Air Force Data Communications.
AIU	AUTOVON Interface Unit.
ALT	Alternate.
ALT-ROUTE	Alternate Routing.
ASCC	AUTODIN Station Control Console.
ASCII	American Standard Code for Information Interchange. A seven bit plus parity code, promulgated by the American Standards Association.
ASSC	AUTODIN Station Supervisory Console.
ASN	Assigned Serial Number.
ASR	Automatic Send-Receive Teletypewriter.
AUTODIN	Automatic Digital Network.
AUTO SYNC	Automatic Synchronization.
AUTOVON	Automatic Voice Network.
BTR	Backlog Threshold Reached.
CA	Connected and Available.
CAU	Crypto Ancillary Unit.
CCSU	Configuration Control and Sensing Unit.
CDP	Communications Data Processor.
CERT	Certified.
CHAR	Character.
CIA	Character Interface Assembly.
CID	Channel Identifier.
CKR	Cut Key Receive.
CKS	Cut Key Send.
CNA	Connected and Not Available.
CNCL	Cancel.
CONUS	Continental U.S.
COS	Channel Out of Service.
CRYPTO	Cryptographic Equipment.
CSC	Configuration Switch Controller.
CSANA	Configuration Switch Access Network Assembly.
CSDC	Channel Status Display Cabinet.
CSDU	Configuration Switch Distribution Unit.
CSN	Channel Sequence Number.
CSU	Configuration Switch Unit.
CSWC	Configuration Switch Controller.

DCA	Defense Communications Agency.
DCA 55-5	DCAC 55-5 Reporting.
DCT	Destination Control Table.
DOCC	DAC Operations Control Center.
DSSCS	Defense Special Security Communications System
DTG	Date Time Group.
DTMF	Dual Tone Multi frequency.
EOM	End of Message Sequence.
ETX	End of Transmission.
HSCTT	High Speed Card-Tape Terminal.
HSP	High Speed Printer.
ICI	Intercept-In.
ICO	Intercept-Out.
IOCD	Input/Output Control and Data.
I/O CONTROL	Input/Output Control.
IC/OVF	Intercept/Overflow.
INV	Invalid.
IOCD	Input/Output Control and Data Unit.
ITA #2	International Telegraph Alphabet Version #2.
IT SCT	Intransit Storage Capacity Threshold.
JRNL	Journal.
KA REGISTER	16-Bit Keyboard Address Register.
KSR	Keyboard Send-Receive Teletypewriter.
LSD	Least Significant Digit.
LTB	Line Termination Buffer.
LTC	Line Traffic Coordinator or LTC Program.
LTBU	Line Termination Buffer Unit.
LTTU	Line Termination Transfer Unit.
MCB	Message Control Block.
MEMB	Memory Bank.
MISPICK	Card Reader Error.
MODE I CHANNEL COORDINATION.	A duplex operation with automatic error and channel controls allowing independent and simultaneous two-way transmission.
MODE II CHANNEL COORDINATION.	A duplex operational without automatic error and channel controls allowing independent and simultaneous two-way transmission.
MODE III CHANNEL COORDINATION.	A duplex operation with automatic error and channel controls, but utilizing only one-way data transmission. The return direction is used exclusively for error control and channel coordination responses. The Mode III channel is reversible on a message basis.
MODE IV CHANNEL COORDINATION,	Unidirectional operation send only or receive only-without error control and channel coordination. The Mode IV channel is non-reversible.
MODE V CHANNEL COORDINATION.	Teletypewriter controller mode. A duplex operation with character framing detection and channel controls allowing independent and simultaneous two-way transmission.
MODEM	Acronym for modulator-demodulator.
MON	Monitor.
MP	Message Processor Program or Processor Unit.
MSD	Most Significant Digit.
MSU	Message Switching Unit.
MTC	Monitor Test Console.
MTT	Magnetic Tape Terminal.

NACK	Not Acknowledged.
NCA	Not Connected and Available.
NCNA	Not Connected and Not Available.
ONA	Order Not Accepted.
OS	Out of Service.
OSRI	Originating Station Routing Indicator.
OSSN	Originating Station Serial Number.
OVD FM	Overdue Flash Message.
OVD IM	Overdue Immediate Message.
OVD PM	Overdue Priority Message.
OVD RM	Overdue Routine Message
OVF-IN	Overflow-In
OVF-OUT	Overflow-Out
PAL	16-Bit Program Address Register.
PA.	16-Bit Program Address Register.
PCA	Processing, Communications Assembly.
PCCU	Punch Card Control Unit.
PGM	Program.
PLT	Program Library Tape.
PROC-PROC	Processor to Processor.
PRT	Printout.
REASON CODE	A code which accompanies printouts and/or service messages.
REF	Reference.
REP	Repeat.
RFI	Reason for Innage.
RFO	Reason for Outage.
RFS	Request Fault Status.
RI	Routing Indicator.
RM	Reject Message.
SB	Standby Processor.
SCW	Sequence Control Word.
SERVICE MESSAGE	A brief, concise, message between the ADMSC and communication centers or tributary stations pertaining to any phase of traffic handling.
SFC	Supervisory Function Control.
SOH	Start of Header.
SOM	Start of Message.
SPS	Sense Point Scanner.
SSN	Station Serial Number.
STBY	Standby.
SUS DUP	Suspected Duplicate.
SVC	Automatically Generated Service Message.
T REGISTER	Toggle (T) Register.
TC	Technical Controller.
TC OVRD	Tech Control Override.
TRLT	Input Line Table.
TSLT	Output Line Table.
TSS	Traffic Service Section.
TSU	Tape Search Unit.
UNACK	Unacknowledged.
VFTG	Voice Frequency Telegraph.
WBT	Wait Before Transmitting.

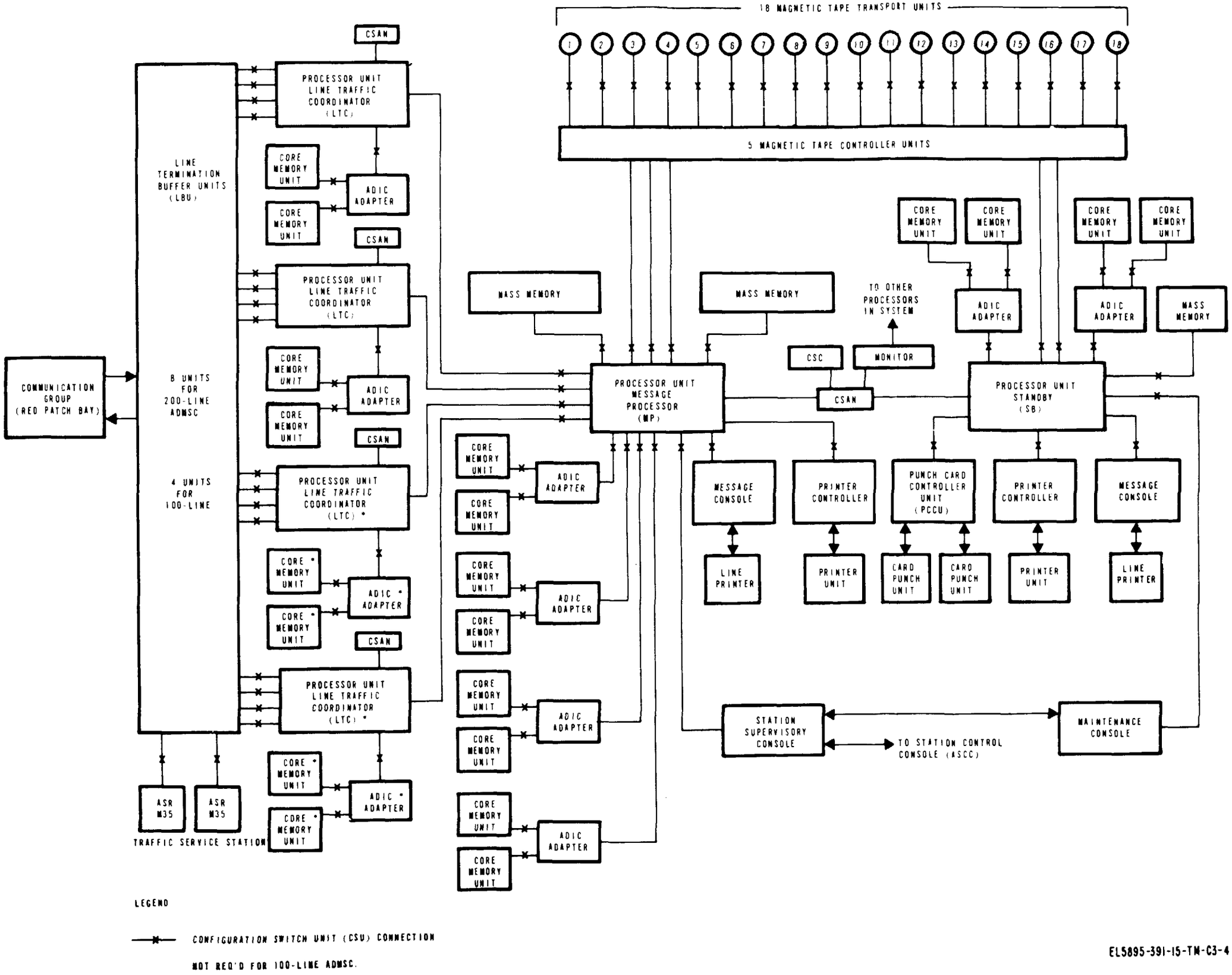


Figure 1-4. ADMS Group, simplified block diagram.

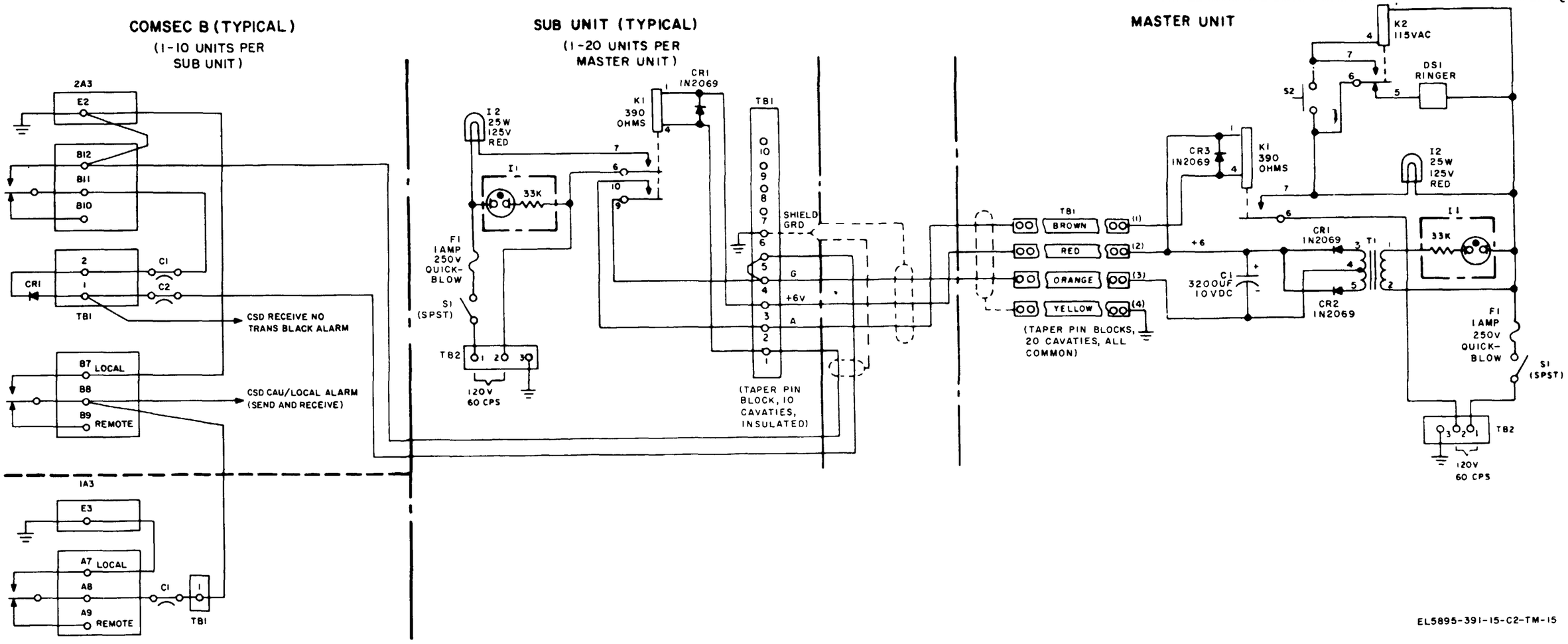
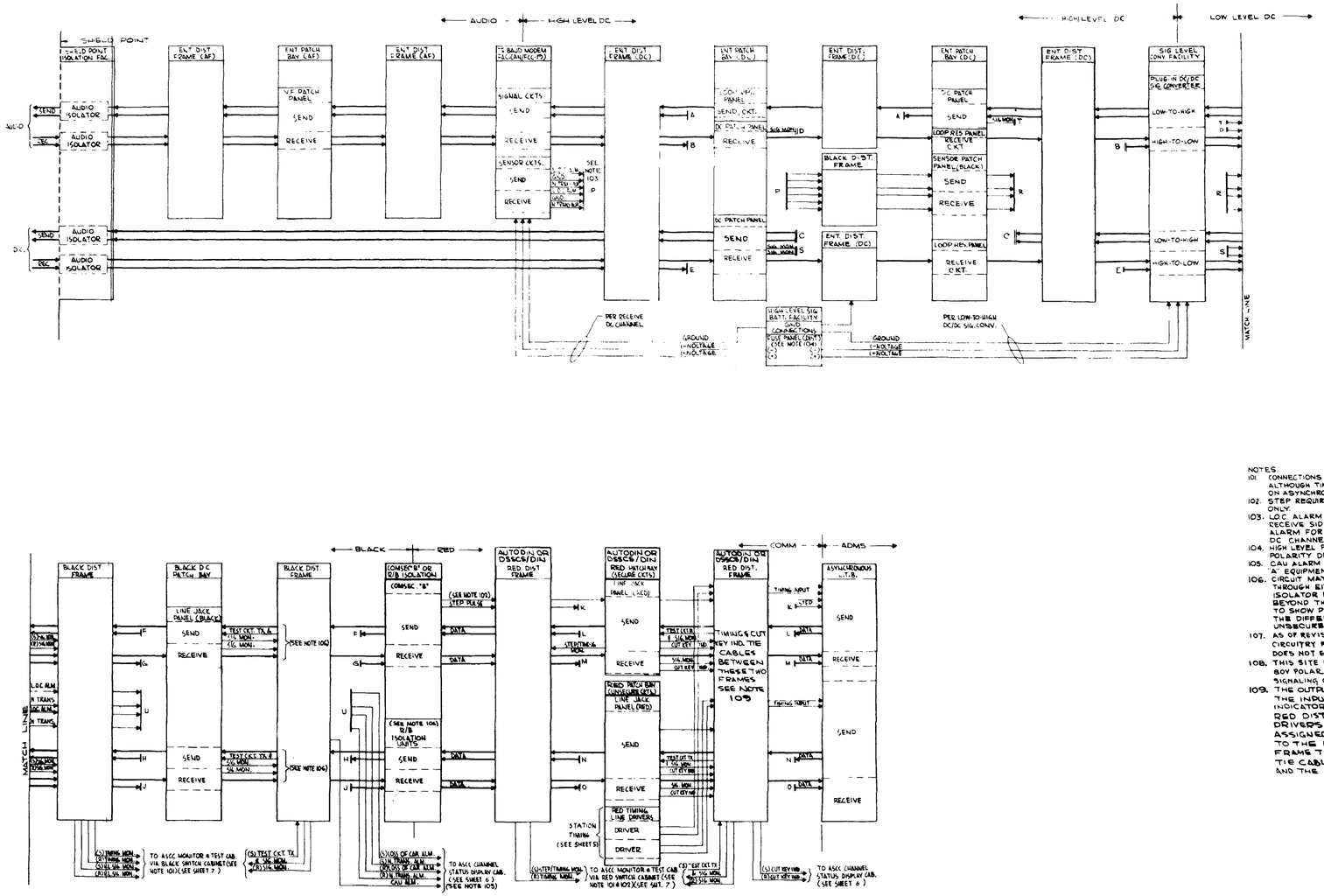
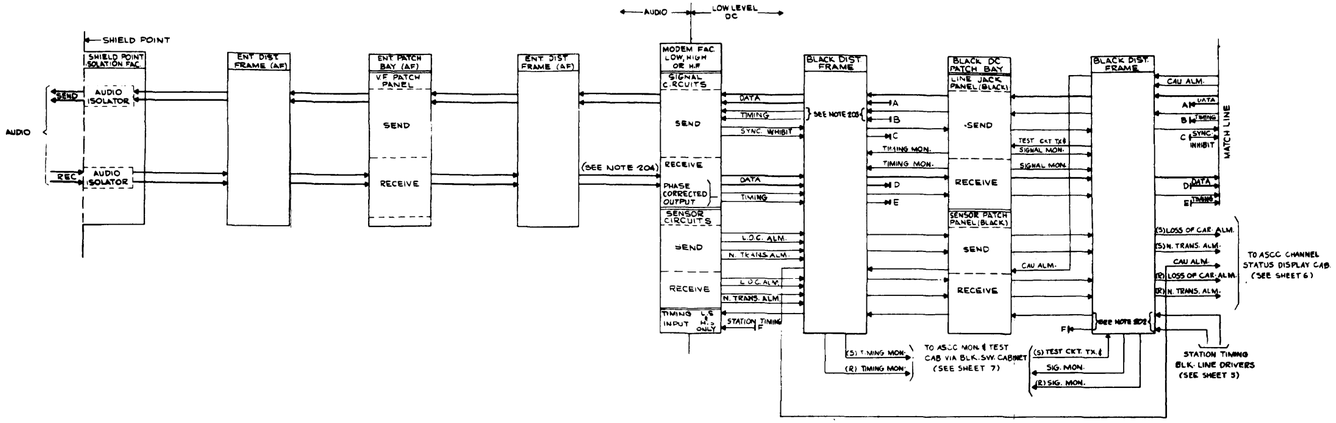


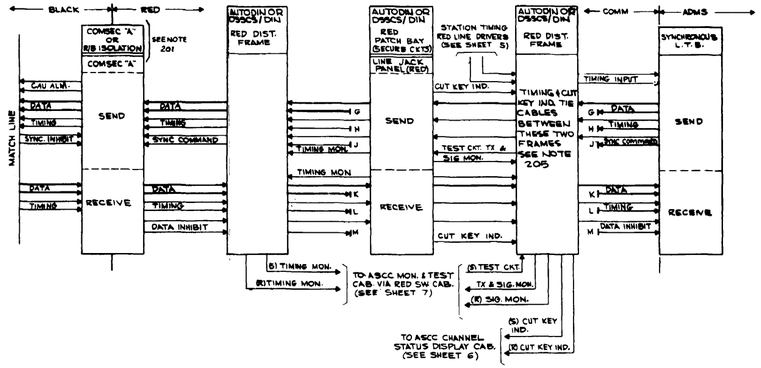
Figure 3-3. COMSEC B alarm system schematic diagram.



NOTES:
101. CONNECTIONS SHOWN ON A PER CHANNEL BASIS ALTHOUGH TIMING MONITOR HAS NO TIMING PRESENT ON ASYNCHRONOUS CIRCUITS.
102. STEP REQUIRED WITH COMSEC TYPE "B" EQUIPMENT ONLY.
103. LOC ALARM AND GROUND FOR BOTH THE SEND AND RECEIVE SIDE ARE PER FACILITY. NO TRANSITION ALARM FOR BOTH SEND AND RECEIVE ARE PER DC CHANNEL OR IS PER FACILITY.
104. HIGH LEVEL POWER SUPPLIES VARY IN VOLTAGE AND POLARITY DEPENDING ON SITE REQUIREMENTS.
105. CAU ALARM IS ONLY CONNECTED TO COMSEC TYPE "A" EQUIPMENT.
106. CIRCUIT MAY BE COMPLETED BEYOND THIS POINT THROUGH EITHER COMSEC "B" OR RED/BLACK ISOLATOR EQUIPMENTS. THE UNSECURE CIRCUIT BEYOND THIS POINT HAS BEEN INCLUDED ONLY TO SHOW PRESENTLY UNUSED CAPABILITY AND THE DIFFERENCE BETWEEN SECURE AND UNSECURE CIRCUITS IN THE RED AREA.
107. AS OF REVISION "A" OF THIS DRAWING, THE CIRCUITRY FOR THE SENSORS OF THE AN/FCC-19'S DOES NOT EXIST IN THE EQUIPMENT.
108. THIS SITE IS PRESENTLY CONFIGURED FOR BOY POLAR, 20 ma, NEGATIVE MARK SIGNALING ON THE HIGH LEVEL SIDE.
109. THE OUTPUTS OF THE RED LINE DRIVERS AND THE INPUTS TO THE CSD CUT KEY INDICATORS ARE TERMINATED ON THE AUTODIN RED DISTRIBUTION FRAME. THOSE LINE DRIVERS AND CUT KEY INDICATORS ASSIGNED TO DSCS CIRCUITS ARE EXTENDED TO THE DSCS/DIN RED DISTRIBUTION FRAME THROUGH THE TIMING AND CUT KEY TIE CABLES (BETWEEN THE TWO FRAMES) AND THE ASSOCIATED CROSS CONNECTS.

COMM SUBSYSTEM BLOCK DIAGRAM SYNCHRONOUS CIRCUITS (AUDIO & DC INPUT)





NOTES:

201. CONNECTIONS SHOWN FOR COMSEC TYPE 'A' OPERATION. WHEN R/B ISOLATION UNITS ARE USED THE "SYNC COMMAND", DATA INHIBIT", "CAU ALM.", AND "SYNC INHIBIT" LEADS ARE NOT USED. 4 R/B ISOLATION UNITS ARE REQUIRED, 2 FOR SIG. SEND & REC. AND 2 FOR TIMING, SEND AND RECEIVE.

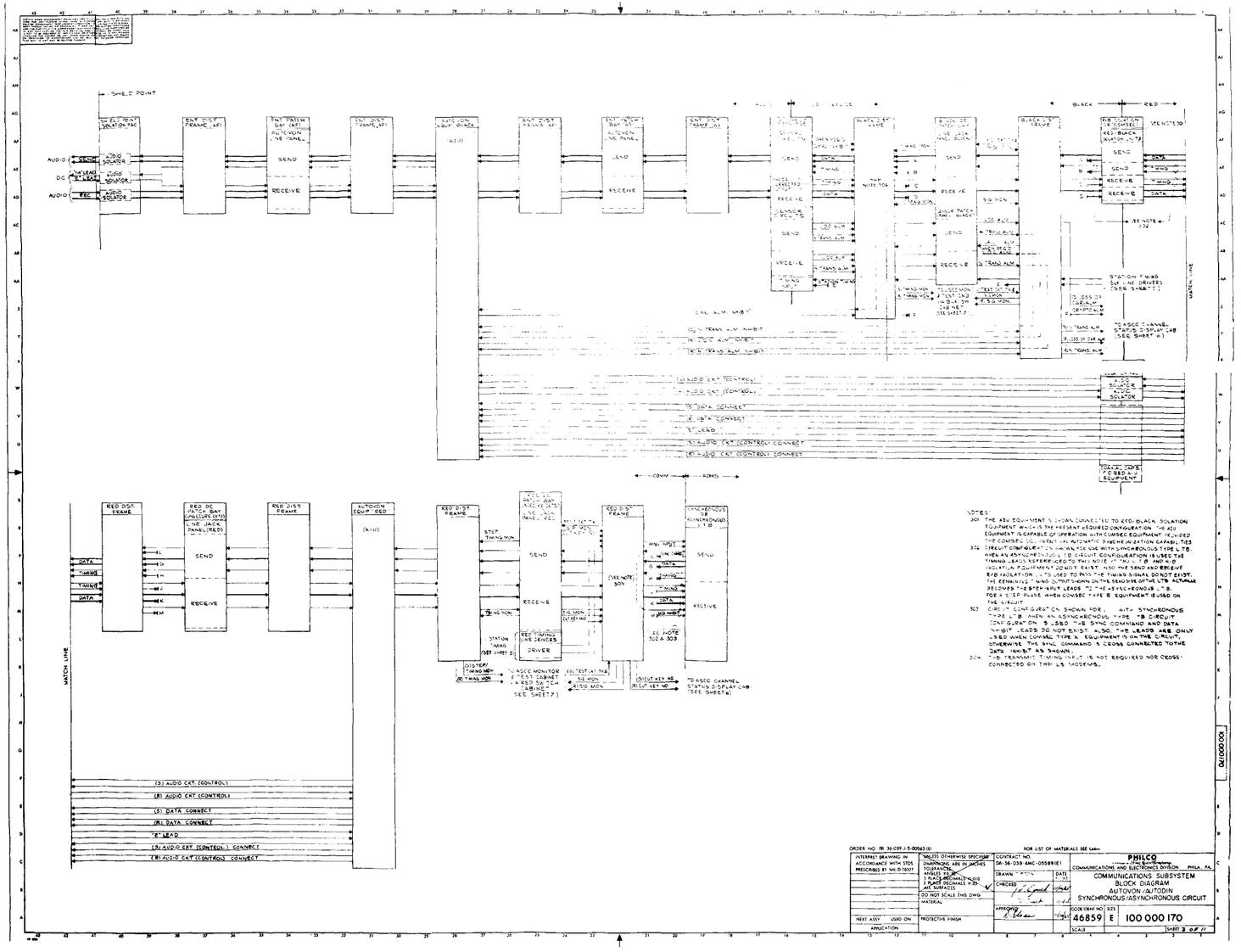
202. THE STATION TIMING INPUT IS NOT REQUIRED NOR CROSS-CONNECTED ON THE H.F. MODEMS.

203. THE TRANSMIT TIMING INPUT IS NOT REQUIRED NOR CROSS-CONNECTED ON THE L.S. MODEMS.

204. TWO (4) AUDIO RECEIVE INPUTS ARE PROVIDED FOR DIVERSITY OPERATION OF THE H.F. MODEMS. NORMAL RECEIVE INPUT IS ON SSA AND DIVERSITY IS ON SSB.

205. THE OUTPUTS OF THE RED LINE DRIVERS AND THE INPUTS TO THE CSD CUT KEY INDICATORS ARE TERMINATED ON THE AUTODIN RED DISTRIBUTION FRAME. THOSE LINE DRIVERS AND CUT KEY INDICATORS ASSIGNED TO DSSCS CIRCUITS ARE EXTENDED TO THE DSSCS/DIN RED DISTRIBUTION FRAME THROUGH THE TIMING AND CUT KEY TIE CABLES (BETWEEN THE TWO FRAMES) AND THE ASSOCIATED CROSS CONNECTS.

COMM SUBSYSTEM BLOCK DIAGRAM SYNCHRONOUS CIRCUITS (AUDIO INPUT)



NOTES:

301 THE A2U EQUIPMENT IS SHOWN CONNECTED TO RED/BLACK ISOLATION EQUIPMENT WHICH IS THE PRESENT REQUIRED CONFIGURATION. THE A2U EQUIPMENT IS CAPABLE OF OPERATION WITH COMSEC EQUIPMENT PROVIDED THE COMSEC EQUIPMENT HAS AUTOMATIC SYNCHRONIZATION CAPABILITIES.

302 CIRCUIT CONFIGURATION SHOWN FOR USE WITH SYNCHRONOUS TYPE I.T.B. WHEN AN ASYNCHRONOUS I.T.B. CIRCUIT CONFIGURATION IS USED THE TIMING LEADS REFERENCED TO THIS NOTE (TWO "B" AND RED ISOLATION EQUIPMENT DO NOT EXIST. ALSO THE SEND AND RECEIVE R/B ISOLATION "A" IS USED TO PASS THE TIMING SIGNAL DO NOT EXIST. THE REMAINING "A" AND OUTPUT SHOWN ON THE SEND SIDE OF THE I.T.B. ACTUALLY RECEIVES THE STEP-INPUT LEADS TO THE ASYNCHRONOUS I.T.B. FOR A STEP PULSE WHEN CONSEC TYPE B EQUIPMENT IS USED ON THE CIRCUIT.

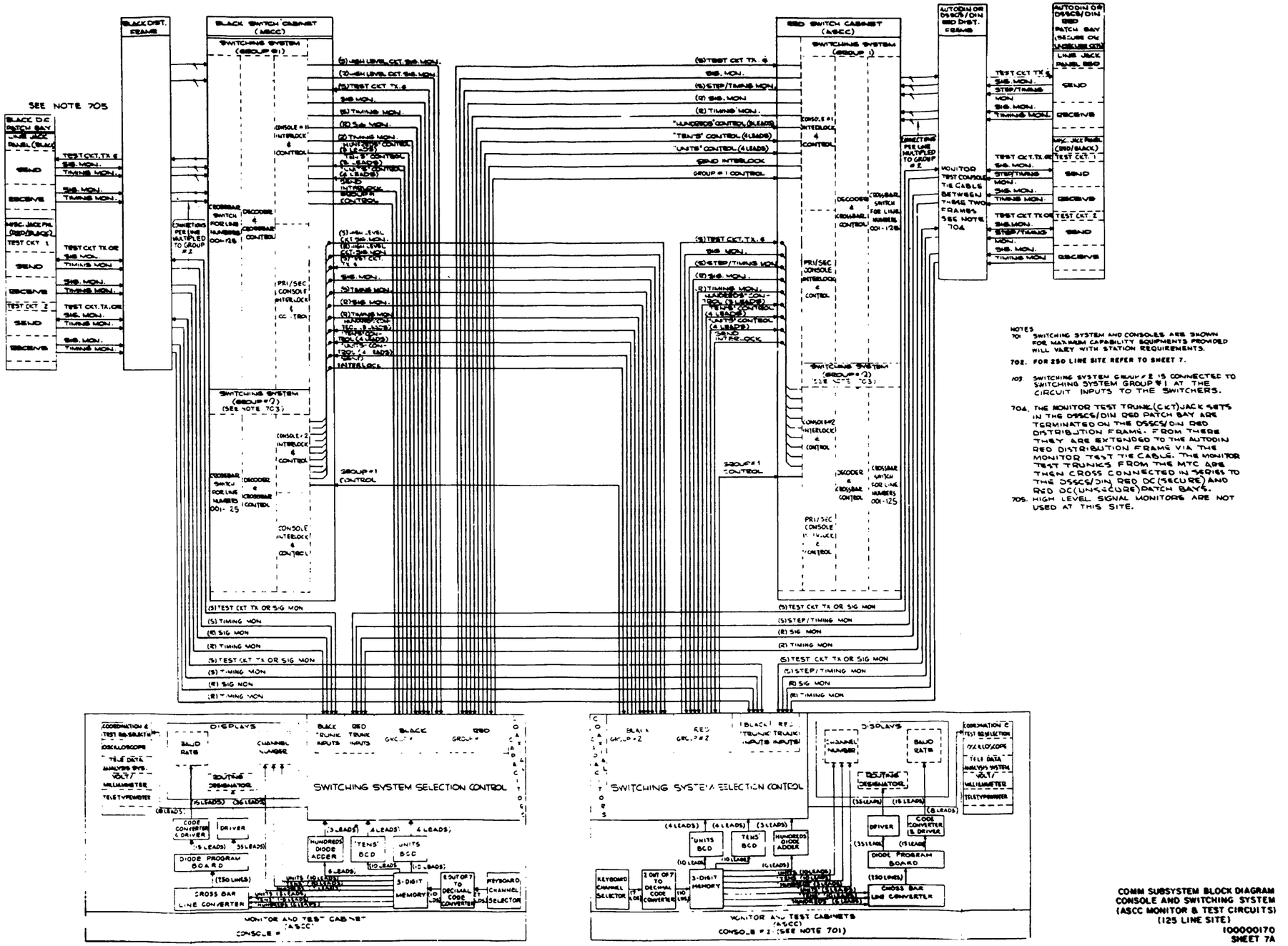
303 CIRCUIT CONFIGURATION SHOWN FOR USE WITH SYNCHRONOUS TYPE I.T.B. WHEN AN ASYNCHRONOUS TYPE I.T.B. CIRCUIT CONFIGURATION IS USED THE SYNC COMMAND AND DATA INHIBIT LEADS DO NOT EXIST. ALSO, THE LEADS ARE ONLY USED WHEN CONSEC TYPE A EQUIPMENT IS ON THE CIRCUIT, OTHERWISE, THE SYNC COMMAND IS CROSS CONNECTED TO THE DATA INHIBIT AS SHOWN.

304 THE TRANSMIT TIMING INPUT IS NOT REQUIRED NOR CROSS-CONNECTED ON THE I.S. MODEMS.

ORDER NO. DA-36-039-AMC-00563 (E)	FOR LIST OF MATERIALS SEE Last	PHILCO	
INTERPRET DRAWING IN ACCORDANCE WITH STDS PRESCRIBED BY MIL-D-70327	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ANGLES ±2° 1 PLACE DECIMALS ±.010 2 PLACE DECIMALS ±.01 FAC SURFACES DO NOT SCALE THIS DWG. MATERIAL PROTECTIVE FINISH	CONTRACT NO. DA-36-039-AMC-05589(E)	COMMUNICATIONS AND ELECTRONICS DIVISION PHILA. PA.
		DRAWN	DATE
		CHECKED	
		APPROVED	
NEXT ASSY USED ON APPLICATION		SCALE	CODE IDENT NO 46859 SIZE E DWG NO 100 000 170 SHEET 3 OF 11

COMMUNICATIONS SUBSYSTEM BLOCK DIAGRAM AUTOVON /AUTODIN SYNCHRONOUS/ASYNCHRONOUS CIRCUIT

100 000 000



Comm subsystem block diagram console.

Comm subsystem block diagram console

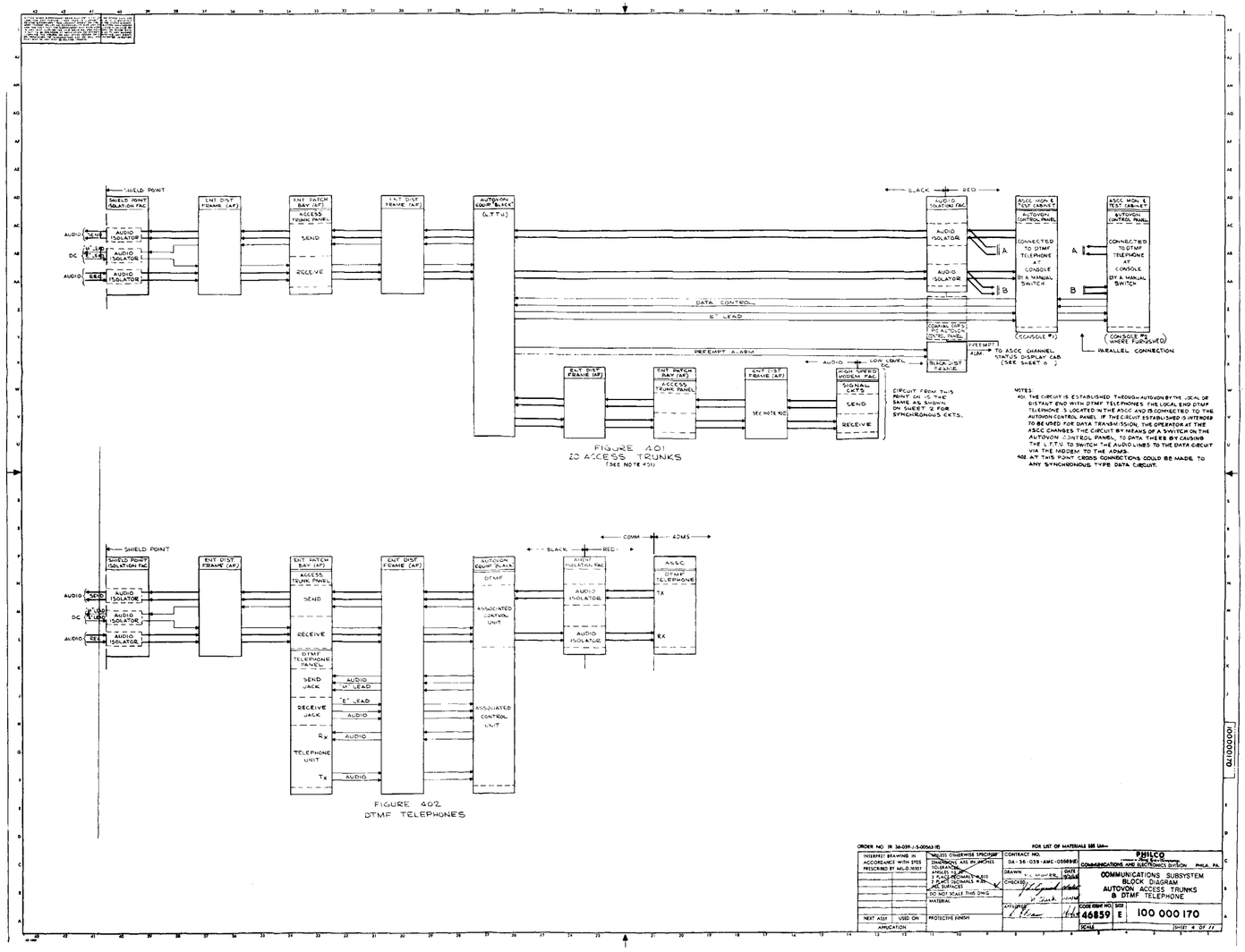


FIGURE 502 ASYNCHRONOUS TIMING

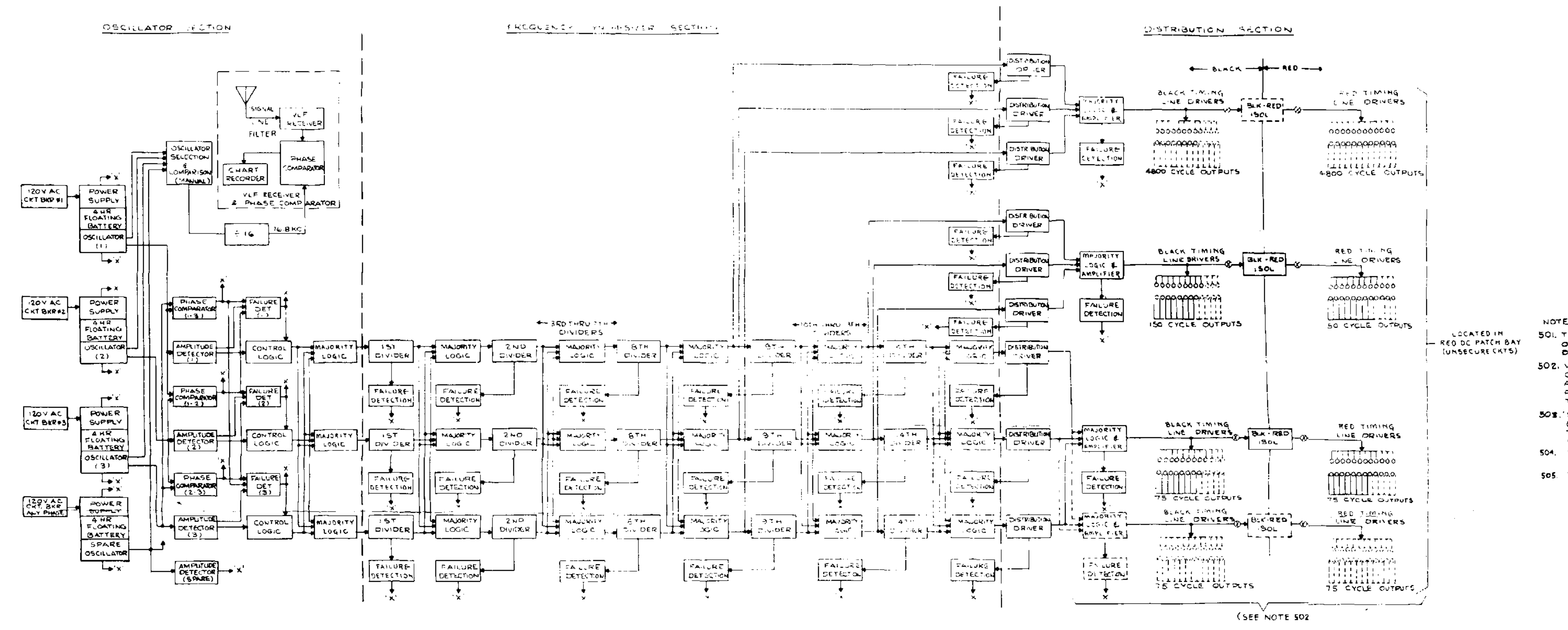


FIGURE 501
SYNCHRONOUS TIMING

NOTES:

501. TIMING FOR 75 & 150 BAUD ASYNCHRONOUS CIRCUITS IS OBTAINED DIRECTLY FROM SYNCHRONOUS TIMING OUTPUTS OF 1200 CYCLES & 2400 CYCLES RESPECTIVELY

502. WHERE MORE THAN 15% OF THE ADMS TERMINATED CIRCUITS OPERATE AT ONE GIVEN RATE, ADDITIONAL GROUPS OF LINE DRIVERS. WILL BE PROVIDED AS INDICATED BY DASHED LINES ON THE 75 CYCLE OUTPUTS

503. 'X' INDICATES CONNECTION TO ALARM INDICATOR ON CIRCUIT CARD, ON MODULE FRONT PANEL, ON TIMING SYSTEM CABINETS, AND ON STATION CONSOLES EITHER DIRECT OR AFTER BEING "OR" GATED.

504. DASHED LINES INDICATE FUTURE EQUIPMENT CAPABILITIES, EXCEPT WHERE INDICATED BY NOTE 502.

505. THE SYMBOL ⊗ REPRESENTS A DISTRIBUTION FRAME TERMINATION AND CROSS CONNECTION

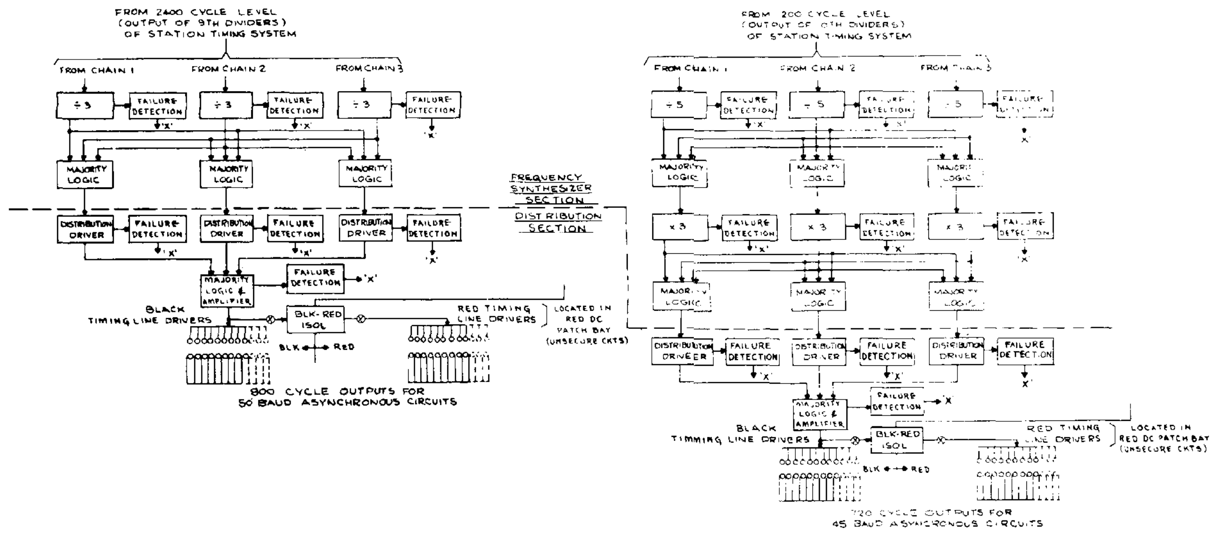


FIGURE 502
ASYNCHRONOUS TIMING
(SEE NOTE 501)

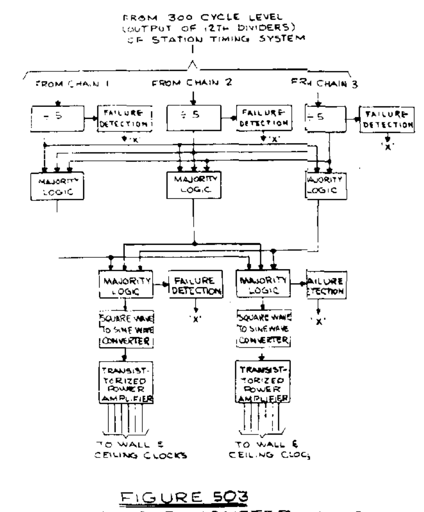
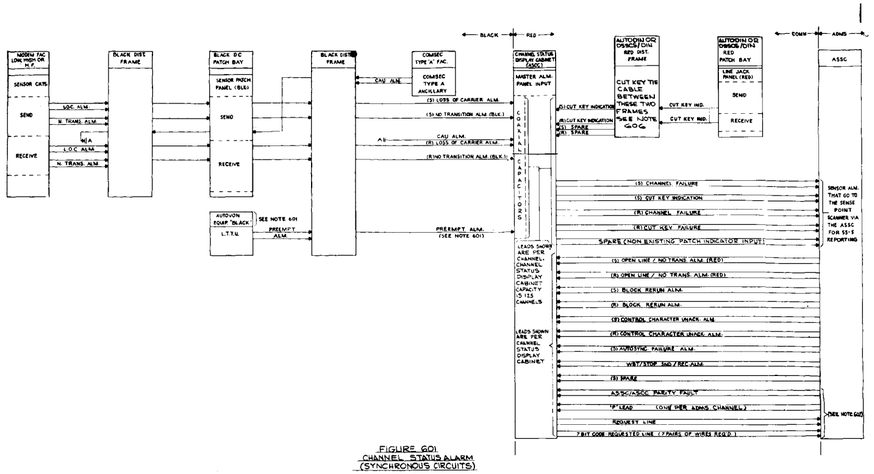


FIGURE 503
STATION CHRONOMETER SYSTEM

ORDER NO FR 36-039-J-5-00563 (E)

INTERPRET DRAWING IN ACCORDANCE WITH STDS PRESCRIBED BY MIL-D-70327	~~UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES: ANGLES ±0°30' 3 PLACE DECIMALS ±.010 2 PLACE DECIMALS ±.03 ALL SURFACES~~	CONTRACT NO. DA-36-039-AMC-05589 (E)	PHILCO — COMMUNICATIONS AND ELECTRONICS DIVISION — PHILA., PA.
KO25	DO NOT SCALE THIS DWG	DRAWN J. IVINS — DATE 12-8-64	COMMUNICATIONS SUBSYSTEM BLOCK DIAGRAM DATA TIMING SUBSYSTEM
NEXT ASSY / USED ON	MATERIAL	CHECKED	CODE IDENT NO. 46859 — SIZE E — 100 000170
APPLICATION	PROTECTIVE FINISH	APPROVED	SCALE: NONE — SHEET 5 OF 11

100000170



NOTES:
601. THIS ALARM ONLY EXISTS FROM THE AUTOVON CIRCUITS AS SHOWN ON SHEET 4, FIG. 601. ON CIRCUITS OTHER THAN AUTOVON, THE ALARM INPUT IS AVAILABLE AT THE BLACK DIST FRAME FOR EVERY ALARM CHANNEL AVAILABLE TO THE ASSC, BUT IT IS NOT CROSS CONNECTED OR USED.
602. INTERCONSOLE CONTROL CIRCUIT WIRING.
603. ALARMS SHOWN FOR BLACK AREA ONLY. RED AREA ALARMS ARE THE SAME AS SHOWN IN FIGURE 601 FOR THE RED AREA ONLY PER CHANNEL BASIS.
604. ONE AND ONLY ONE OF THE THREE (S) CONFIGURATIONS SHOWN FOR GFE, ENVIRONMENTAL SENSORS AND ALARMS WILL EXIST AT THE SITE.
605. AS OF REVISION 'A' OF THIS DRAWING, THE CIRCUITRY FOR THE SENSORS OF THE AN/FCC-19'S DOES NOT EXIST IN THIS EQUIPMENT
606. THE INPUTS TO THE CSD CUT KEY INDICATORS ARE TERMINATED ON THE AUTOVON DCO DISTRIBUTION FRAME. THOSE CUT KEY INDICATORS ASSIGNED TO DSSCS CIRCUITS ARE EXTENDED TO THE DSSCS/ON DCO DISTRIBUTION FRAME THROUGH THE CUT KEY TIE CABLES (BETWEEN THE TWO FRAMES) AND THE ASSOCIATED CROSS CONNECTS.

FIGURE 601
CHANNEL STATUS ALARM
(SYNCHRONOUS CIRCUITS)

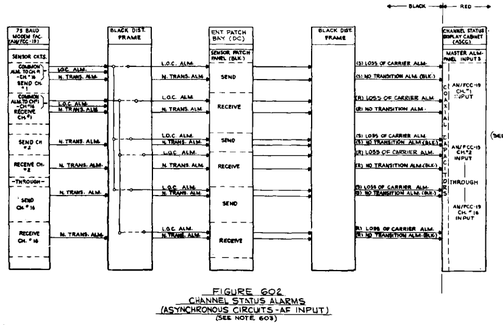


FIGURE 602
CHANNEL STATUS ALARMS
(ASYNCHRONOUS CIRCUITS-AE INPUT)
(SEE NOTE 603)

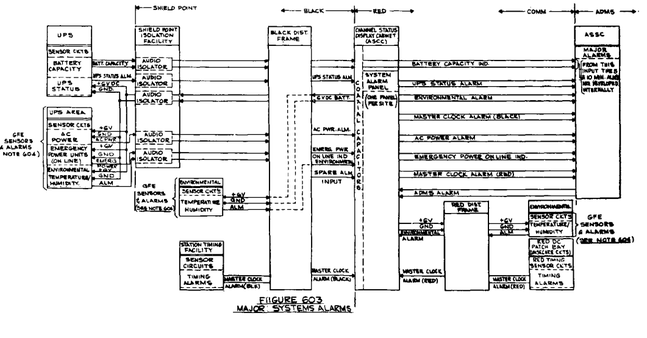
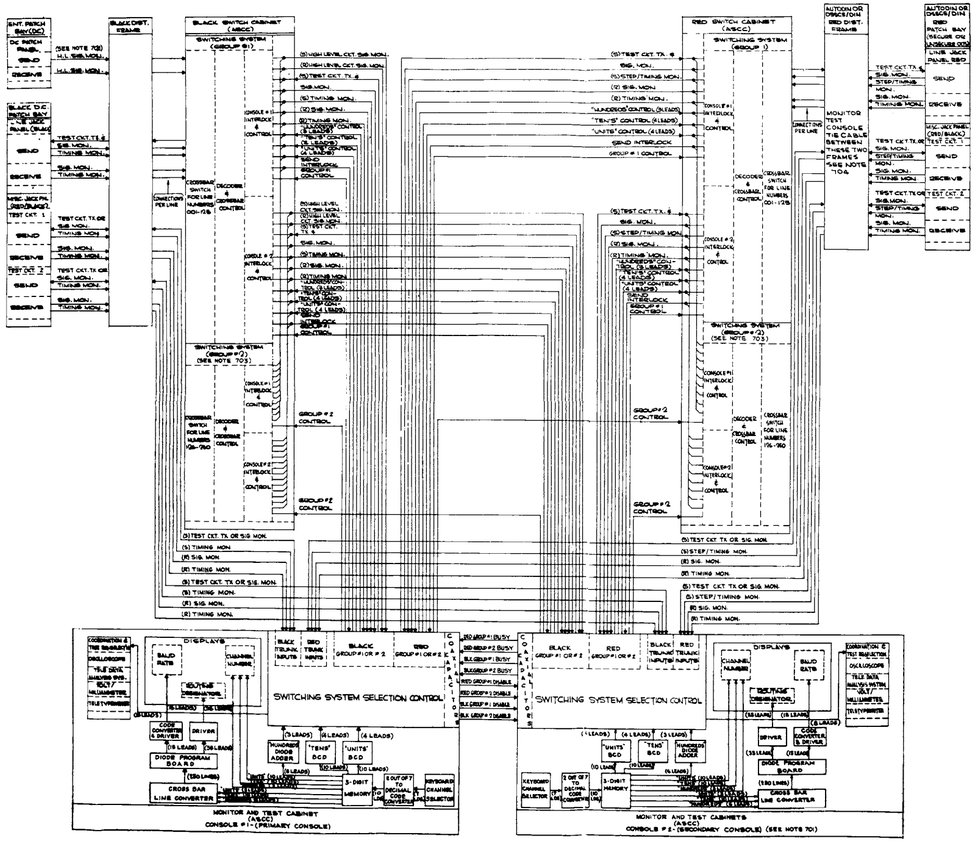


FIGURE 603
MAJOR SYSTEMS ALARMS

COMM SUBSYSTEM BLOCK DIAGRAM
CHANNEL STATUS DISPLAYS
(ASCC ALARM CIRCUITS)

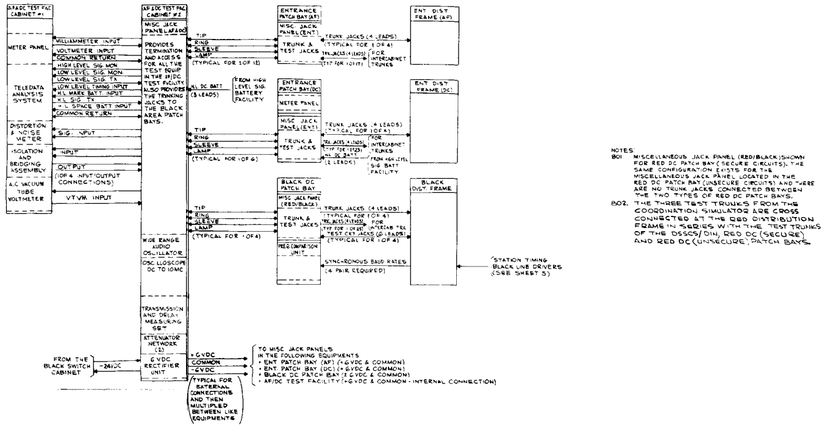
10000070
SHEET 6

Change 1



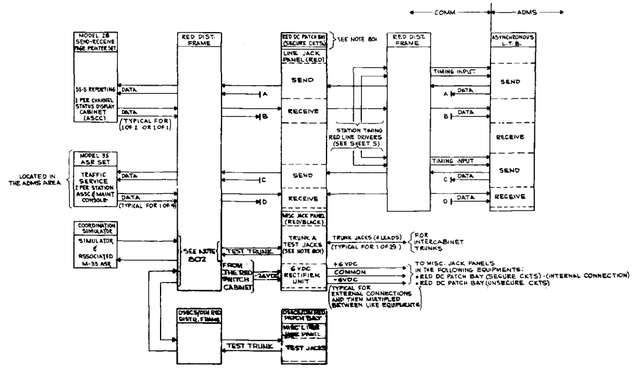
NOTES:
701. SWITCHING SYSTEM AND CONSOLES ARE SHOWN FOR MAXIMUM CAPABILITY EQUIPMENTS PROVIDED WILL VARY WITH STATION REQUIREMENTS.
702. HI-LEVEL MONITOR SIGNALS HAVE BEEN CONVERTED TO LOW LEVEL SIGNALS WITHIN THE SWITCHING SYSTEM EQUIPMENT.
703. SWITCHING SYSTEM GROUP #2 IS CONNECTED TO THE RED OR BLACK DISTRIBUTION FRAME WIRES IN THE SAME AS SHOWN FOR SWITCHING SYSTEM GROUP #1.
704. THE MONITOR TEST TRUNK(CKT)JACK SETS IN THE DSSCS/DIN RED PATCH BAY ARE TERMINATED ON THE DSSCS/DIN RED DISTRIBUTION FRAME. FROM THERE THEY ARE EXTENDED TO THE AUTODIN RED DISTRIBUTION FRAME VIA THE MONITOR TEST TIE CABLE. THE MONITOR TEST TRUNKS FROM THE MTC ARE THEN CROSS CONNECTED IN SERIES TO THE THE DSSCS/DIN, RED DC (SECURED), AND RED DC (UNSECURE) PATCH BAYS.

COMM SUBSYSTEM BLOCK DIAGRAM
OF GOLF AND SWITCHING SYSTEM
AND MONITOR & TEST CABINETS



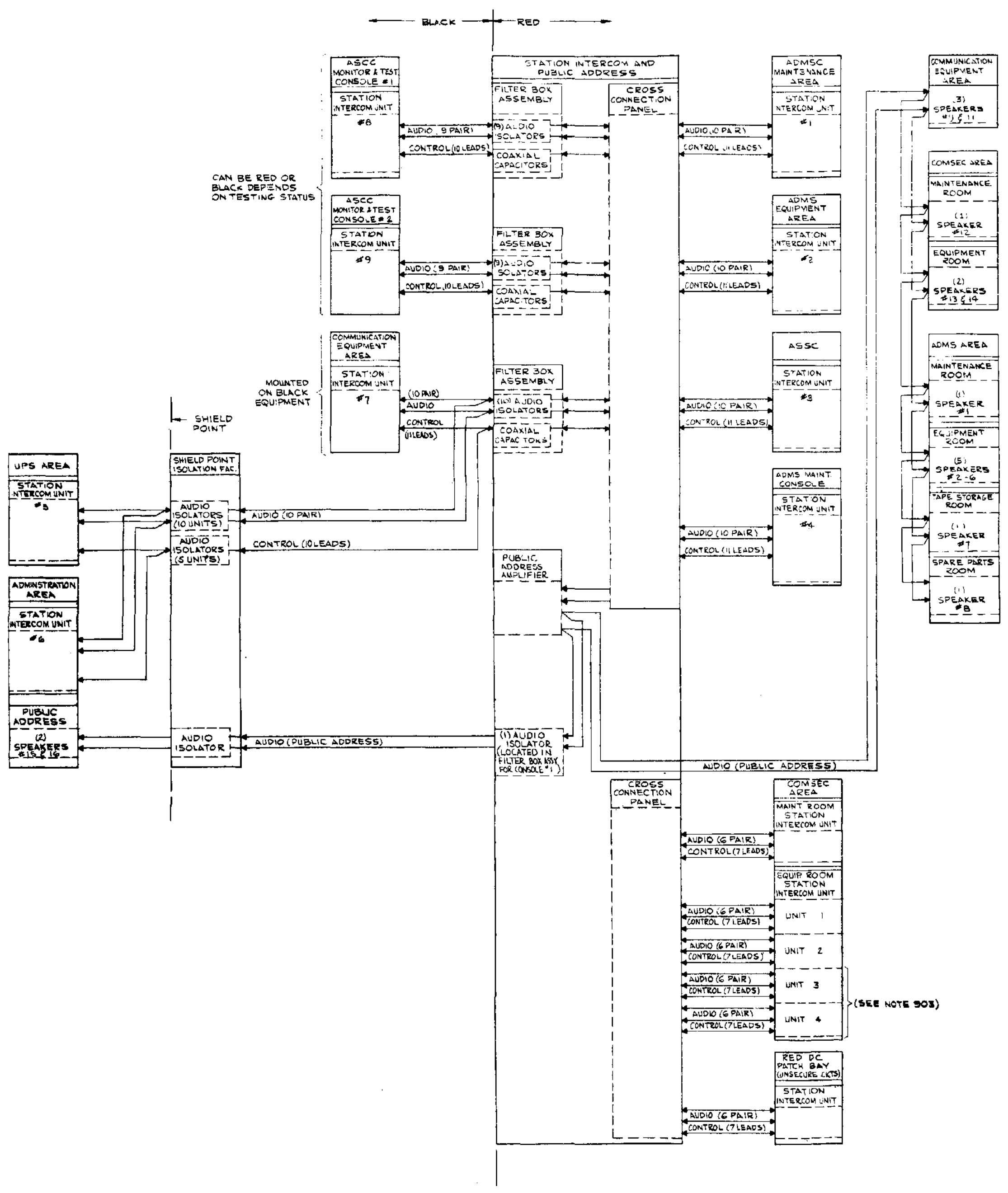
NOTES:
802. MISCELLANEOUS JACK PANEL (RED/BLACK) SHOWN FOR RED DC PATCH BAY (SECURE CKTS). THE SAME CONFIGURATION EXISTS FOR THE MISCELLANEOUS JACK PANEL LOCATED IN THE RED DC PATCH BAY (UNSECURE CKTS) AND THERE ARE NO TRUNK JACKS CONNECTED BETWEEN THE TWO TYPES OF RED DC PATCH BAYS.
802. THE THREE TEST TRUNKS FROM THE COORDINATION SIMULATOR ARE CROSS CONNECTED AT THE RED DISTRIBUTION FRAME IN SERIES WITH THE TEST TRUNKS OF THE DSSCS/DIN, RED DC (SECURE) AND RED DC (UNSECURE) PATCH BAYS.

FIGURE 802
AF/DC TEST FACILITY
& MISCELLANEOUS TEST CIRCUITS



COMM SUBSYTEM BLOCK DIAGRAM AF/DC TEST FACILITY & MISCELLANEOUS CIRCUITS

FIGURE 802. MISCELLANEOUS TEST & SERVICE CIRCUITS



NOTES:

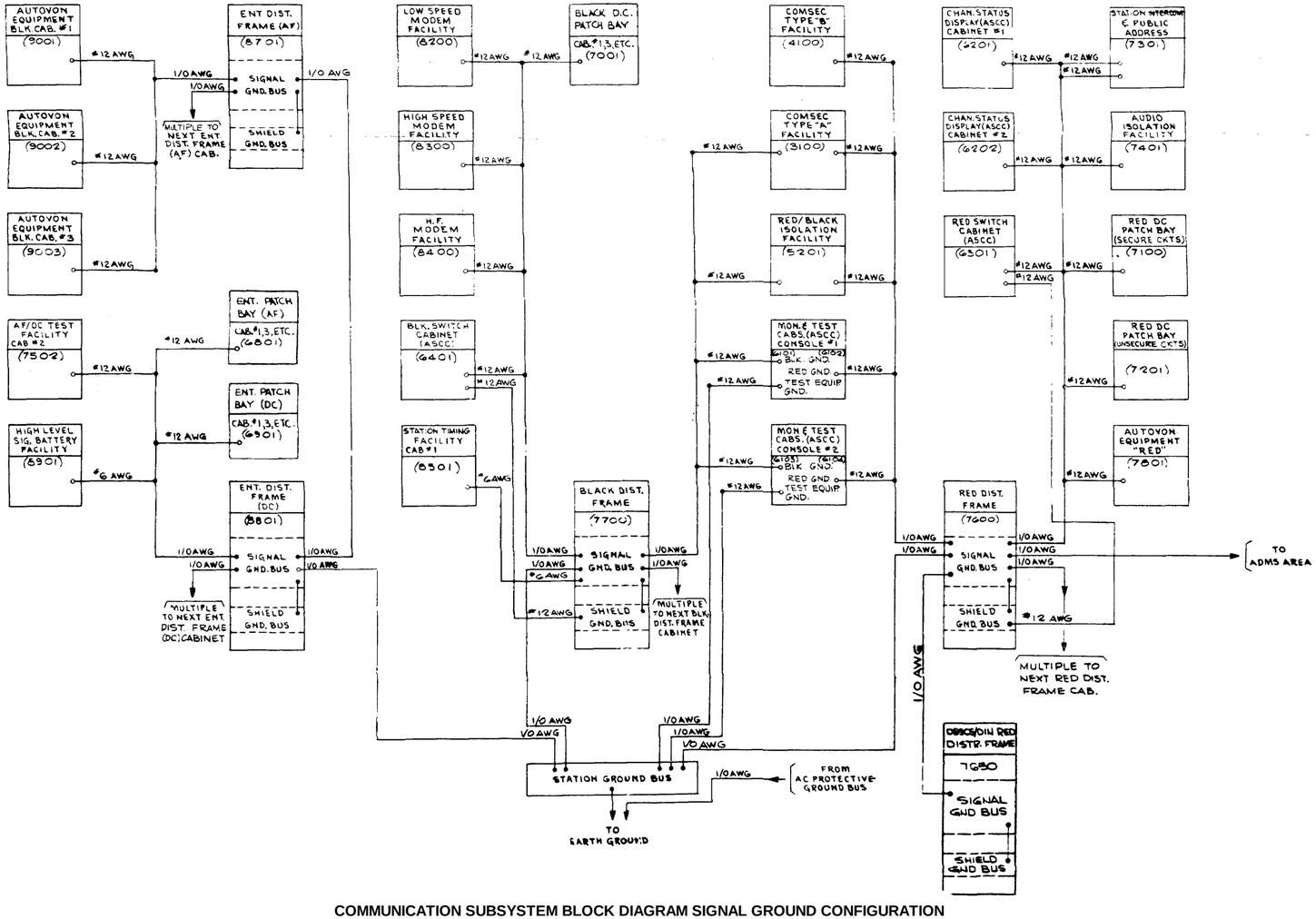
901. EACH INTERCOM IS A 10 POSITION INTERCOM UNIT. THE NINTH CHANNEL SELECT BUTTON OR THE 10th POSITION ON EACH GENERAL INTERCOM UNIT IS USED FOR OPERATION INTO THE PUBLIC ADDRESS.
902. THE COMSEC INTERCOMS ARE NOT CONNECTED TO THE GENERAL INTERCOM UNITS OR PUBLIC ADDRESS.
903. THE INTERCOM AND PUBLIC ADDRESS FACILITY ARE SHOWN FOR THE MAXIMUM STATION REQUIREMENT. EQUIPMENTS PROVIDED WILL VARY WITH THE INDIVIDUAL STATION REQUIREMENTS.

ORDER NO. FR 36-039-J-5-00563 (E)

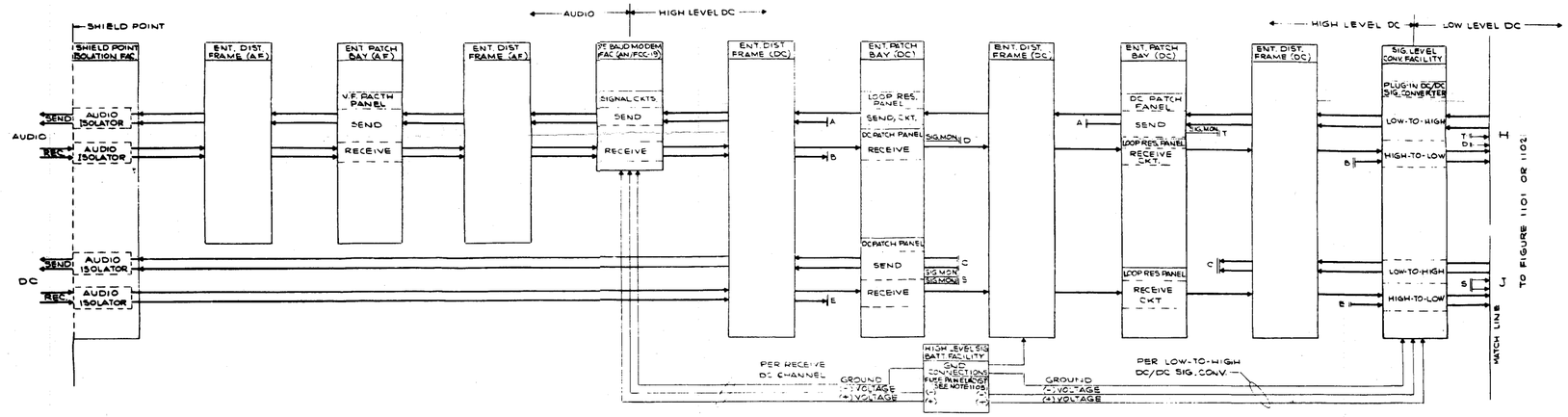
FOR LIST OF MATERIALS SEE LM—

INTERPRET DRAWING IN ACCORDANCE WITH STDS PRESCRIBED BY MIL-D-70327	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES: ANGLES ±0°30' 3 PLACE DECIMALS ±.010 2 PLACE DECIMALS ±.03 ALL SURFACES	CONTRACT NO. DA-36-039-AMC-05589 (E)	PHILCO COMMUNICATIONS AND ELECTRONICS DIVISION . PHILA., PA.
KO25	DO NOT SCALE THIS DWG	DRAWN TIPTON DATE 11/30/65	COMMUNICATIONS SUBSYSTEM BLOCK DIAGRAM STATION INTERCOM AND PUBLIC ADDRESS FACILITY
NEXT ASSY / USED ON	MATERIAL	CHECKED	CODE IDENT NO. 46859 SIZE E 100 000170
APPLICATION	PROTECTIVE FINISH	APPROVED	SCALE NONE SHEET 9 OF 11

100 000 170



COMMUNICATION SUBSYSTEM BLOCK DIAGRAM SIGNAL GROUND CONFIGURATION



NOTES:
1101. CONNECTIONS SHOWN ON A PER CHANNEL BASIS ALTHOUGH TIMING MONITOR HAS NO TIMING PRESENT ON ASYNCHRONOUS CIRUITS.
1102. THE ADMS TRAFFIC COORDINATION UNIT CAN BE CONNECTED TO AN EATERNAL AUDIO OR DC CIRCUIT DEPENDING ON SITE REQUIRMENTS.
1103. THE TECH CONTROL COORDINATOR UNIT CAN BE CONNECTED TO AN EXTERNAL AUDIO OR DC CIRCUIT DEPENDING ON SITE REQUIRMENTS.
1104. ONLY 1 OF 3 AVAILABLE CIRCUITS FOR THE AN/FGC-79 ARE SHOWN.
1105. HIGH LEVEL POWER SUPPLIES VARY IN VOLTAGE AND POLARYTY DEPENDING ON SITE REQUIREMENT.
1106. THESE CIRCUITS ARE CONSIDERED NON ADMS.

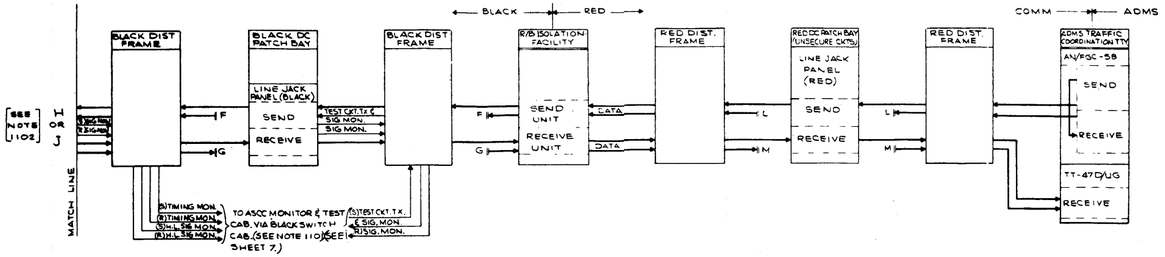


FIGURE 1101
ADMS TRAFFIC COORDINATION CIRCUIT
(SEE NOTE 1106)

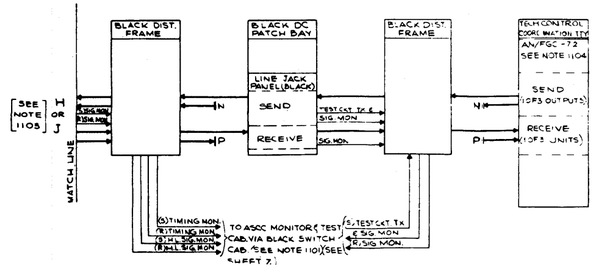
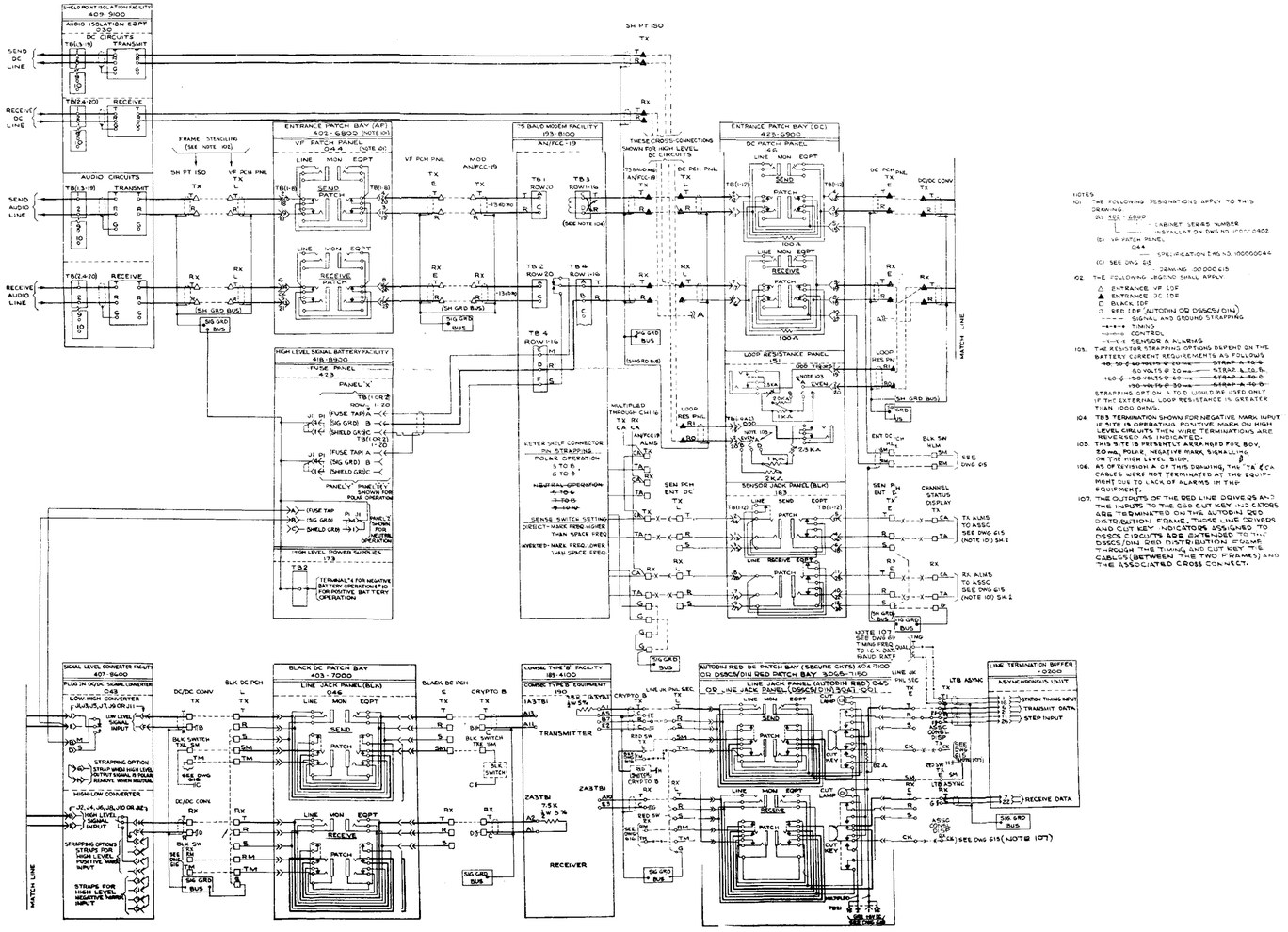


FIGURE 1102
TECH CONTROL COORDINATION CIRCUIT
(SEE NOTE 1106)

ORDER NO FR 36-039-J-5-00563 (E) — FOR LIST OF MATERIAL SEE LM

INTERPRET DRAWING IN ACCORDANCE WITH STDS PRESCRIBED BY	DO NOT SCALE THIS DWG.	CONTRACT NO. DA 36-039 AMC-05589 (E)	PHILCO COMMUNICATIONS AND ELECTRONICS DIVISION PHILA., PA
	MATERIAL	DRAWN C.S.P. Turman, Jr. 1/14/63	COMM SUBSYSTEM BLOCK DIAGRAM TELETYPE WRITER COORDINATION CIRCUITS
	PROTECTIVE FINISH	CHECKED T.W. Grum 1/14/63	
NEXT ASSY / USED ON		APPROVED J. Evans 1/15/63	SIZE E / CODE IDENT NO 46859 / 100000170
APPLICATION		J. Elias 1/21/63	SCALE NONE / SHEET 11 OF 11



NOTES

101 THE FOLLOWING DESIGNATIONS APPLY TO THIS DRAWING

(A) 402-6800 — CABINET SERIES NUMBER — INSTALLAT ON DWG NO. 100100402

(B) VF PATCH PANEL 204- — SPECIFICATION DWG NO. 100000644

(C) SEE DWG 615 — DRAWING 100000615

102 THE FOLLOWING LEGEND SHALL APPLY

△ ENTRANCE VF IDF
▲ ENTRANCE DC IDF
□ BLACK IDF
◇ RED IDF (AUTODIN OR DSSCS/DIN)
---- SIGNAL AND GROUND STRAPPING
-+-+- TIMING
-o-o- CONTROL
-x-x- SENSOR A ALARMS

103 THE RESISTOR STRAPPING OPTIONS DEPEND ON THE BATTERY CURRENT REQUIREMENTS AS FOLLOWS

~~40 TO 60 MA TO 20 MA~~ — STRAP A TO C
80 VOLTS @ 20 MA — STRAP A TO B
120 ~~TO 150 MA~~ TO 60 MA — STRAP A TO B
~~150 TO 250 MA TO 30 MA~~ — STRAP A TO D

STRAPPING OPTION A TO D WOULD BE USED ONLY IF THE EXTERNAL LOOP RESISTANCE IS GREATER THAN 1000 OHMS.

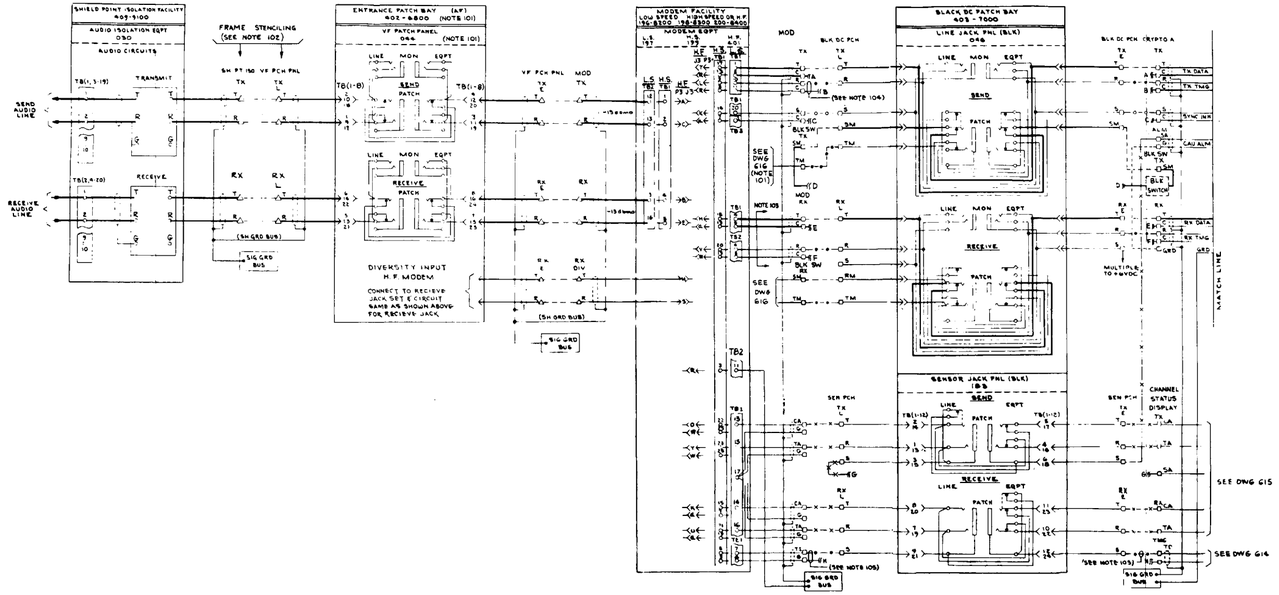
104 TB3 TERMINATION SHOWN FOR NEGATIVE MARK INPUT. IF SITE IS OPERATING POSITIVE MARK ON HIGH LEVEL CIRCUITS THEN WIRE TERMINATIONS ARE REVERSED AS INDICATED.

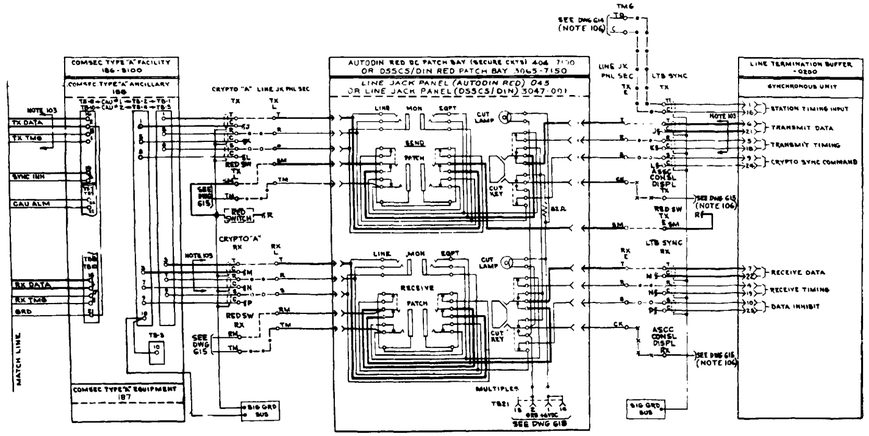
105 THIS SITE IS PRESENTLY ARRANGED FOR 80V, 20 MA, POLAR, NEGATIVE MARK SIGNALLING ON THE HIGH LEVEL SIDE.

106 AS OF REVISION A OF THIS DRAWING, TM "TA" CA CABLES WERE NOT TERMINATED AT THE EQUIPMENT DUE TO LACK OF ALARMS IN THE EQUIPMENT.

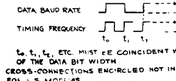
107 THE OUTPUTS OF THE RED LINE DRIVE 25 AND THE INPUTS TO THE CSD CUT KEY INDICATORS ARE TERMINATED ON THE AUTODIN RED DISTRIBUTION FRAME. THOSE LINE DRIVERS AND CUT KEY INDICATORS ASSIGNED TO DSSCS CIRCUITS ARE EXTENDED TO THE DSSCS/DIN RED DISTRIBUTION FRAME THROUGH THE TIMING AND CUT KEY TE CABLES (BETWEEN THE TWO FRAMES) AND THE ASSOCIATED CROSS CONNECT.

COMM SUBSYSTEM APPLICATION SCHEMATIC ASYNCHRONOUS CIRCUITS





NOTES:
101. THE FOLLOWING DESIGNATIONS APPLY TO THIS DRAWING
(a) 403-6800 — CABINET SERIES NUMBER
— INSTALLATION DWG NO. 100 000 403.
(b) VF PATCH PANEL
044 — SPECIFICATION 100 000 044
(c) SEE DWG G15 — DRAWING 00 00 00 G15
102. THE FOLLOWING LEGEND SHALL APPLY:
△ ENTRANCE VF IDF
▲ ENTRANCE DC IDF
□ BLACK IDF
○ RED IDF (AUTODIN OR DSSCS/DIN)
----- SIGNAL OR (GND STRAPPING WHERE INDICATED)
-x-x- TIMING
-o-o- CONTROL
-x-x- SENSOR ALARMS
103. THE TIMING AND DATA SIGNAL RELATIONSHIP AT THE TRANSMITTING SOURCE SHALL BE AS FOLLOWS:

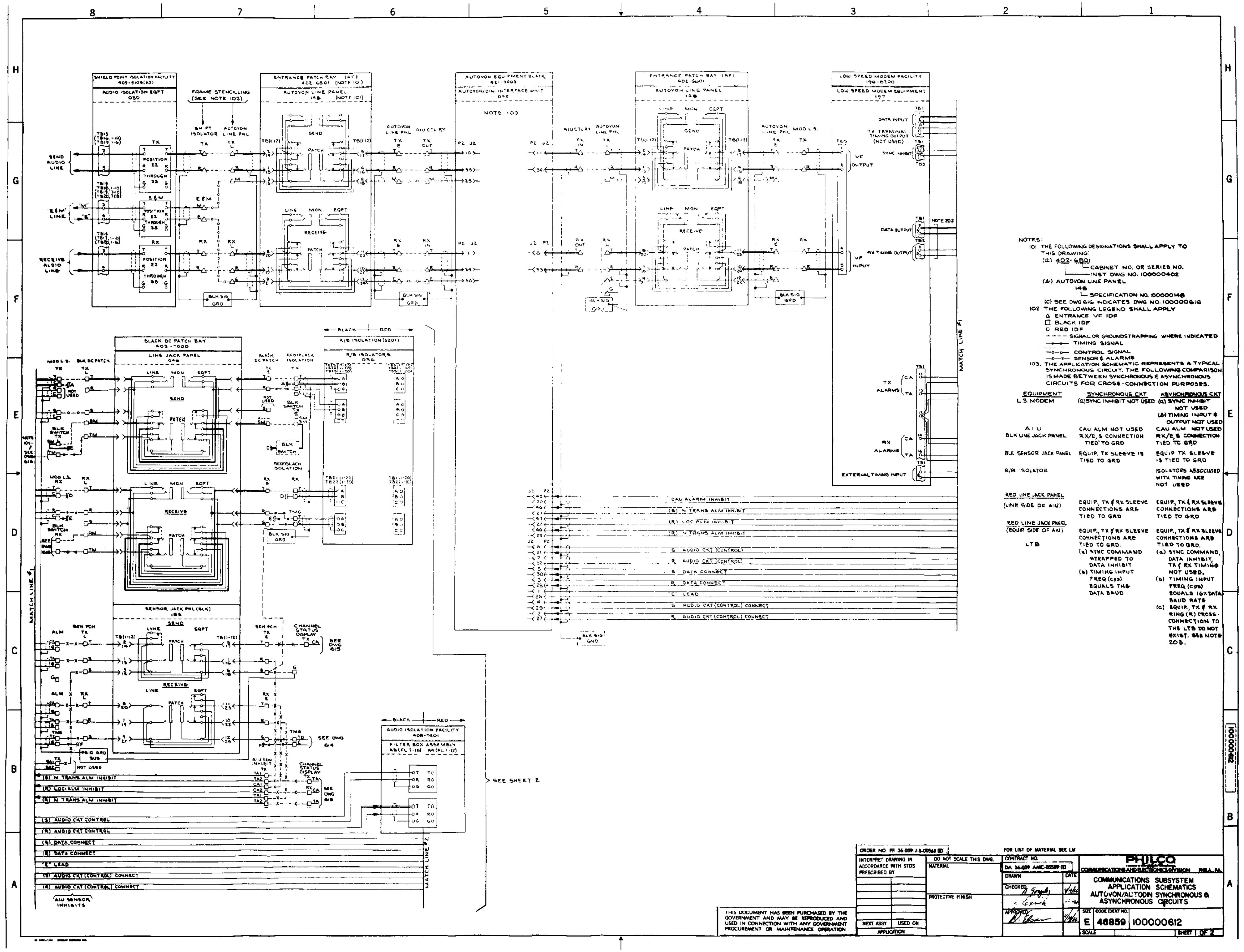


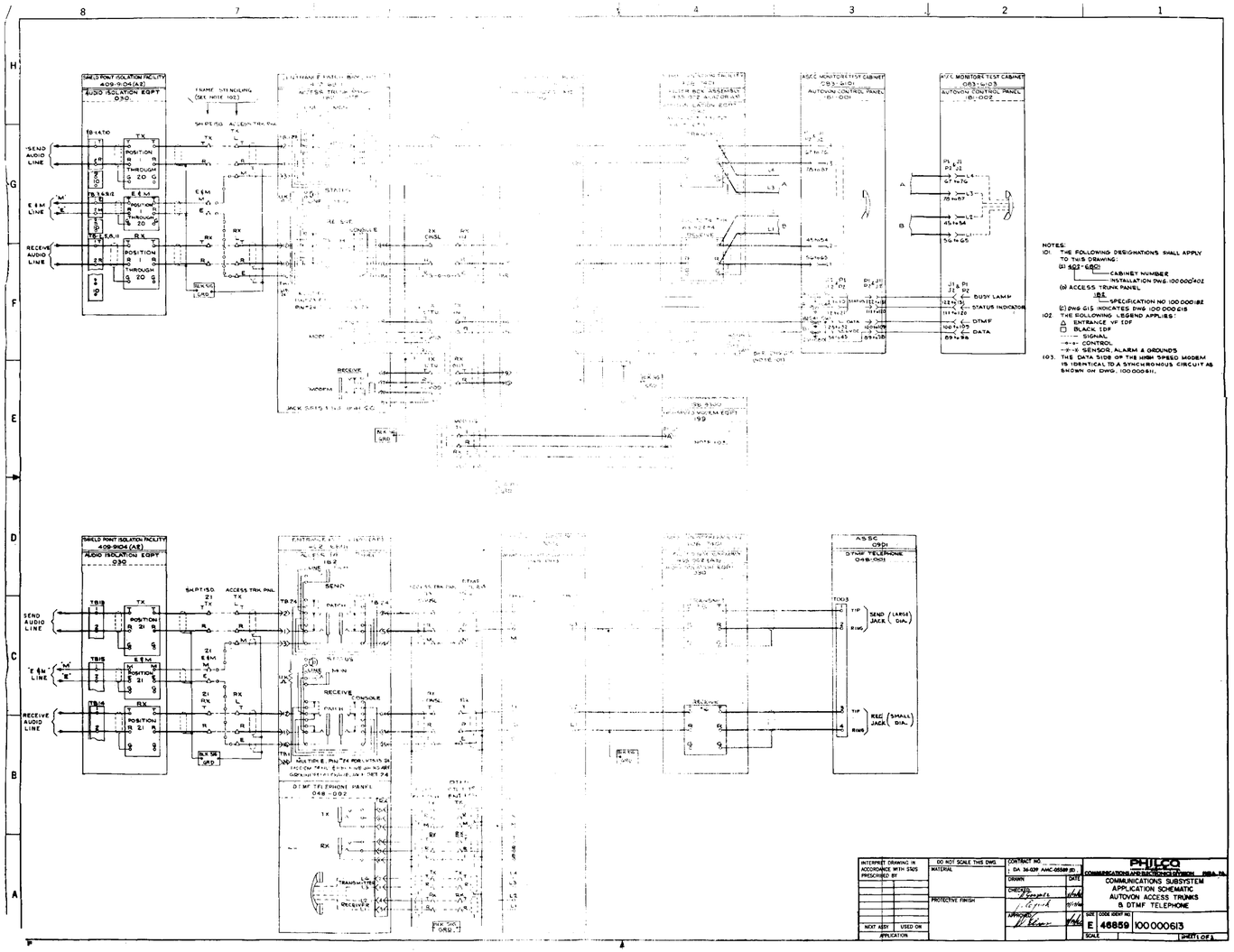
t_0, t_1, t_2 ETC. MUST BE COINCIDENT WITHIN ± 8% OF THE DATA BIT WIDTH
104. CROSS-CONNECTIONS ENCIRCLED NOT INSTALLED FOR L.S. MODE AB
105. CROSS-CONNECTIONS ENCIRCLED 2 PLACES, NOT INSTALLED FOR H.F. MOD EMS. INSTEAD, SX/L SLEEVE IS CONNECTED TO GY. GND.
106. THE OUTPUTS OF THE RED LINE DRIVERS AND THE INPUTS TO THE CSD CUT KEY INDICATORS ARE TERMINATED ON THE AUTODIN RED DISTRIBUTION FRAME. THOSE LINE DRIVERS AND CUT KEY INDICATORS ASSIGNED TO DSSCS CIRCUITS ARE EXTENDED TO THE DSSCS/DIN RED DISTRIBUTION FRAME THROUGH THE TIMING AND CUT KEY TIE CABLES (BETWEEN THE TWO FRAMES) AND THE ASSOCIATED CROSS CONNECTS

COMMUNICATIONS SUBSYSTEM APPLICATION SCHEMATIC SYNCHRONOUS CIRCUITS

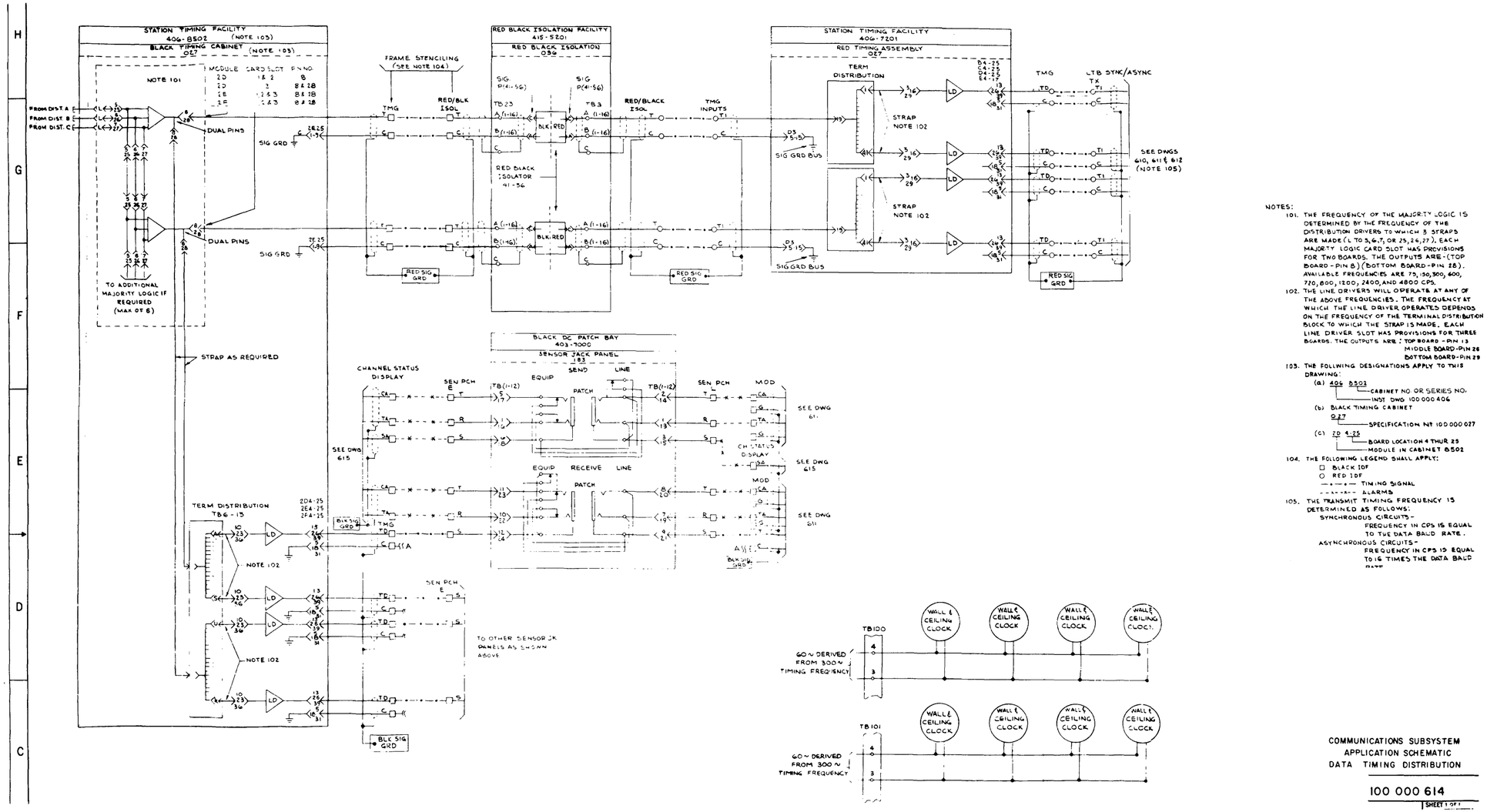
100 000 611

SHEET 1 of 1


FOR LIST OF MATERIAL SEE LM
CONTRACT NO.
DA 36-039 AMC-05589 (E)
PHILCO
COMMUNICATIONS AND ELECTRONICS DIVISION PHILA. PA.
COMMUNICATIONS SUBSYSTEM
APPLICATION SCHEMATICS
AUTOVON/AUTODIN SYNCHRONOUS &
ASYNCHRONOUS CIRCUITS
SIZE E
CODE IDENT NO. 46859
100000612
SHEET OF 2


SHIELD POINT ISOLATION FACILITY
409-9-004(A2)
AUDIO ISOLATION EQPT
090
SHIELD POINT ISOLATION FACILITY
409-INCH (A2)
AUDIO ISOLATION EQPT
092
SEND AUDIO LINE
E&M LINE
RECEIVE AUDIO LINE
FRAME STENCILING (SEE NOTE 102)
ACCESS TRK PNL
AUTOVON CONTROL PANEL
AUTOVON ACCESS TRUNKS & DTMF TELEPHONE
DTMF TELEPHONE PANEL
048-002
DTMF TELEPHONE
048-001
SEND (LARGE) JACK, DIA.
REC. (SMALL) JACK, DIA.
BUSY LAMP
STATUS INDICATOR
DTMF
DATA
NOTES:
101 THE FOLLOWING DESIGNATIONS SHALL APPLY TO THIS DRAWING:
(a) 123-680
CABINET NUMBER
INSTALLATION DWG. 100 000 401
(b) ACCESS TRUNK PANEL
18
SPECIFICATION NO. 100 000 182
(c) DWG 615 INDICATES DWG. 100 000 615
102 THE FOLLOWING LEGEND APPLIES:
ENTRANCE VF TDF
BLACK TDF
SIGNAL
CONTROL
S-I-E SENSOR, ALARM & GROUNDS
103 THE DATA SIDE OF THE HIGH SPEED MODEM IS IDENTICAL TO A SYNCHRONOUS CIRCUIT AS SHOWN ON DWG. 100 000 611.
INTERPRET DRAWING IN ACCORDANCE WITH STDS PRESCRIBED BY
DO NOT SCALE THIS DWG
MATERIAL
PROTECTIVE FINISH
NEXT ASSY
USED ON
APPLICATION
CONTRACT NO
: DA 36-039 AMC-00569 (E)
DRAWN
DATE
CHECKED
APPROVED
PHILCO
COMMUNICATIONS AND ELECTRONICS DIVISION
COMMUNICATIONS SUBSYSTEM
APPLICATION SCHEMATIC
AUTOVON ACCESS TRUNKS
& DTMF TELEPHONE
SIZE
E
CODE IDENT NO
46859
100 000 613
SCALE
SHEET 1 OF 1

100000613



NOTES:

101. THE FREQUENCY OF THE MAJORITY LOGIC IS DETERMINED BY THE FREQUENCY OF THE DISTRIBUTION DRIVERS TO WHICH 3 STRAPS ARE MADE (1 TO 3,6,7, OR 25,26,27). EACH MAJORITY LOGIC CARD SLOT HAS PROVISIONS FOR TWO BOARDS. THE OUTPUTS ARE - (TOP BOARD - PIN 8) (BOTTOM BOARD - PIN 28). AVAILABLE FREQUENCIES ARE 75, 150, 300, 600, 720, 800, 1200, 2400, AND 4800 CPS.

102. THE LINE DRIVERS WILL OPERATE AT ANY OF THE ABOVE FREQUENCIES. THE FREQUENCY AT WHICH THE LINE DRIVER OPERATES DEPENDS ON THE FREQUENCY OF THE TERMINAL DISTRIBUTION BLOCK TO WHICH THE STRAP IS MADE. EACH LINE DRIVER SLOT HAS PROVISIONS FOR THREE BOARDS. THE OUTPUTS ARE: TOP BOARD - PIN 13
MIDDLE BOARD - PIN 28
BOTTOM BOARD - PIN 29

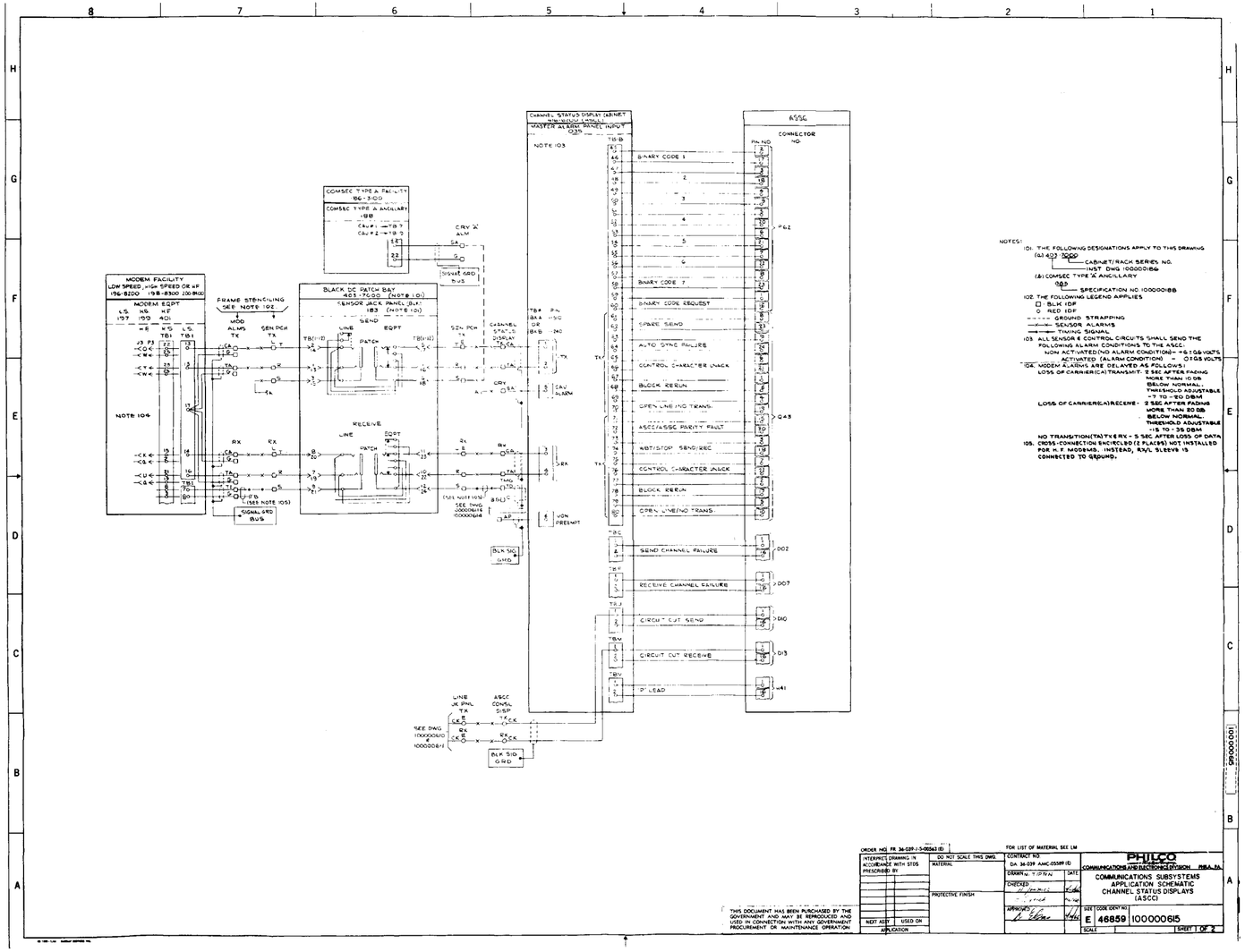
103. THE FOLLWING DESIGNATIONS APPLY TO THIS DRAWING:
(a) 406 8502 — CABINET NO. OR SERIES NO. / INST. DWG 100 000 406
(b) BLACK TIMING CABINET 027 — SPECIFICATION NO 100 000 027
(c) 2D 1 & 25 — BOARD LOCATION & THUR 25 / MODULE IN CABINET 8502

104. THE FOLLOWING LEGEND SHALL APPLY:
□ BLACK IDF
○ RED IDF
—•—•— TIMING SIGNAL
– – • – • – ALARMS

105. THE TRANSMIT TIMING FREQUENCY IS DETERMINED AS FOLLOWS:
SYNCHRONOUS CIRCUITS - FREQUENCY IN CPS IS EQUAL TO THE DATA BAUD RATE.
ASYNCHRONOUS CIRCUITS - FREQUENCY IN CPS IS EQUAL TO 16 TIMES THE DATA BAUD RATE

COMMUNICATIONS SUBSYSTEM
APPLICATION SCHEMATIC
DATA TIMING DISTRIBUTION

100 000 614
SHEET 1 OF 1


MODEM FACILITY
LOW SPEED, HIGH SPEED OR HF
196-8200 198-8300 /20 (HG)
MODEM EQPT
NOTE 104
FRAME STENCILING SEE NOTE 102
BLACK DC PATCH BAY
803-7400 (NOTE 1.01)
SENSOR JACK PANEL (BLK) 183 (NOTE 101)
SEND
RECEIVE
LINE
PATCH
EQPT
COMSEC TYPE A FACILITY
196-3100
COMSEC TYPE A ANCILLARY
198
CHANNEL STATUS DISPLAY (CABINET
MASTER ALARM PANEL INPUT
NOTE 103
ASSC
CONNECTOR NO
BINARY CODE 1
BINARY CODE 7
BINARY CODE REQUEST
SPARE SEND
AUTO SYNC FAILURE
CONTROL CHARACTER UNACK
BLOCK RERUN
OPEN LINE/NO TRANS.
ASCC/ASSC PARITY FAULT
NOT/STOP SEND/REC
CONTROL CHARACTER JACK
BLOCK RERUN
OPEN LINE/NO TRANS.
SEND CHANNEL FAILURE
RECEIVE CHANNEL FAILURE
CIRCUIT CUT SEND
CIRCUIT CUT RECEIVE
"P" LEAD
P62
P49
P02
P07
P10
P13
P41
SIGNAL GRD BUS
BLK SIG GND
BLK SIG GRD
LINE JK PNL TX
ASCC CONSOL DISP
SEE DWG 100000610 100000617
NOTES:
101. THE FOLLOWING DESIGNATIONS APPLY TO THIS DRAWING
(a) 403 5000 CABINET/RACK SERIES NO.
INST. DWG 100000186
(b) COMSEC TYPE 'A' ANCILLARY
198
SPECIFICATION NO. 100000188
102. THE FOLLOWING LEGEND APPLIES
BLK IDF
RED IDF
GROUND STRAPPING
SENSOR ALARMS
TIMING SIGNAL
103. ALL SENSOR & CONTROL CIRCUITS SHALL SEND THE FOLLOWING ALARM CONDITIONS TO THE ASCC:
NON ACTIVATED (NO ALARM CONDITION) - +6 TO +20 VOLTS
ACTIVATED (ALARM CONDITION) - -12 TO -20 VOLTS
104. MODEM ALARMS ARE DELAYED AS FOLLOWS:
LOSS OF CARRIER(CA) TRANSMIT: 2 SEC AFTER FADING MORE THAN 10 DB BELOW NORMAL. THRESHOLD ADJUSTABLE -70 TO -90 DBM
LOSS OF CARRIER(CA) RECEIVE - 2 SEC AFTER FADING MORE THAN 20 DB BELOW NORMAL. THRESHOLD ADJUSTABLE -15 TO -35 DBM
NO TRANSITION(TA) TX & RX - 5 SEC AFTER LOSS OF DATA
105. CROSS-CONNECTION ENCIRCLED (2 PLACES) NOT INSTALLED FOR H.F. MODEMS. INSTEAD, R/L SLEEVE IS CONNECTED TO GROUND.
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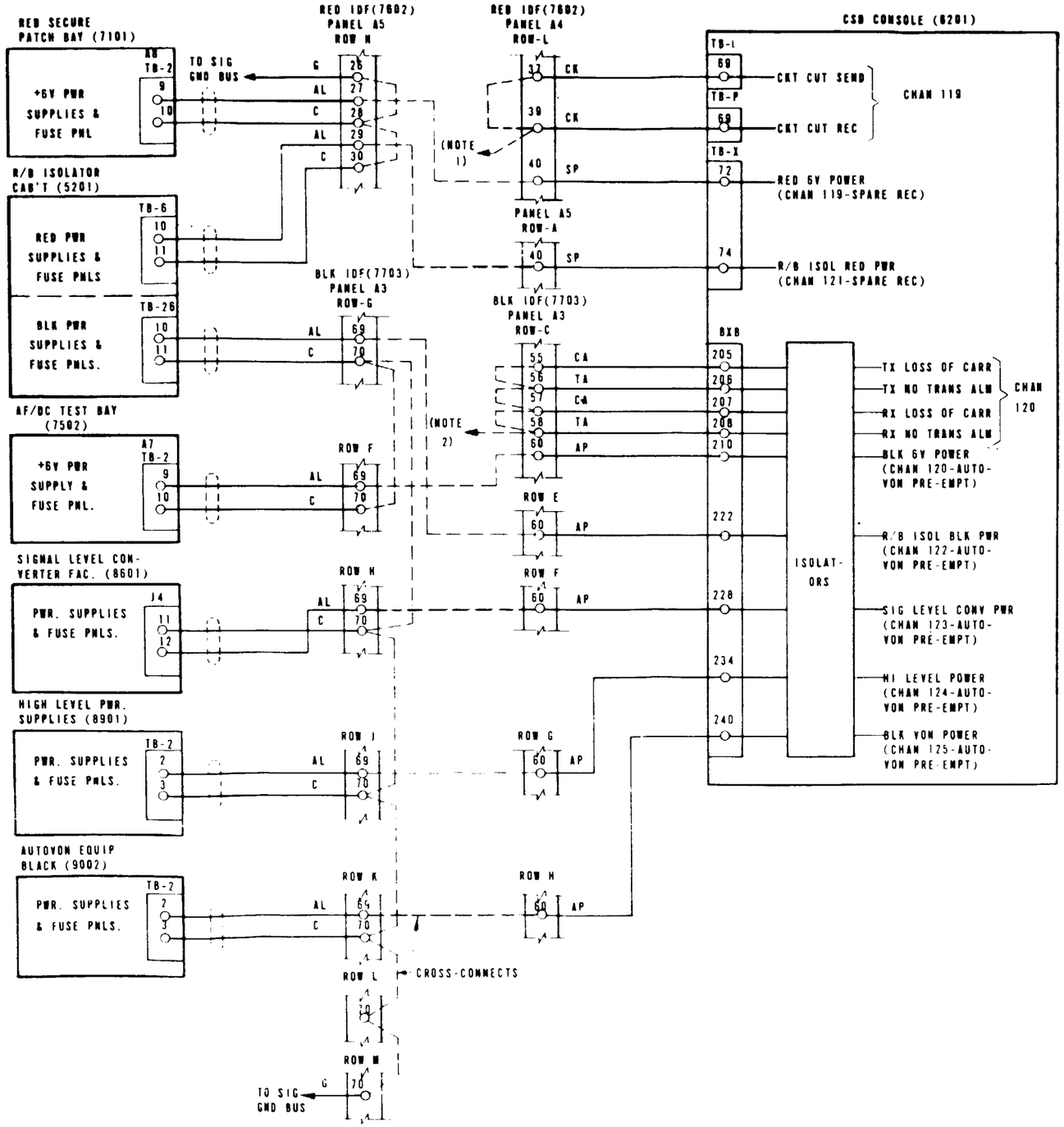
ORDER NO. FR 36-039-I-50563-(E)
FOR LIST OF MATERIAL SEE LM
INTERPRET DRAWING IN ACCORDANCE WITH STDS PRESCRIBED BY
DO NOT SCALE THIS DWG.
MATERIAL
PROTECTIVE FINISH
NEXT ASSY
USED ON
APPLICATION
CONTRACT NO
DA 36-039 AMC-05589(E)
DRAWN
TITLE
DATE
CHECKED
APPROVED
PHILCO
COMMUNICATIONS AND ELECTRONICS DIVISION PHILA. PA.
COMMUNICATIONS SUBSYSTEMS
APPLICATION SCHEMATIC
CHANNEL STATUS DISPLAYS
(ASCC)
SIZE E
CODE IDENT NO 46859
100000615
SCALE
SHEET 1 OF 2
DR000001

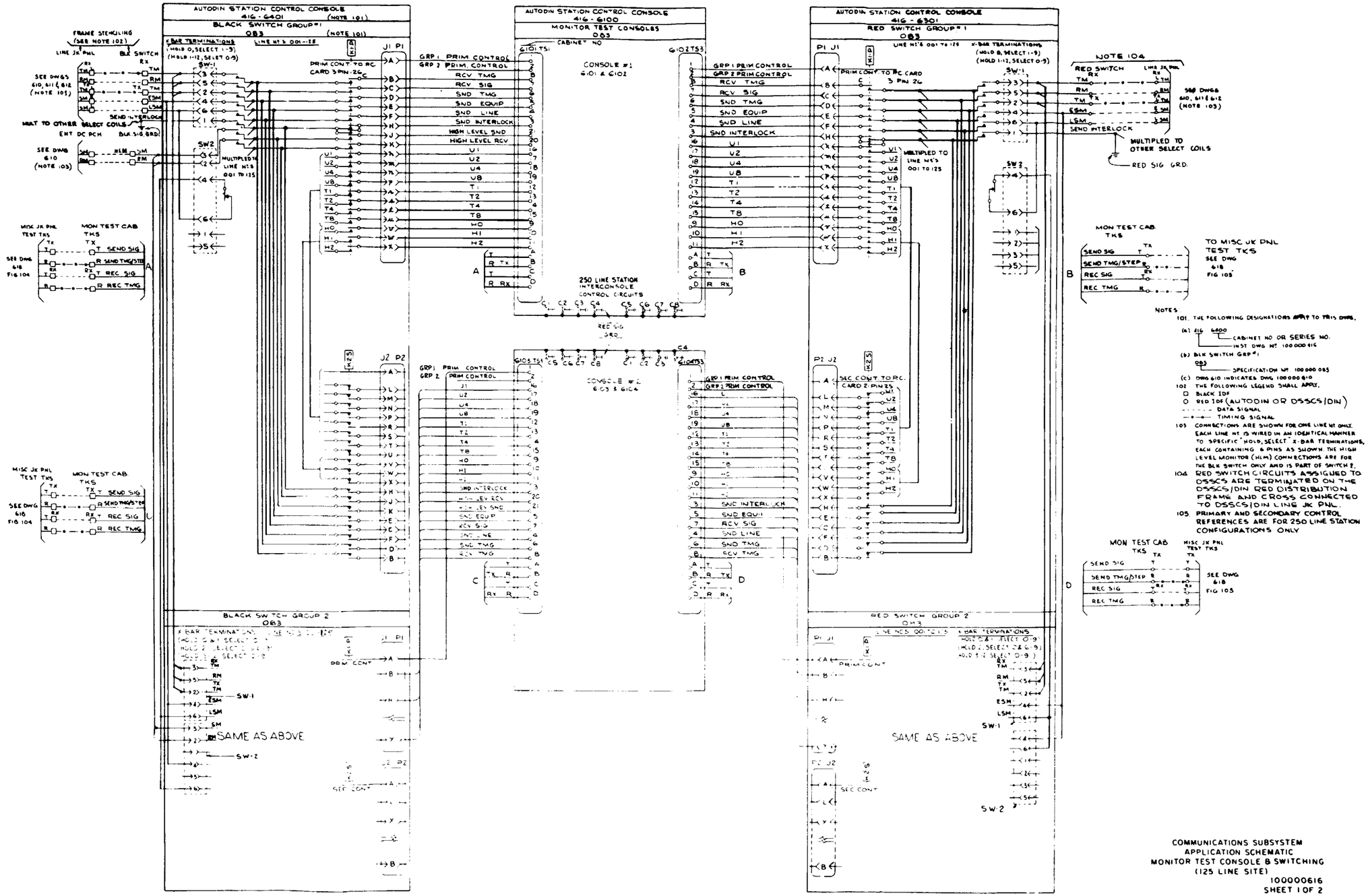


NOTES:

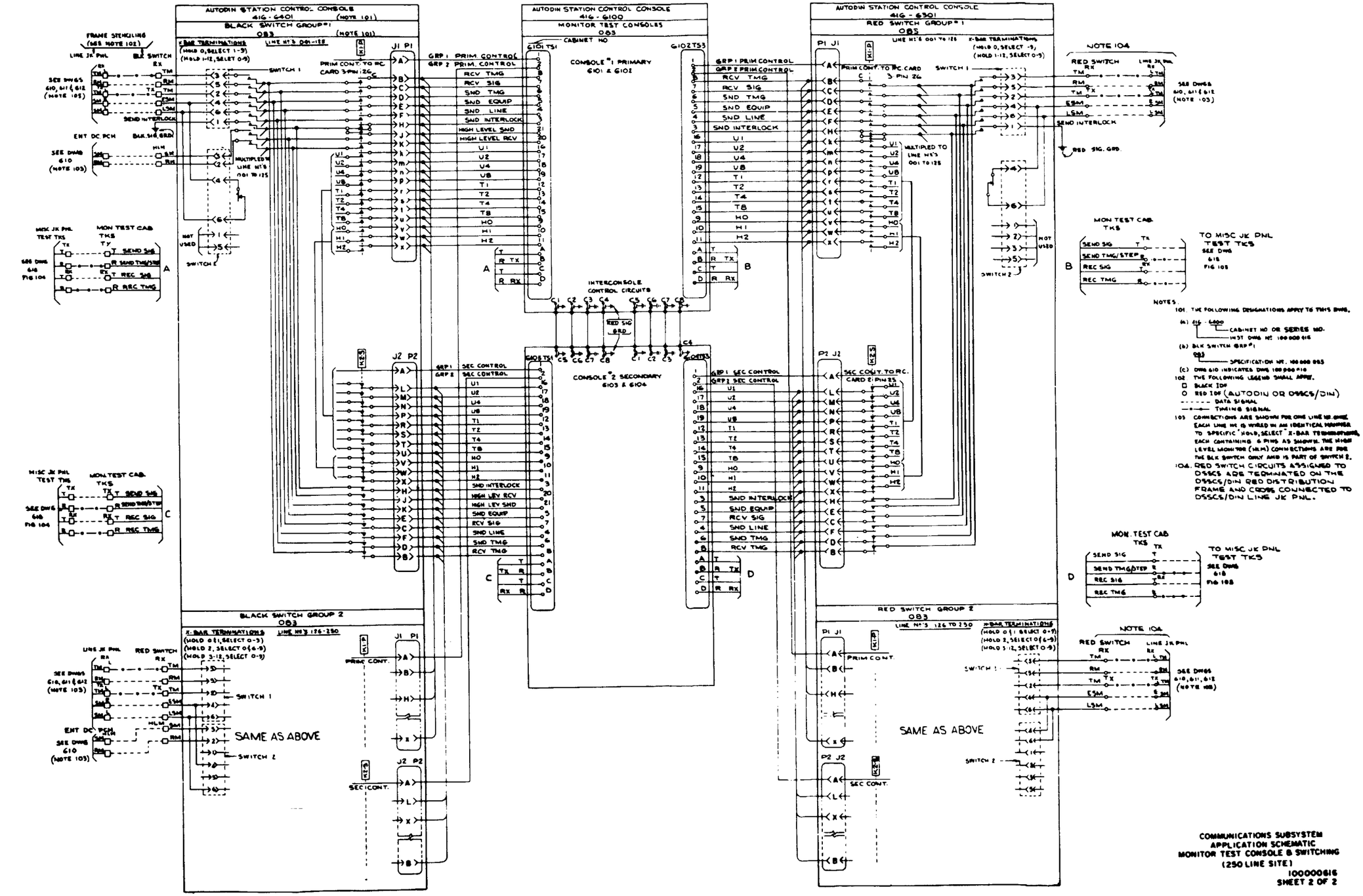
1. MULTIPLED TO SAME PINS (37 & 38) FOR ROW M OF PANEL A4 AND ROWS A THRU E OF PANEL A5 (CHANNELS 120 THRU 125) AND CONNECTED TO +6V (PANEL A5, ROW M, PIN 35). INHIBITS UNUSED 'CKT CUT' ALARM INDICATORS CHANNELS 119 THRU 125.
2. MULTIPLED TO SAME PINS (55 THRU 58) FOR ROWS B THRU M OF PANEL A3 (CHANNELS 119 THRU 125) AND CONNECTED TO +6V (+6V FEED ON PIN 70 ROW M OF PANEL IN SAME BAY OR ADJACENT BAY) INHIBITS UNUSED "LOSS OF CARRIER" AND "NO TRANSITION ALARM" INDICATORS FOR CHANNELS 119 THRU 125.

POWER SUPPLY AND FUSE ALARMS
1C00006I5A

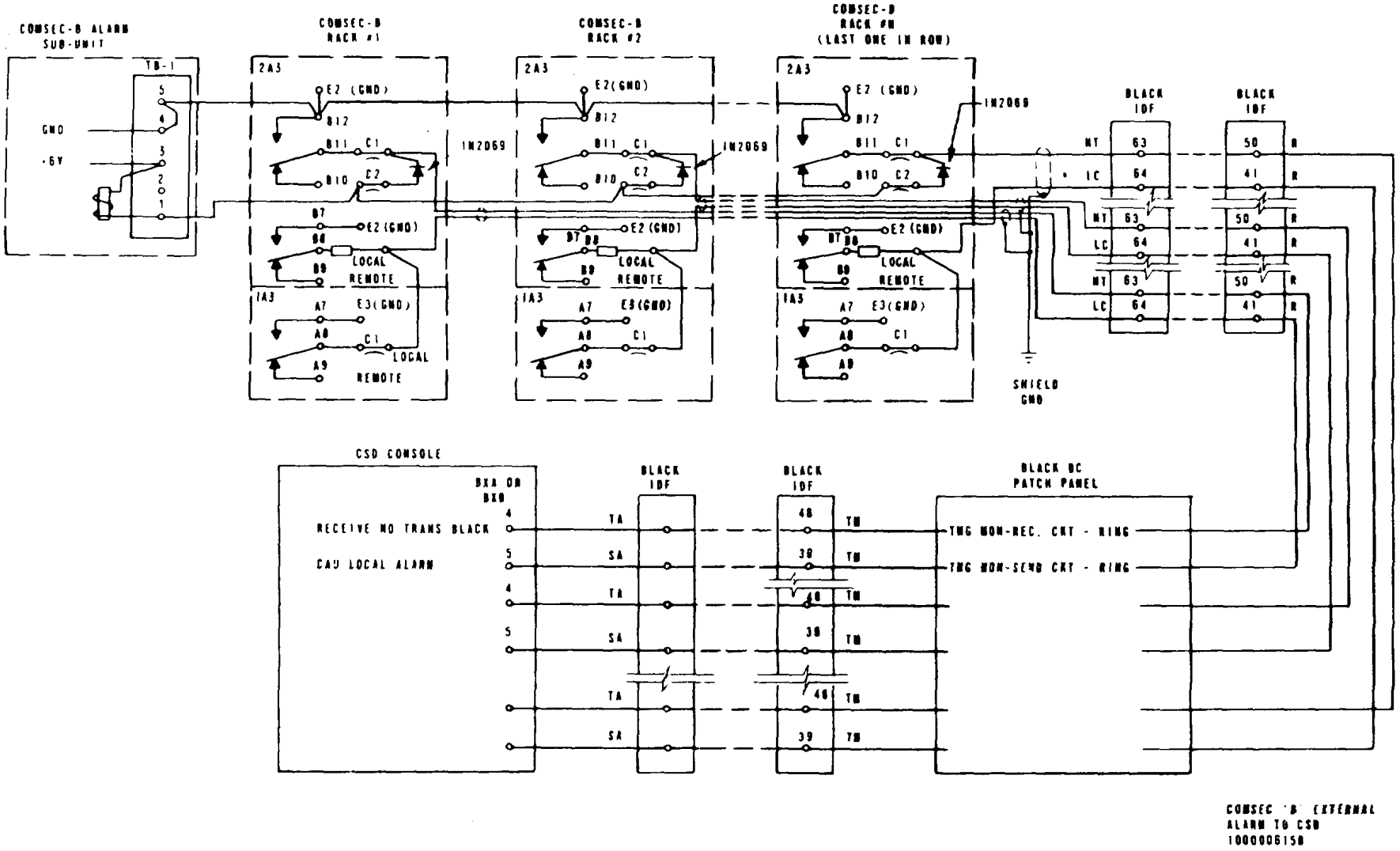
Power supply and fuse alarms



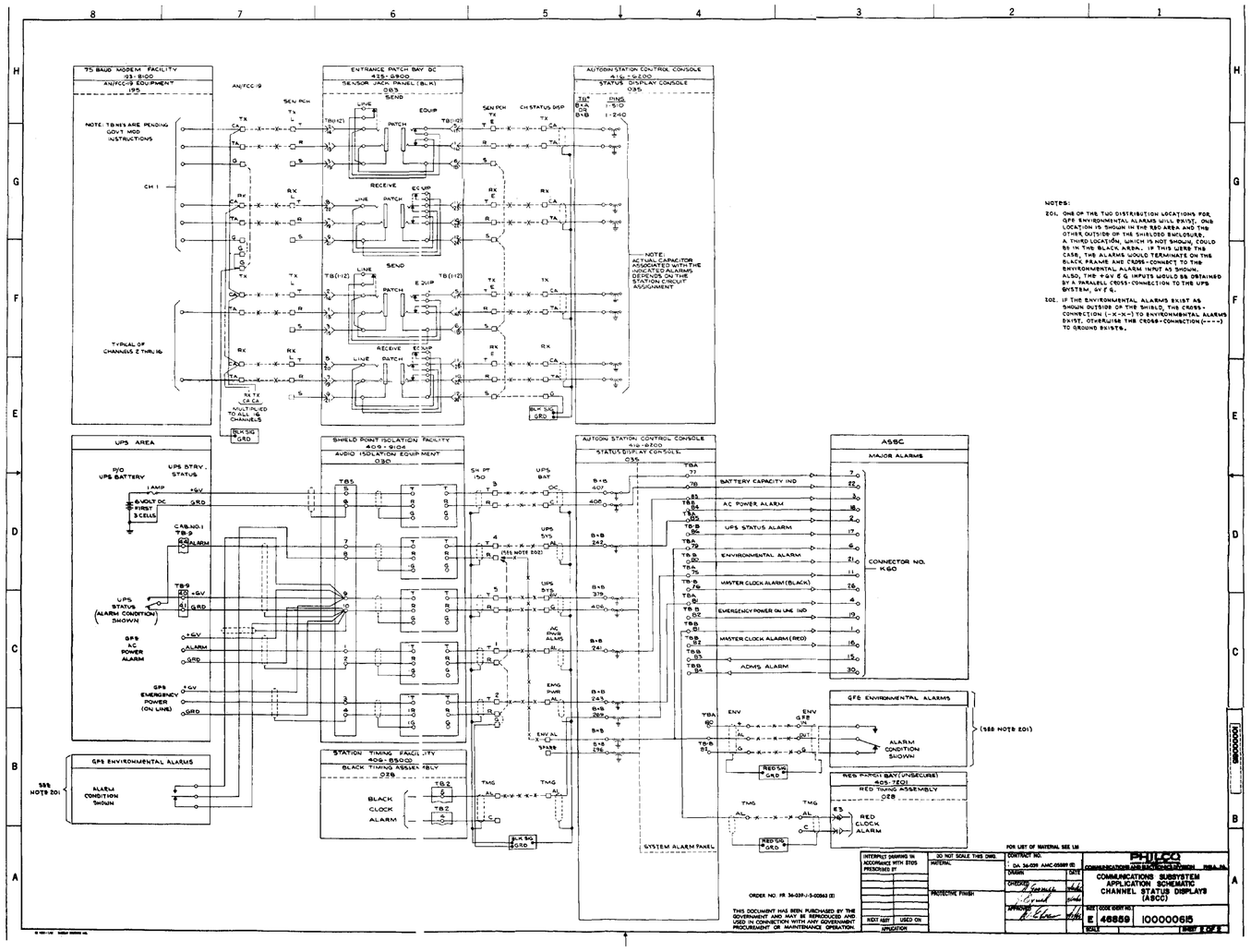
Communications system application schematic monitor test console & switching (125 line site).

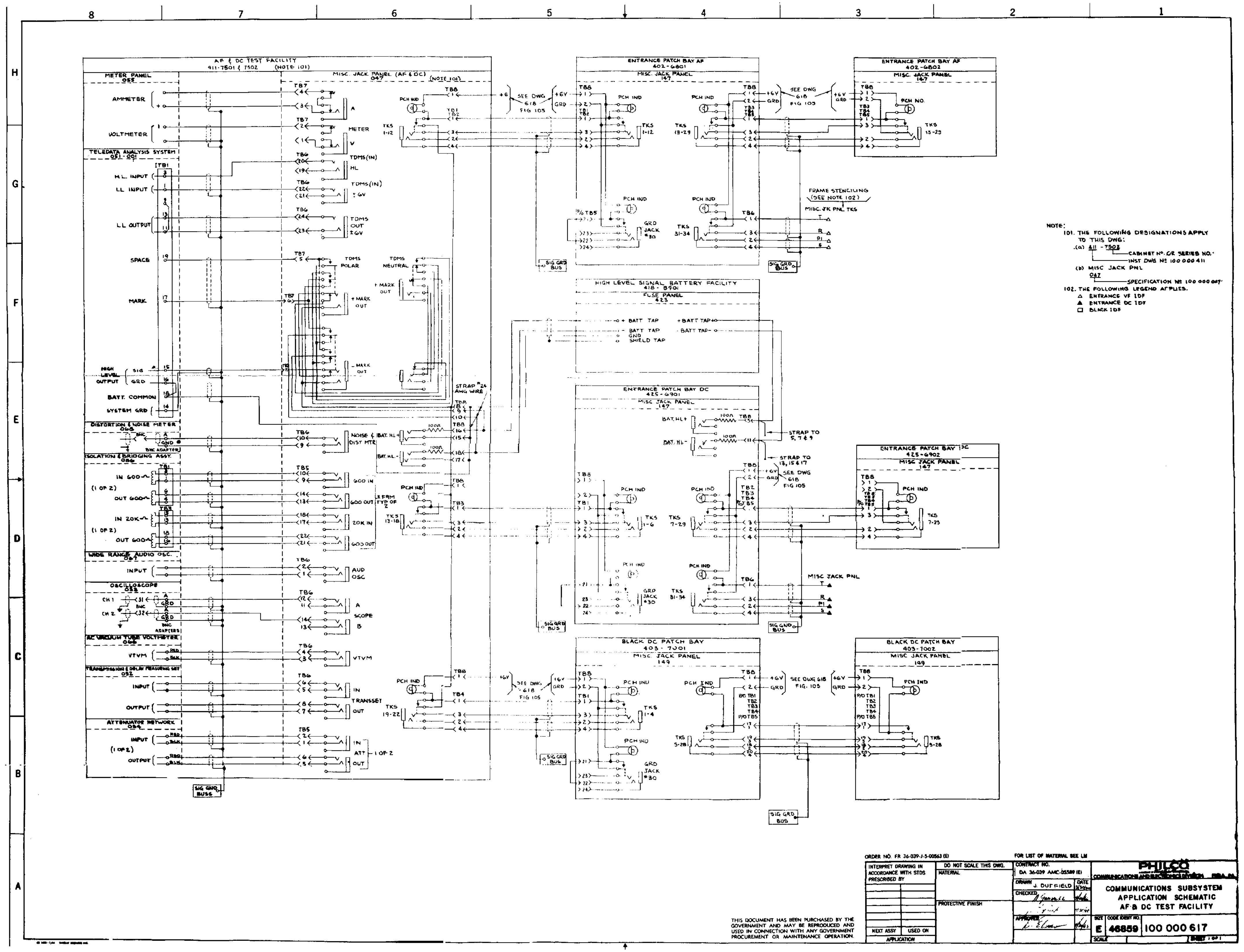


Communications system application schematic monitor test console & switching (250 line site).



COMSEC ‘B’ external alarm to CSD


75 BAUD MODEM FACILITY
403-8100
AN/FCC-9 EQUIPMENT
195
NOTE: TB NOS ARE PENDING GOVT MOD INSTRUCTIONS
CH 1
TYPICAL OF CHANNELS 2 THRU 16
AN/FCC-9
SEN PCH
CH STATUS DISP
ENTRANCE PATCH BAY DC
425-8900
SENSOR JACK PANEL (BLK)
083
SEND
RECEIVE
EQUIP
LINE
PATCH
AUTODIN STATION CONTROL CONSOLE
416-6200
STATUS DISPLAY CONSOLE
035
TBA 1-120
TBB 1-120
TBC 1-120
TBD 1-120
PINS 1-510
1-240
NOTE: ACTUAL CAPACITOR ASSOCIATED WITH THE SPECIFIC CIRCUITS DENOTED ON THE STATION CIRCUIT ASSIGNMENT
BLK SIG GRD
SX TX CX CA
MULTIPLIED TO ALL 16 CHANNELS
TBX 550
GRD
UPS AREA
P/O UPS BATTERY
UPS BTRY. STATUS
LAMP
6 VOLT DC FIRST 3 CELLS
CAB NO. 1 TB 9
ALARM
+GV
GRD
UPS STATUS (ALARM CONDITION) SHOWN
GPS AC POWER ALARM
GPS EMERGENCY POWER (ON LINE)
GPS ENVIRONMENTAL ALARMS
SEE NOTE 201
ALARM CONDITION SHOWN
SHIELD POINT ISOLATION FACILITY
409-9104
AUDIO ISOLATION EQUIPMENT
030
TB5
SH PT 150
UPS BAT
UPS SYS
AC ALMS
EMG PWR
ENV AL
SPARE
(SEE NOTE 202)
STATION TIMING FACILITY
409-8500
BLACK TIMING ASSEMBLY
028
BLACK CLOCK ALARM
TMG
AUTODIN STATION CONTROL CONSOLE
416-6200
STATUS DISPLAY CONSOLE
035
SYSTEM ALARM PANEL
BATTERY CAPACITY IND
AC POWER ALARM
UPS STATUS ALARM
ENVIRONMENTAL ALARM
MASTER CLOCK ALARM (BLACK)
EMERGENCY POWER ON LINE IND
MASTER CLOCK ALARM (RED)
ADMS ALARM
ASSC
MAJOR ALARMS
CONNECTOR NO. K60
GFE ENVIRONMENTAL ALARMS
(SEE NOTE 201)
ENV
ENV GRD
RED PATCH BAY (UNSECURE)
405-7201
RED TIMING ASSEMBLY
028
TMS
TMG
RED CLOCK ALARM
RED SIG GRD
NOTES:
201. ONE OF THE TWO DISTRIBUTION LOCATIONS FOR GFE ENVIRONMENTAL ALARMS WILL EXIST. ONE LOCATION IS SHOWN IN THE RBO AREA AND THE OTHER OUTSIDE OF THE SHIELDED ENCLOSURE. A THIRD LOCATION, WHICH IS NOT SHOWN, COULD BE IN THE BLACK AREA. IF THIS WERE THE CASE, THE ALARMS WOULD TERMINATE ON THE BLACK FRAME AND CROSS-CONNECT TO THE ENVIRONMENTAL ALARM INPUT AS SHOWN. ALSO, THE +GV E G INPUTS WOULD BE OBTAINED BY A PARALLEL CROSS-CONNECTION TO THE UPS SYSTEM, 6V F G.
202. IF THE ENVIRONMENTAL ALARMS EXIST AS SHOWN OUTSIDE OF THE SHIELD, THE CROSS-CONNECTION (-X-X-) TO ENVIRONMENTAL ALARMS EXIST, OTHERWISE THE CROSS-CONNECTION (----) TO GROUND EXISTS.
ORDER NO. FR 36-039-J-50063 (E)
THIS DOCUMENT HAS BEEN PURCHASED BY THE GOVERNMENT AND MAY BE REPRODUCED AND USED IN CONNECTION WITH ANY GOVERNMENT PROCUREMENT OR MAINTENANCE OPERATION.
INTERPRET DRAWING IN ACCORDANCE WITH STDS PRESCRIBED BY
DO NOT SCALE THIS DWG.
MATERIAL
PROTECTIVE FINISH
NEXT ASSY
USED ON APPLICATION
FOR LIST OF MATERIAL SEE LM
CONTRACT NO.
DA 36-039 AMC-05889 (E)
PHILCO
COMMUNICATIONS AND ELECTRONICS DIVISION PHILA. PA.
DRAWN
DATE
DESIGNED
APPROVED
COMMUNICATIONS SUBSYSTEM APPLICATION SCHEMATIC CHANNEL STATUS DISPLAYS (ABCC)
SIZE
E
CODE IDENT NO.
46859
DRAWING NO.
100000615
SCALE
SHEET 1 OF 1


AF & DC TEST FACILITY
METER PANEL
TELEDATA ANALYSIS SYSTEM
ENTRANCE PATCH BAY AF
HIGH LEVEL SIGNAL BATTERY FACILITY
ENTRANCE PATCH BAY DC
BLACK DC PATCH BAY
NOTE:
101. THE FOLLOWING DESIGNATIONS APPLY TO THIS DWG:
(a) 411 - 7502
CABINET NO. OR SERIES NO.
INST DWG NO 100 000 411
(b) MISC JACK PNL 047
SPECIFICATION NO 100 000 047
102. THE FOLLOWING LEGEND APPLIES.
△ ENTRANCE VF IDF
▲ ENTRANCE DC IDF
□ BLACK IDF
ORDER NO. FR 36-039-J-5-00563 (E)
FOR LIST OF MATERIAL SEE LM
INTERPRET DRAWING IN ACCORDANCE WITH STDS PRESCRIBED BY
DO NOT SCALE THIS DWG.
MATERIAL
PROTECTIVE FINISH
NEXT ASSY
USED ON
APPLICATION
CONTRACT NO.
DA 36-039 AMC-05589 (E)
DRAWN J. DUFFIELD
CHECKED
APPROVED
DATE
PHILCO
COMMUNICATIONS SUBSYSTEM
APPLICATION SCHEMATIC
AF & DC TEST FACILITY
SIZE E
CODE IDENT NO. 46859
100 000 617
SCALE
THIS DOCUMENT HAS BEEN PURCHASED BY THE GOVERNMENT AND MAY BE REPRODUCED AND USED IN CONNECTION WITH ANY GOVERNMENT PROCUREMENT OR MAINTENANCE OPERATION.

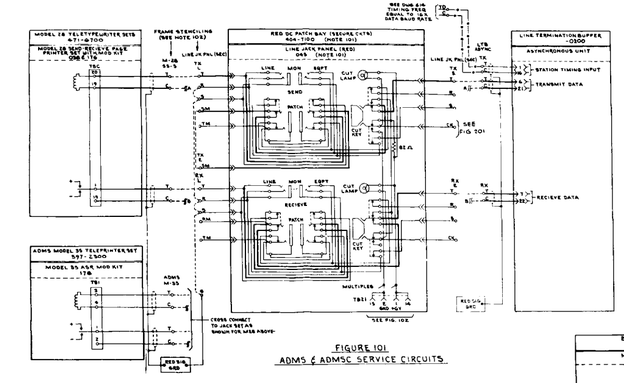


FIGURE 101
ADMS & ADMSC SERVICE CIRCUITS

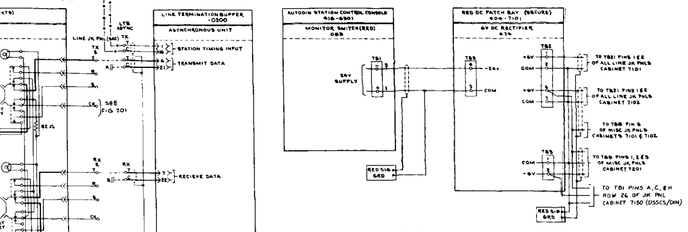


FIGURE 102
±6V DC RED DISTRIBUTION

NOTES:
101. THE FOLLOWING DESIGNATIONS APPLY TO THIS DRAWING:
(a) 404-3100
CABINET SERIES NO.
INST DWG NO. 100000404
(b) LINE JACK PANEL:
045
SPECIFICATION NO. 100000045
102. THE FOLLOWING LEGENDS APPLY TO THIS DRAWING:
□ BLACK TDP.
○ RED TDP (AUTODIN OR DSSCS/DIN)
- - - - - DATA SIGNAL OR SRD STRAPPING
— / — / — TIMING SIGNAL
103. FIGURES 103 AND 104 SHOW THE +6V MARK BATTERY JACKS (J8E Y6R) THE BATCH PANELS ARE ALSO EQUIPPED WITH +6V SPACE BATTERY JACKS (J8E Y8R) WHICH ARE NOT SHOWN IN THE FIGURES. IN THIS CASE THE +6V IS CONNECTED TO THESE JACKS IN THE SAME MANNER AS SHOWN FOR THE +6V.

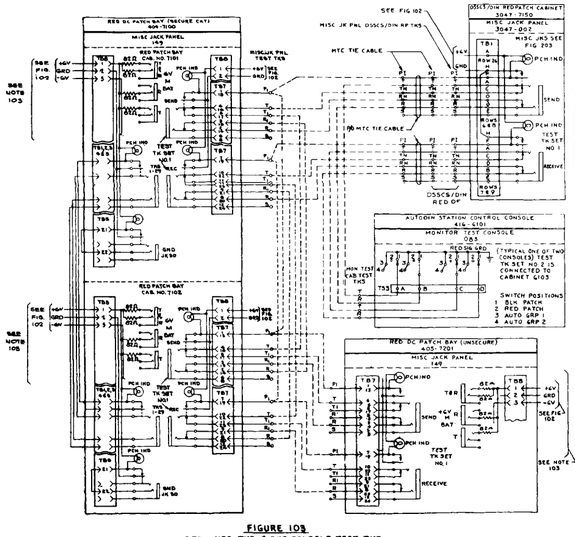


FIGURE 103
RED MISC TKS & RED CONSOLE TEST TKS

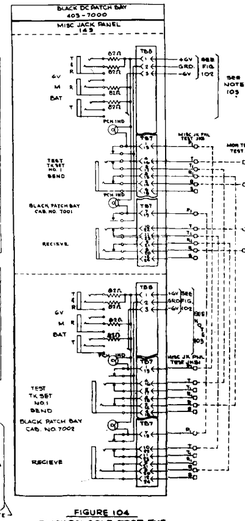


FIGURE 104
BLACK CONSOLE TEST TKS

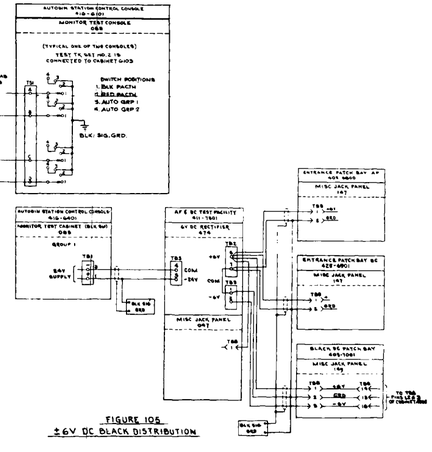


FIGURE 105
±6V DC BLACK DISTRIBUTION

COMMUNICATIONS SUBSYSTEM
APPLICATION SCHEMATIC
MISC TEST & SERVICE CIRCUITS

100 000 618
SHEET 1 OF 2

Change 1

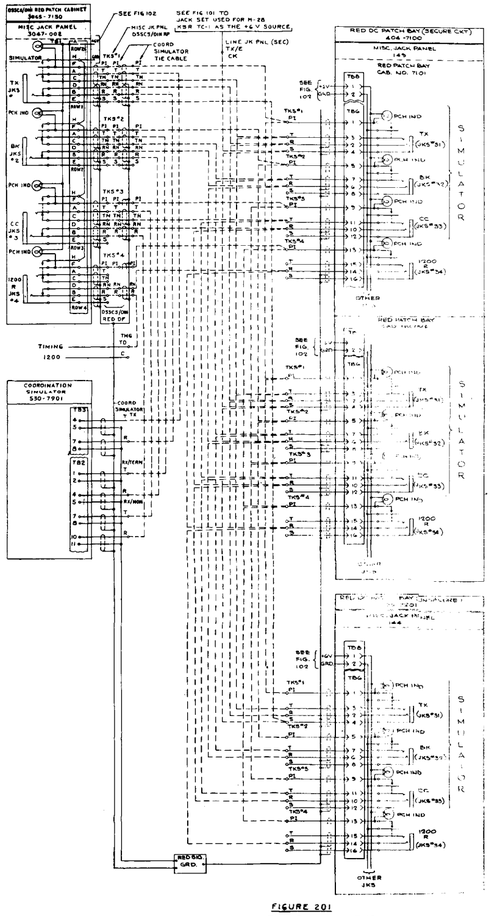


FIGURE 201
COORDINATION SIMULATOR TKS

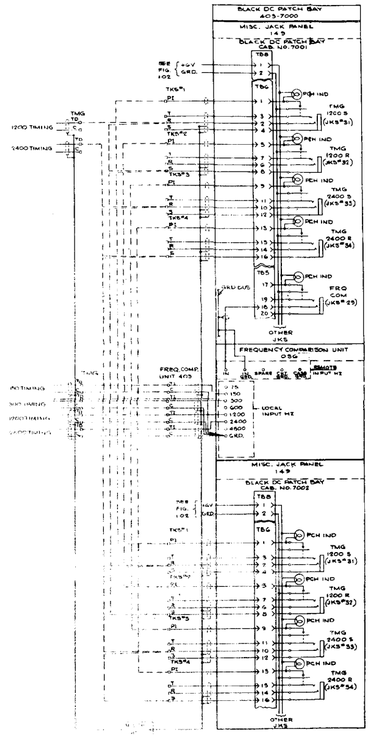


FIGURE 202
[illegible] TIMING JKS

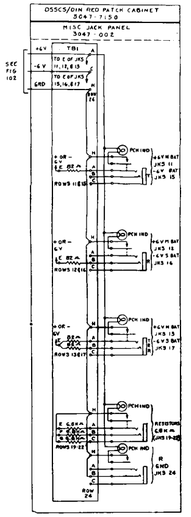
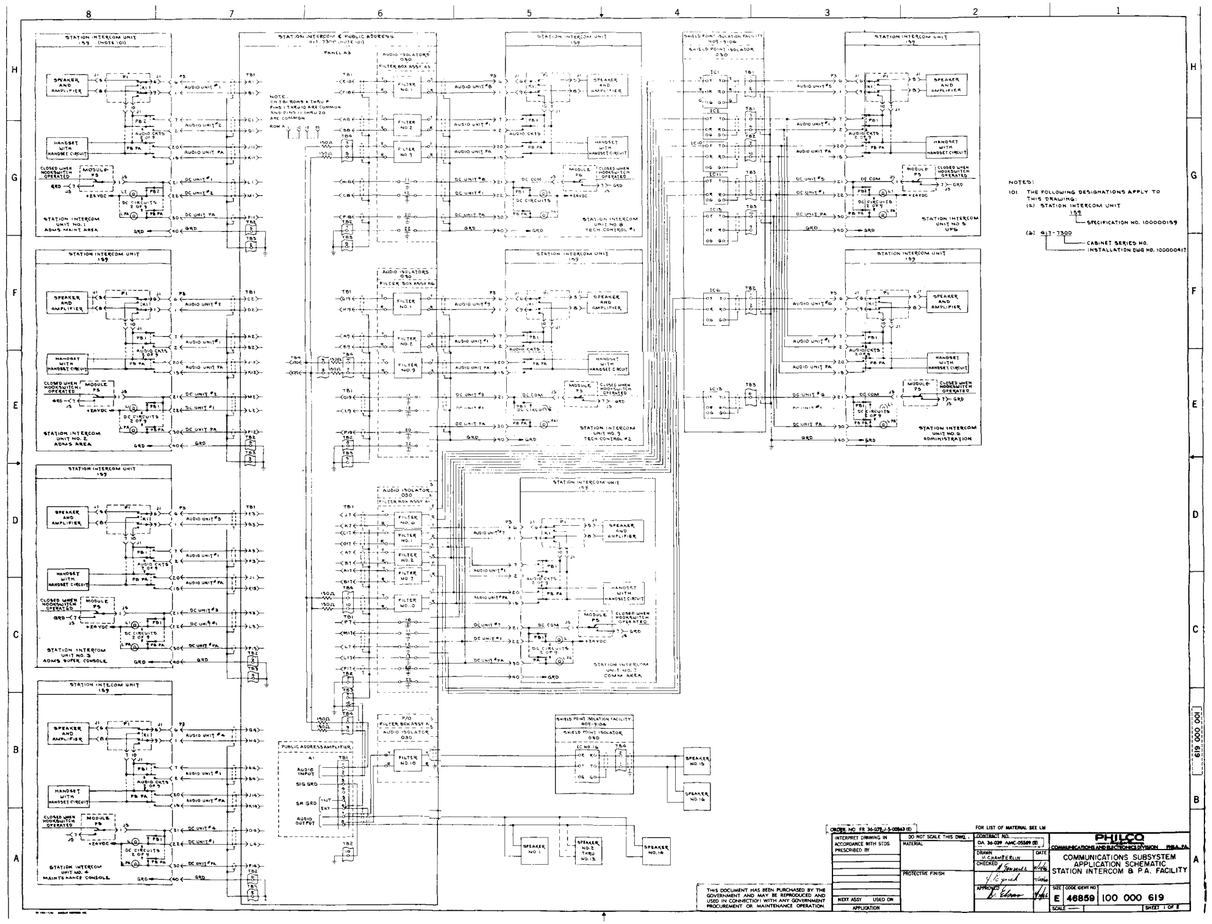


FIGURE 203
OSSCS/DIN MISC JKS

COMMUNICATIONS SUBSYSTEM
APPLICATION SCHEMATIC
MISC TEST & SERVICE CIRCUITS

100 000 818
SHEET 2 OF 2
Change 1


STATION INTERCOM UNIT 155
STATION INTERCOM & PUBLIC ADDRESS
STATION INTERCOM UNIT 154
STATION INTERCOM UNIT 153
NAVAL PHONE FACILITY
STATION INTERCOM UNIT 152
STATION INTERCOM UNIT 151
PUBLIC ADDRESS AMPLIFIER
NOTES:
10. THE FOLLOWING DESIGNATIONS APPLY TO THIS DRAWING.
(a) STATION INTERCOM UNIT
155
SPECIFICATION NO. 100000159
(b) 9J1-3309
CABINET SERIES NO.
INSTALLATION DWG NO. 100000917
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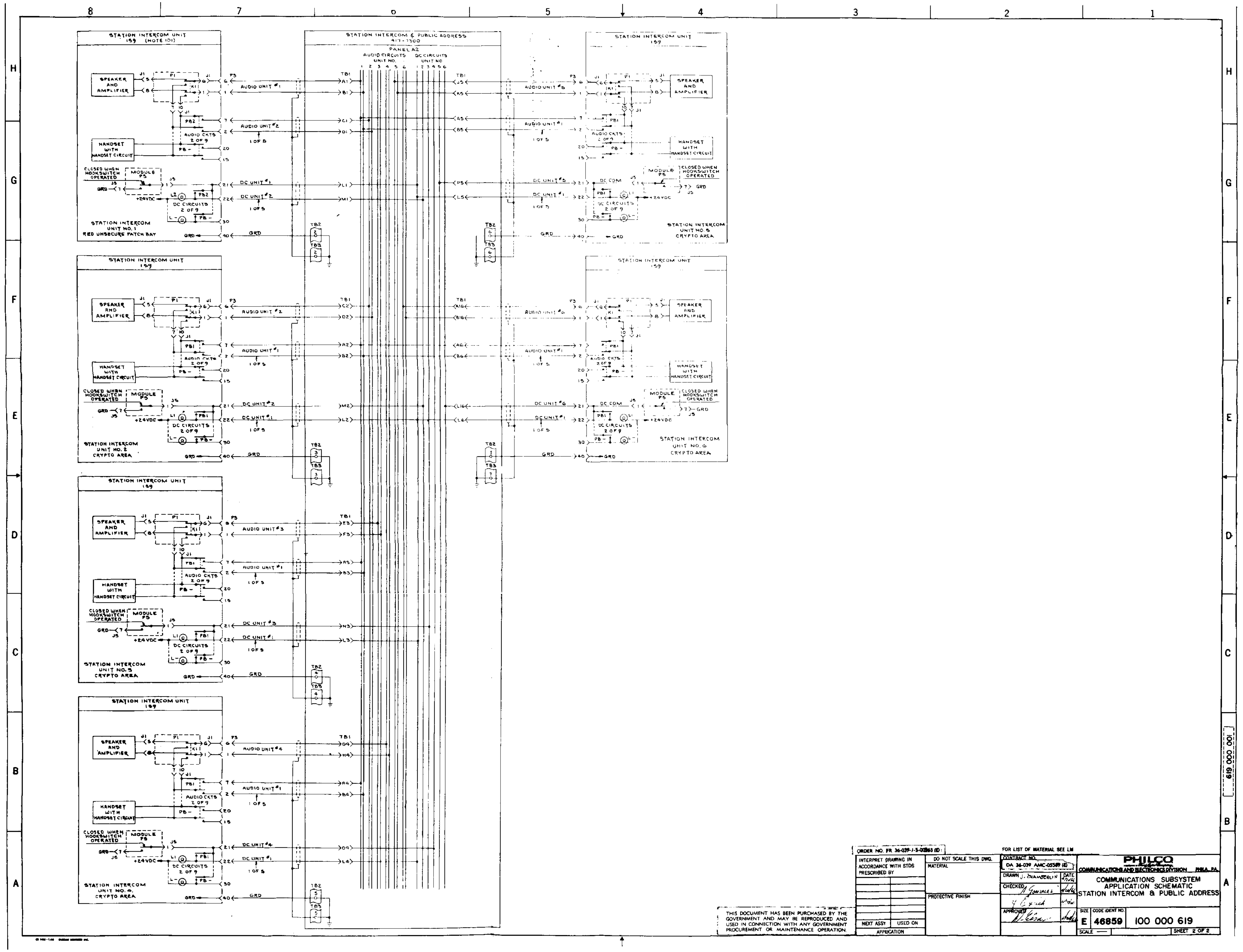
COMMUNICATIONS AND ELECTRONICS DIVISION PHILA. PA.
COMMUNICATIONS SUBSYSTEM
APPLICATION SCHEMATIC
STATION INTERCOM & P.A. FACILITY
E 46859 100 000 619


STATION INTERCOM UNIT
STATION INTERCOM & PUBLIC ADDRESS
SPEAKER AND AMPLIFIER
HANDSET WITH HANDSET CIRCUIT
STATION INTERCOM UNIT NO. 1 RED UNSECURE PATCH BAY
STATION INTERCOM UNIT NO. 2 CRYPTO AREA
STATION INTERCOM UNIT NO. 3 CRYPTO AREA
STATION INTERCOM UNIT NO. 4 CRYPTO AREA
STATION INTERCOM UNIT NO. 5 CRYPTO AREA
STATION INTERCOM UNIT NO. 6 CRYPTO AREA
ORDER NO. FR 36-039-J-5-00843 (E)
FOR LIST OF MATERIAL SEE LM
INTERPRET DRAWING IN ACCORDANCE WITH STDS PRESCRIBED BY
DO NOT SCALE THIS DWG.
MATERIAL
PROTECTIVE FINISH
CONTRACT NO. DA 36-039 AMC-05589 (E)
DRAWN J. CHAMBERLIN
CHECKED
APPROVED
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COMMUNICATIONS AND ELECTRONICS DIVISION PHILA. PA.
COMMUNICATIONS SUBSYSTEM
APPLICATION SCHEMATIC
STATION INTERCOM & PUBLIC ADDRESS
SIZE E
CODE IDENT NO. 46859
100 000 619
SCALE —
SHEET 2 OF 2
NEXT ASSY
USED ON
APPLICATION
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The Metric System and Equivalents

Linear Measure

1 centimeter = 10 millimeters = .39 inch
1 decimeter = 10 centimeters = 3.94 inches
1 meter = 10 decimeters = 39.37 inches
1 dekameter = 10 meters = 32.8 feet
1 hectometer = 10 dekameters = 328.08 feet
1 kilometer = 10 hectometers = 3,280.8 feet

Weights

1 centigram = 10 milligrams = .15 grain
1 decigram = 10 centigrams = 1.54 grains
1 gram = 10 decigram = .035 ounce
1 decagram = 10 grams = .35 ounce
1 hectogram = 10 decagrams = 3.52 ounces
1 kilogram = 10 hectograms = 2.2 pounds
1 quintal = 100 kilograms = 220.46 pounds
1 metric ton = 10 quintals = 1.1 short tons

Liquid Measure

1 centiliter = 10 milliters = .34 fl. ounce
1 deciliter = 10 centiliters = 3.38 fl. ounces
1 liter = 10 deciliters = 33.81 fl. ounces
1 dekaliter = 10 liters = 2.64 gallons
1 hectoliter = 10 dekaliters = 26.42 gallons
1 kiloliter = 10 hectoliters = 264.18 gallons

Square Measure

1 sq. centimeter = 100 sq. millimeters = .155 sq. inch
1 sq. decimeter = 100 sq. centimeters = 15.5 sq. inches
1 sq. meter (centare) = 100 sq. decimeters = 10.76 sq. feet
1 sq. dekameter (are) = 100 sq. meters = 1,076.4 sq. feet
1 sq. hectometer (hectare) = 100 sq. dekameters = 2.47 acres
1 sq. kilometer = 100 sq. hectometers = .386 sq. mile

Cubic Measure

1 cu. centimeter = 1000 cu. millimeters = .06 cu. inch
1 cu. decimeter = 1000 cu. centimeters = 61.02 cu. inches
1 cu. meter = 1000 cu. decimeters = 35.31 cu. feet

Approximate Conversion Factors

To change	*To*	*Multiply by*	*To change*	*To*	*Multiply by*
inches	centimeters	2.540	ounce-inches	Newton-meters	.007062
feet	meters	.305	centimeters	inches	.394
yards	meters	.914	meters	feet	3.280
miles	kilometers	1.609	meters	yards	1.094
square inches	square centimeters	6.451	kilometers	miles	.621
square feet	square meters	.093	square centimeters	square inches	.155
square yards	square meters	.836	square meters	square feet	10.764
square miles	square kilometers	2.590	square meters	square yards	1.196
acres	square hectometers	.405	square kilometers	square miles	.386
cubic feet	cubic meters	.028	square hectometers	acres	2.471
cubic yards	cubic meters	.765	cubic meters	cubic feet	35.315
fluid ounces	milliliters	29,573	cubic meters	cubic yards	1.308
pints	liters	.473	milliliters	fluid ounces	.034
quarts	liters	.946	liters	pints	2.113
gallons	liters	3.785	liters	quarts	1.057
ounces	grams	28.349	liters	gallons	.264
pounds	kilograms	.454	grams	ounces	.035
short tons	metric tons	.907	kilograms	pounds	2.205
pound-feet	Newton-meters	1.356	metric tons	short tons	1.102
pound-inches	Newton-meters	.11296			

Temperature (Exact)

°F	Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	°C

PIN: 023159-000