DEPARTMENT OF THE ARMY TECHNICAL MANUAL

OPERATOR'S MANUAL:

INITIALIZATION AND OPERATING PROCEDURES

GUIDED MISSILE AIR DEFENSE SYSTEM AN/TSQ-73

HEADQUARTERS, DEPARTMENT OF THE ARMY
1 AUGUST 1978

This copy is a reprint which includes current pages from Changes 1 THROUGH 17.

Change No. 17

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Operator's Manual: Initialization and Operating Procedures

GUIDED MISSILE AIR DEFENSE SYSTEM AN/TSQ-73

Current to Tape Version 34.1

TM 9-1430-652-10-3, 1 August 1978, is changed as follows:

1. This change includes coverage for Mobile Subscriber Equipment (MSE) applications.

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8-39 thru 8-40.2	8-39 thru 8-40.2
8-41 and 8-42	8-41 and 8-42
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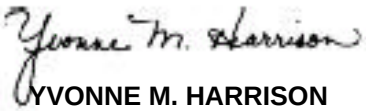

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GUIDED MISSILE AIR DEFENSE SYSTEM AN/TSQ-73

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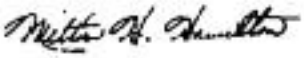

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DISTRIBUTION:

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WARNING

DANGEROUS VOLTAGE
is used in the operation of this equipment

DEATH ON CONTACT
may result if personnel fail to observe safety precautions

Never work on electronic equipment unless there is another person nearby who is familiar with the operation and hazards of the equipment and who is competent in administering first aid. When the technician is aided by operators, he must warn them about dangerous areas.

Whenever possible, the power supply to the equipment must be shut off before beginning work on the equipment. Take particular care to ground every capacitor likely to hold a dangerous potential. When working inside the equipment, after the power has been turned off, always ground every part before touching it.

Be careful not to contact high-voltage connections when installing or operating this equipment.

Whenever the nature of the operation permits, keep one hand away from the equipment to reduce the hazard of current flowing through vital organs of the body.

WARNING

Do not be misled by the term "low voltage." Potentials as low as 50 volts may cause death under adverse conditions.

For Artificial Respiration, refer to FM 21-11.

EXTREMELY DANGEROUS POTENTIALS
greater than 500 volts exist in the following units:

Display console high voltage power supply

Display console CRT

WARNING

For emergencies requiring immediate shutdown of system power, press SYSTEM POWER OFF switch located on power cabinet power transfer unit. Observe that SYSTEM POWER ON indicator light goes off.

LIST OF EFFECTIVE PAGES

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OPERATOR MANUAL: INITIALIZATION AND OPERATING PROCEDURES

GUIDED MISSILE AIR DEFENSE SYSTEM AN/TSQ-73

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CHAPTER 3

SYSTEM INITIALIZATION

Section I. INTRODUCTION

3-1. Scope. This manual contains the initialization and operating procedures and support program operating procedures for the AN/TSQ-73 System. Before the system becomes operational, system initialization procedures (Chapter 3) must be accomplished. These include hardware setup, power turn-on, optional programming procedures, and radar interface equipment (RIE) alinement. The system initialization flowchart (fig. 3-1) outlines the procedures to be followed when initializing the system. System initialization must be performed in the order shown in the flowchart.

NOTE

Be sure that the procedures described in TM 9-1430-651-12 are completed before attempting procedures in this chapter. After power turn-on, system must warm up for 30 minutes before system becomes fully operational.

3-2. Reporting Equipment Publications Improvements. Reporting of errors, omissions, and recommendations by the individual user for improving this publication is encouraged. Reports should be submitted on DA Form 2028, Recommended Changes to Publications, and forwarded to: Commander, U.S. Army Missile Command, ATTN: AMSMI-MMC-LS-LP, Redstone Arsenal, Alabama 35898-5238. You may also send in your comments electronically to our e-mail address: ls-lp@redstone-emh2.army.mil or by fax 205-842-6546/ DSN 788-6546.

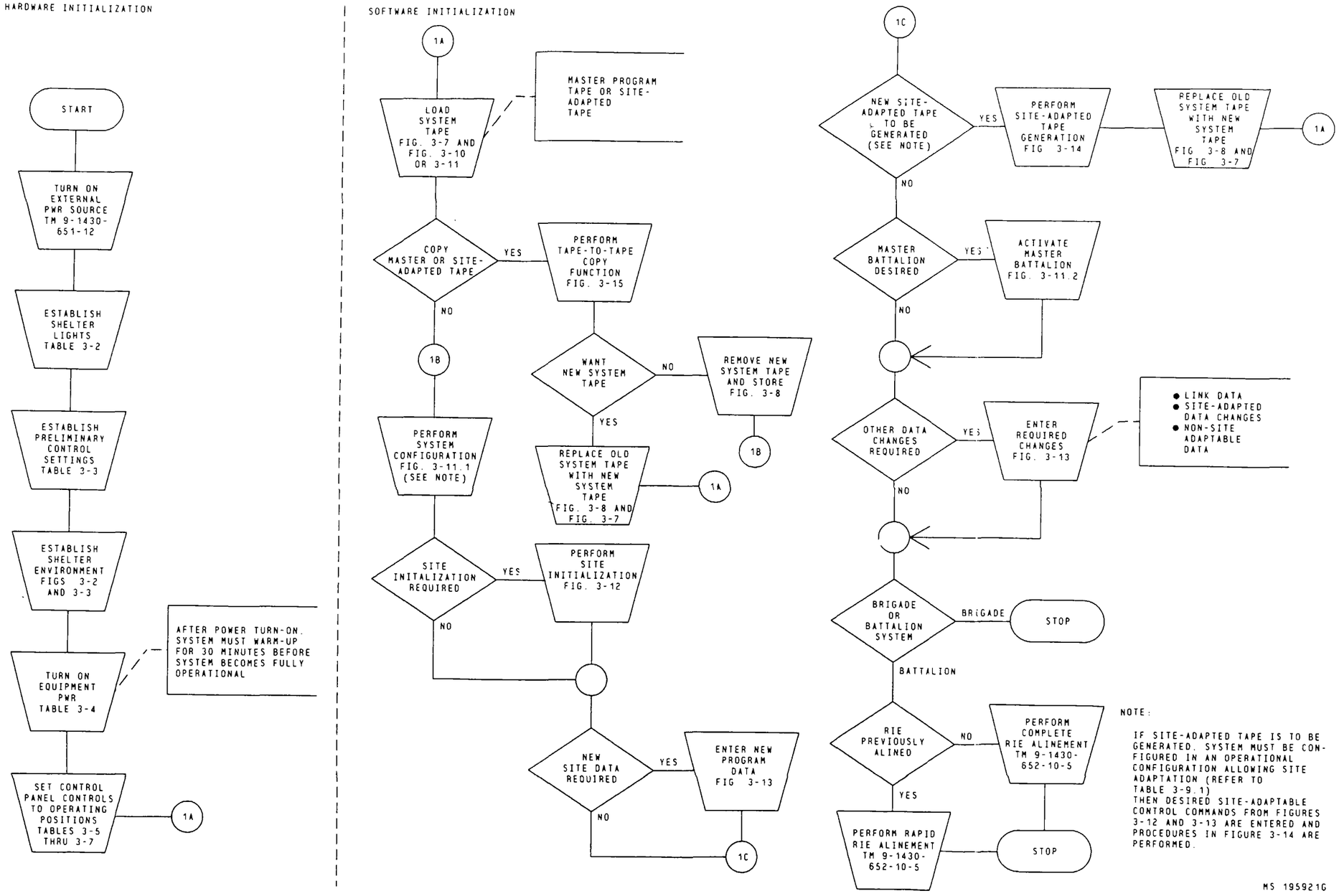


Figure 3-1. System Initialization - Flow Chart

Section II. HARDWARE INITIALIZATION

3-3. General. Initialization of system hardware must be accomplished prior to program entries (software initialization) or normal operation. Shelter lighting must be turned on, equipment control settings must be checked before power is applied and, after power is applied, equipment controls must be set to their initial operating states or positions. The tasks described in the following tables and paragraphs must be accomplished in the order given to prevent possible equipment damage. Refer to TM 9-1425-650-12 for physical location of electronic equipment control panels and TM 9-1430-652-10-2 for descriptions of controls and indicators.

3-4. Equipment Address Options. For the purpose of clarity, a specific equipment configuration and selected channel address settings have been assigned for the initialization. However, some major units are interchangeable electrically and functionally and therefore their addresses can be interchanged. Table 3-1 lists those units and the address options available.

3-5. Establish Shelter Lighting. Table 3-2 lists the switch settings necessary to establish shelter lighting in order to accomplish system initialization.

3-6. Preliminary Control Settings. Only the equipment panel controls listed in table 3-3 must be preset before power is applied; all other control positions are irrelevant. In this case, the listed order of the control settings is irrelevant as long as all the controls are set to the listed positions.

3-7. Power Turn-On. Table 3-4 lists the switch settings for applying power to the system electronic equipment.

WARNING

If the modular collective protection equipment (MCPE) is installed but not operating, air baffle 12 (MCPE/AC air intake control) and door of MCPE protective entrance must be open to prevent depletion of oxygen supply.

3-8. Shelter Environmental Modes. The system shelter may be operated in any one of four different environmental modes as determined by setting shelter air baffles, equipment blowers, and MCPE/air conditioner controls as specified in figures 3-2 and 3-3. Available environmental modes are as follows:

a. *Ambient*. In the ambient environmental mode, both equipment and personnel area temperatures are maintained by outside air.

b. *Vent*. In the vent environmental mode, equipment area temperature is maintained by outside air and personnel area temperature is maintained by the air-conditioner (cooling and heating).

CAUTION

Do not change air conditioner modes when the equipment is initialized and operating as power fluctuations will cause memory errors. Wait for an opportune maintenance period, then perform shutdown and restart changing air conditioner modes.

c. *Air-Conditioned*. In the air-conditioned environmental mode, both equipment and personnel area temperatures are maintained by the air-conditioner.

d. *CBR*. The CBR environmental mode is identical to air-conditioned environmental mode except that shelter air is detoxified and the shelter is pressurized by the Modular Collective Protection Equipment (MCPE).

3-9. Equipment Initialization. Tables 3-5 thru 3-7 list the preliminary operating positions of each equipment panel's controls. Any control or indicator not listed in these tables is irrelevant at this point and may be ignored. Set switches in accordance with table 3-5 and table 3-6 or 3-7. Use table 3-6 for modem control settings for battalion configuration operation or table 3-7 for brigade configuration operation. Table 3-8 lists Modem/Device/Connector assignments.

Table 3-1. Equipment Address Options

Unit	Designations	Selection
DDG No. 1	----	Channel 04
DDG No. 2		Channel 06
Computer	Upper and Lower	Primary or Secondary
Tape Units	Upper and Lower	Channel 0(10) or 1(11)
Consoles	Consoles 1 thru 8	Addresses must start with 0 and be consecutive.
Voice Comm Stations	Wall and console	Addresses 1 thru 10
Memories	Memory 1 thru 4	Memory bank addresses are restricted to 0, 1, 2 or 3.One address must be zero: the remainder must be consecutively numbered but can be in any order (i. e, 3, 0, 2, 1). Duplicate addresses are not allowed.
	Memory 5 thru 8	Nonfunctional
Modems	IA/TB	By addresses assigned during initialization but individual modems must be set for the data link to be used.

[1]The basic requirement is that identical equipment may not have more than one unit with the same address (channel) selected and online. For example, either tape unit can be used for any tape unit function if the proper addressing is used.

Table 3-2. Establish Shelter Lighting

Panel	Control	Setting
POWER TRANSFER UNIT		
	CAUTION **When turning on power for the first time ("cold" start), be sure that all MAIN POWER circuit breakers are off (down position and all DC power panel circuit breakers, except EMERGENCY POWER BATTERY OUTPUT, UPPER MEMORY RACK NO. 2, and LOWER MEMORY RACK NO.2) are on (up) before external power source is turned on.** **When turning on power from a power-loss condition ("re-start"), proceed as above except be sure to keep EMERGENCY OUTPUT circuit breaker in the on (up) position. This permits IBDL backup power to maintain the data in the CMOS memories until main power is established** .	
	NOTE **Be sure external power source is on.**	
AC Power Panel	PHASE AVAILABLE	A,B,C on (ind)
	PHASE ROTATION	A,B,C on (ind)
	POWER SOURCE SELECT	TAC POWER or CONV POWER
	MAIN POWER	
	RELAY COILS SERVICE BREAKER	ON (up)
	SYSTEM POWER ON	Green
	SHELTER circuit breaker	ON (up)
	LIGHTING MAIN	ON (up)
	LOCAL LCU/RMT	LOCAL (LCL/RMT if remote display consoles are used)
	AUX 5V MONITOR	ON (up)

3-4.1/(3-4.2 blank) Deleted

Table 3-2. Establish Shelter Lighting - Continued

Panel	Control	Setting
Single ceiling light assemblies	MAINTENANCE/OPERATIONAL	MAINTENANCE
Dual ceiling light assemblies	MAINTENANCE ON/OFF	ON
Environmental Control Panel	LIGHTING BLKOUT OVERRIDE	ON

NOTE

When AUX 5V MONITOR circuit breaker is set to ON, AC/DC CONVERSION NO. 1 voltage fault UNDER and BATTERY CHRG FAULT indicators may light. Additionally, on the environmental control panel, AIRFLOW FAULT SENSOR DUCT 1 and SENSOR DUCT 2 indicators may light.

Table 3-3. Preliminary Control Settings

Panel	Control	Setting
ADP STATUS AND CONTROL	**POWER**	
	UPPER CPU	OFF
	LOWER CPU	OFF
	IOU	OFF
	ADP	OFF
	ADP STATUS	
	PRIMARY CPU	
	RUN/INHIBIT	INHIBIT
	SECONDARY CPU	
	RUN/INHIBIT	INHIBIT
	DEVICE CONTROL	
	IOX 1	OFF LINE
	IOX 2	OFF LINE
	IOX 3	OFF LINE
	IOM	OFF LINE
	KEYBOARD PRINTER	OFF LINE
	MEMORY CONTROL	
	MEMORY 1	
	MEMORY SELECT	OFF

Table 3-3. Preliminary Control Settings - Continued

Panel	Control	Setting
ADP STATUS AND CONTROL	**MEMORY 2**	
	MEMORY SELECT	OFF
	MEMORY 3	OFF
	MEMORY SELECT	OFF
	MEMORY 4	
	MEMORY SELECT	OFF
	MEMORY 5	
	MEMORY SELECT	OFF
	MEMORY 6	
	MEMORY SELECT	OFF
	MEMORY 7	
	MEMORY SELECT	OFF
	MEMORY 8	
	MEMORY SELECT	OFF
DATA COMMUNICATION	**POWER SUPPLIES**	
	LOWER	
	1(CLOCK)	OFF
	2	OFF
	3	OFF
	4	OFF
	UPPER	
	1	OFF
	2	OFF
	3	OFF
	4	OFF
	IBDL	
	ON/OFF	OFF

NOTE

The modem control panels are located in door 2 of rack 2. The indicated control settings are made on all modem control panels.

Modem	POWER ON/OFF	OFF
RADAR SIMULATOR	MODE	OFF LINE
	RCVR NOISE VOLTS PEAK	OFF

Table 3-3. Preliminary Control Settings - Continued

Panel	Control	Setting
RADAR SIMULATOR (cont)	ANTENNA DIRECTION	STOP
	POWER ON/OFF	OFF
RADAR INTERFACE EQUIPMENT II	RDR/CPU ON LINE/OFF LINE	OFF LINE
	POWER ON/OFF	OFF
	RADAR PROCESSING	
	MEMORY	OFF
	RADAR J-BOX	
	F1 ON/F1 INHIBIT	F1 INHIBIT
Environmental control	CONTROL MODULE MODE SELECTOR	OFF
	EVAPORATOR FAN SPEED HIGH/LOW	LOW
	COMPRESSOR CIRCUIT BREAKER	ON
	CONTROL CIRCUIT BREAKER	ON
MCPE Compartment Control Module (if installed)	POWER	OFF
VOICE COMM CENTRAL	POWER ON/OFF	OFF
	SHELTER STATIONS	
	LEFT STATION	
	ON (RESET)/OFF	OFF
	RIGHT STATION	
	ON (RESET)/OFF	OFF
Analog-to-Digital Converter	Refer to TM 11-5820-1112-13&P for preliminary control settings	
Secure Line Termination Unit[1]	Refer to TM 11-5895-1519-13&P for preliminary control settings.	
Operator Interface[1]	POWER ON/OFF	OFF
Display junction box (if used)	AC MASTER ON/OFF	OFF
	DC	
	CB J2 thru J12	OFF
Keyboard Printer Unit	POWER ON/OFF	OFF
RADAR J-BOX (if used)	POWER ON/OFF	OFF

[1]Equipment present only in AN/TSQ-73 equipped with MSE/ADI.

Table 3-4. Power Turn-On Settings - Continued

Panel	Control	Setting
	NOTE **Be sure that all controls are set for selected environmental mode.**	
	CAUTION **After prolonged storage, long periods of shutdown, or exposure to cold temperatures, preheat air conditioner compressor crankcase 4 hours before operation in COOL mode, as specified in TM 5-4120-361-14. Crankcase heater is turned on when primary power is applied.**	
	CAUTION **To prevent damage to heater elements when operating MODE SELECTOR HIGH HEAT, set EVAPORATOR FAN SPEED to HIGH. Operate MODE SELECTOR in VENT for 2 to 3 minutes prior to air conditioner shutdown.**	
POWER TRANSFER UNIT	MAIN POWER AIR CONDITIONER	Set in accordance with selected environmental mode (para 3-8)
AC Power Panel	BATTERY CHARGER	ON (unless temperature is below 5°F) Battery full indicator lights. Fault indicator goes out.
	UTILITY OUTLETS	ON (up)
	DISPLAY FANS	ON (up)
	CBR UNIT	Set in accordance with selected environmental mode (para 3-8).
	CAUTION **When air conditioner environmental mode is selected, do not set SHELTER BLOWERS circuit breaker to ON.**	
	SHELTER BLOWERS	Set in accordance with selected environmental mode (para 3-8). If temperature is below 0 °F, allow 30 minutes before turn-on of shelter blowers. Air flow fault Sensor Duct 1 and Sensor Duct 2 indicator goes off within 2 minutes.
	RADAR J-BOX	ON (up); (if RJB is used)

Table 3-4. Power Turn- On Settings - Continued

Panel	Control	Setting
AC Power Panel (cont)	**AC/DC CONVERSION**	
	NO. 1	ON (up) AC/DC Conversion No. 1 voltage fault indicator UNDER goes off and may light. OVER indicator should go off prior to end of power turn-on.
	NO. 2	OFF (down) Set to ON (up) only if remote displays are connected.
DC Power Panel	MODULE TEST SET	OFF (down)
	EMERGENCY POWER BATTERY OUTPUT	ON (up) BATTERY FULL/CHARGING indicator (AC Power Panel) lights according to battery condition. Fault indicator may light for a few minutes if battery is fully discharged.
	NOTE **Display junction box controls are set only when remote display equipment is connected. Observe D.C. indicator is lit.**	
Display Junction Box	AC MASTER	ON (observe AC indicator lights)
	DC circuit breakers J2 thru J12	On only for connected equipment per connector in use.
Radar Junction Box (if used)	POWER ON/OFF	ON (observe POWER indicator lights)

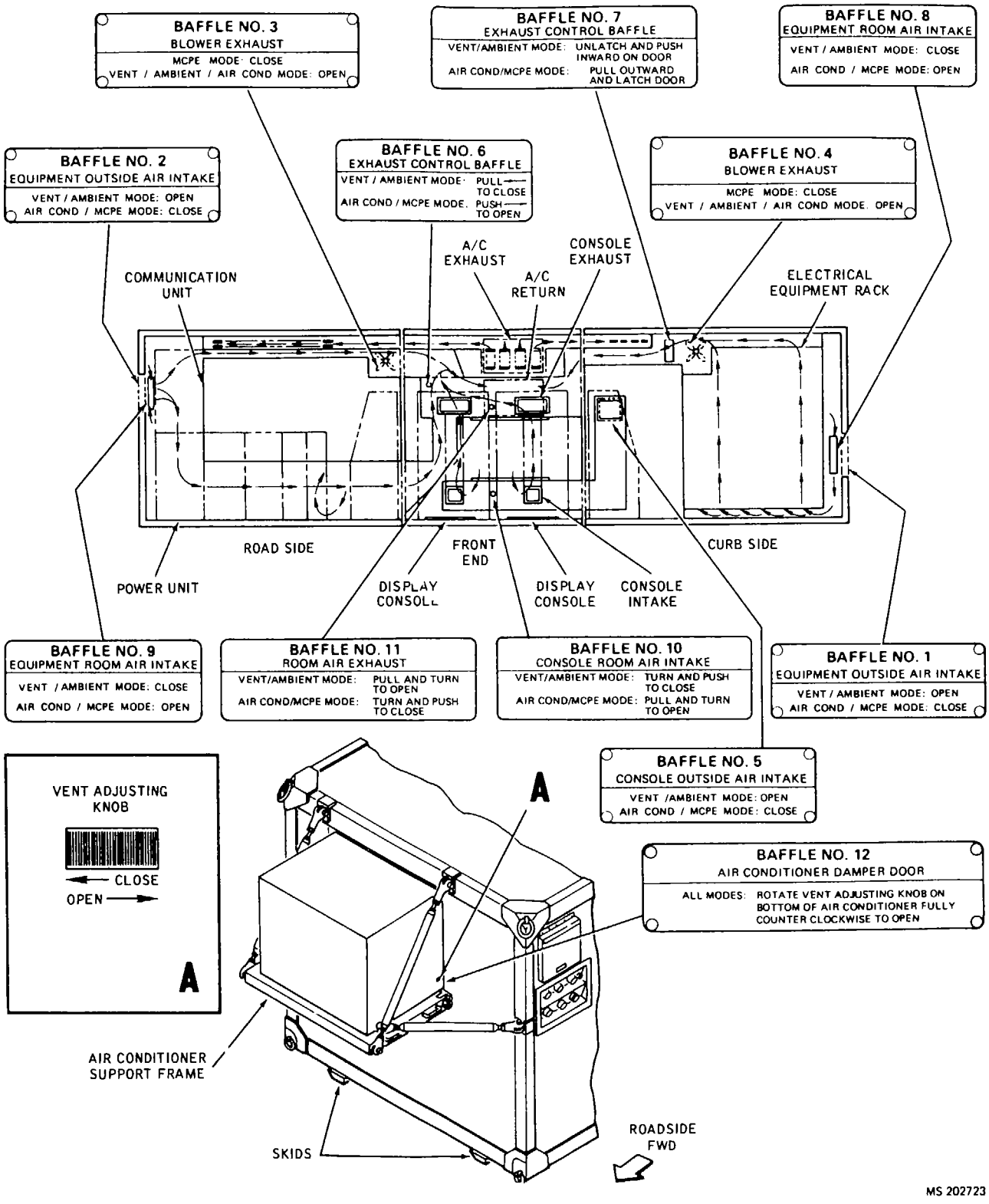
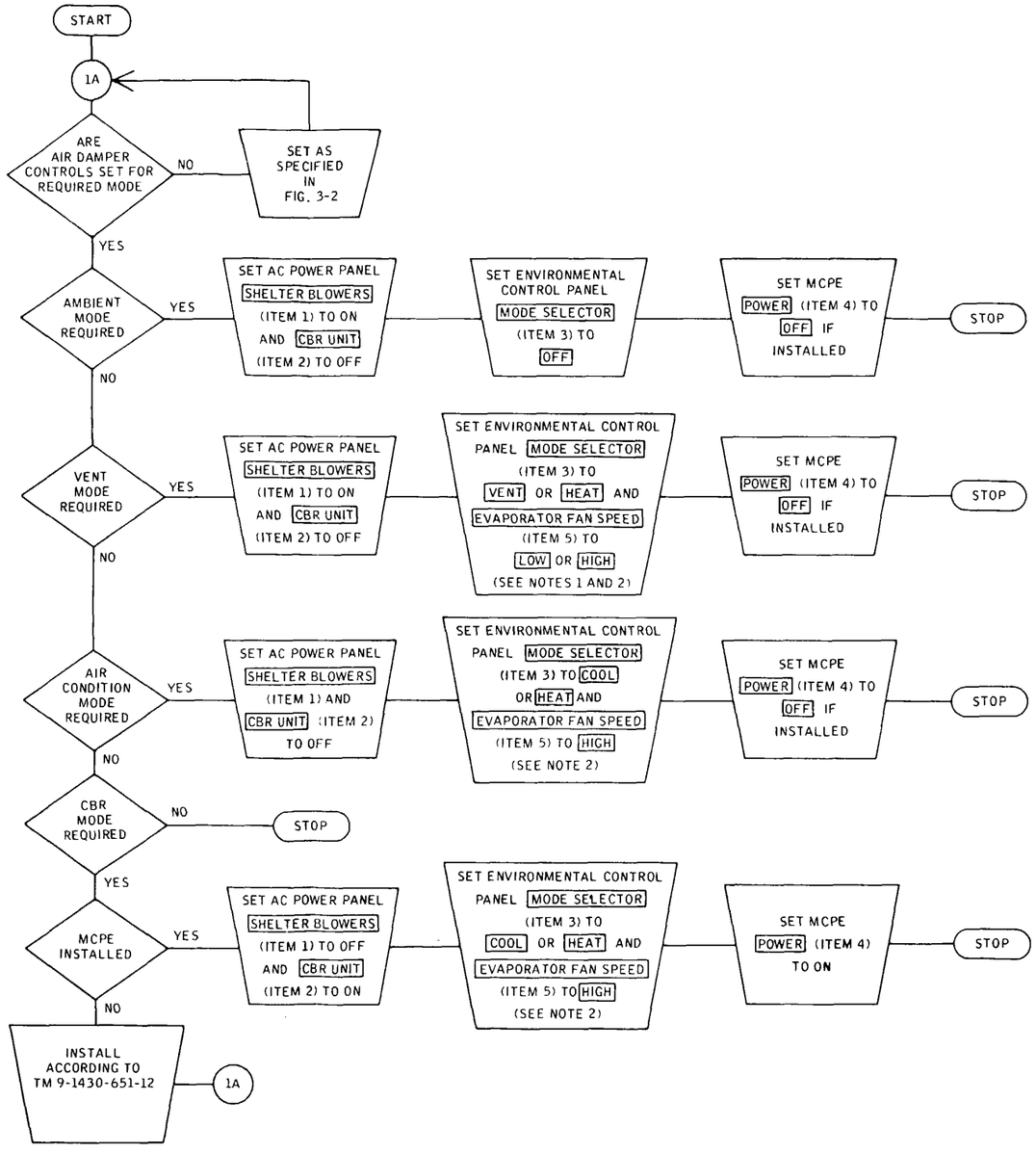
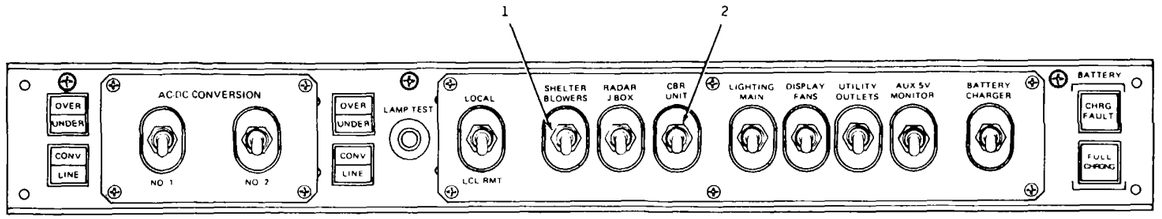
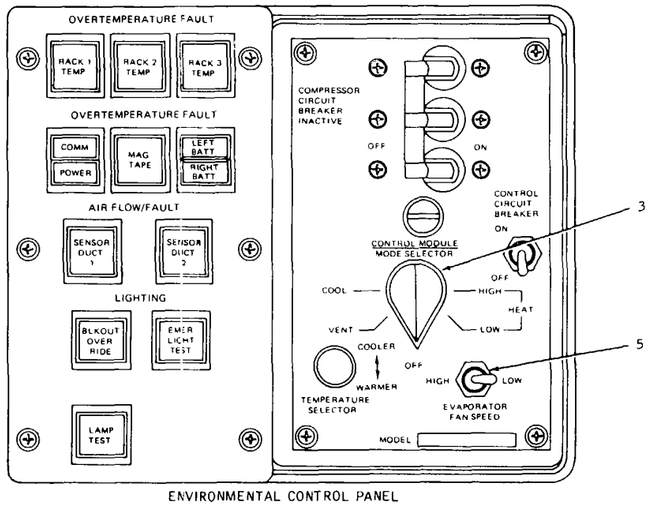


Figure 3-2. Air Damper Operation

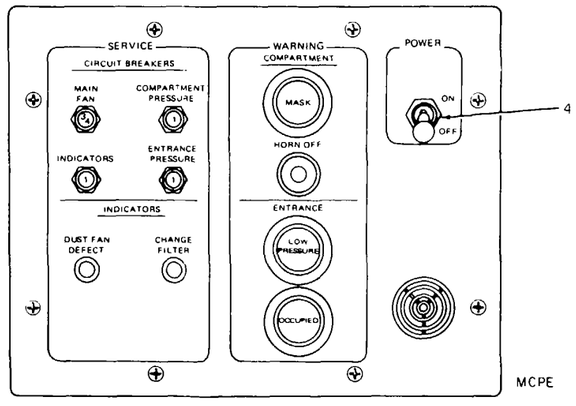




AC POWER PANEL



ENVIRONMENTAL CONTROL PANEL



MCPE

NOTES:

1. WHEN OPERATING MODE SELECTOR IN HIGH HEAT, SET MODE SELECTOR EVAPORATOR FAN SPEED TO HIGH.
2. TO COOL OFF AIR CONDITIONER HEATING ELEMENTS AFTER USING MODE SELECTOR IN HIGH HEAT, OPERATE MODE SELECTOR IN VENT FOR 2 TO 3 MINUTES.
3. [ ] INDICATES EQUIPMENT MARKING.

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Figure 3-3. Air Conditioning Operation

Table 3-5. Equipment Initialization Switch Settings

Panel	Control	Setting
ADP STATUS AND CONTROL	**POWER**	
	ADP	ON
	UPPER CPU	ON
	LOWER CPU	ON
	IOU	ON
	PRIMARY CPU	
	SELECT	LOWER
	ADP STATUS	
	PRIMARY CPU	
	RUN/INHIBIT	RUN
	SECONDARY CPU	
	RUN/INHIBIT	RUN
	DEVICE CONTROL	
	IOX 1	ON LINE
	IOX 2	ON LINE
	IOX 3	OFF LINE
	IOM	ON LINE
	KEYBOARD PRINTER	ON LINE

NOTE

Ensure backup control card ON/OFF switch for each operational memory is ON. Switch should be left in the ON position, except for an extended period of shutdown or when system is in storage.

	MEMORY CONTROL	
	MEMORY 1	
	MEMORY SELECT	ON LINE
	MEMORY 2	
	MEMORY SELECT	ON LINE
	MEMORY 3	
	MEMORY SELECT	ON LINE
	MEMORY 4	
	MEMORY SELECT	ON LINE

Table 3-5. Equipment Initialization Switch Settings --Continued

Panel	Control	Setting	
DATA COMMUNICATION	IBDL ON/OFF	OFF	
	POWER SUPPLIES	(Battalion)	(Brigade)
	LOWER		
	1 (CLOCK)	ON	ON
	2	ON	OFF
	3	OFF	OFF
	4	OFF	OFF
	UPPER		
	1	ON	ON
	2	ON	ON
	3	ON	ON
	4	ON	OFF
Modem Control			
	NOTE **The modem control panels are located in door 2 of rack 2. The indicated control settings are made on all modem control panels. At least one modem must be on to bootload. Power should not be applied to unused modems.**		
	POWER ON/OFF	ON	
RADAR SIMULATOR[1]	POWER ON/OFF	ON	
	MODE	STD	
	PRF-HZ	According to radar to match RIE conditions	
	ANTENNA		
	RATE - RPM	According to radar to match RIE conditions	
	DIRECTION	CW or CCW per radar (should not be off)	
	RCVR NOISE VOLTS PEAK	OFF	
Mag Tape Units No. 1 and 2	CHANNEL SELECT	0 (upper) 1 (lower)	

See footnote at end of table.

Table 3-5. Equipment Initialization Switch Settings - Continued

Panel	Control	Setting
Keyboard Printer	POWER ON/OFF	ON
Display Consoles	ADDRESS SELECT (located inside left-hand section)	As determined locally. Refer to Table 3-1.
	SYMBOL BRIGHTNESS (8 thumbwheel switches)	5
	VIDEO BRIGHTNESS (8 thumbwheel switches)	5
	POWER ON	ON
	DOU INHIBIT OVERRIDE (located below bullnose on right front)	OFF
	CONSOLE RESET (located below bullnose on right front)	Press once
DDG No. 1	ADDRESS SELECT POWER ON	4 ON
DDG No. 2 (Brigade only)	ADDRESS SELECT POWER ON	6 ON
VOICE COMM CENTRAL	POWER ON/OFF	ON
		NOTE **FAULT STATUS LINK QUALITY STA 1, STA 2, STA 3, and STA 4 indicators may flash.**
	SHELTER STATIONS	
	LEFT STATION	ON (RESET)
	RIGHT STATION	ON (RESET)
	LINE SELECT	
	FUNCTION	0
	ADDRESS	00
	FAULT DETECTION	
	STA 1 thru 10	ON for active station. OFF for station not connected.

NOTE

The following control settings apply to two wall stations and two display console stations. The display console right-hand section must be placed in the maintenance position for access to the STA ADRS switch.

Table 3-5. Equipment Initialization Switch Settings - Continued

Panel	Control	Setting
VOICE COMM STATION	STA ADRS	1, 2, 3 or 4 (each VCS requires different address)
	MPX	ON LINE
		NOTE **VCC FAULT STATUS LINK QUALITY indicators go off. Record station address on front panel and voice comm directory.**
[2]Analog to Digital Converter	Refer to TM 11-5820-1112-13&P for equipment initialization switch settings.	
[2]Secure Line Termination Unit	Refer to TM 11-5895-1519-13&P for equipment initialization switch settings.	
[2]Operator Interface	POWER ON/OFF	ON
		NOTE **Power initiates BIT routine. If BIT passes, operational mode may be selected. If BIT fails, no further processing is allowed. Failure indication is "communications error."**
	16-character keypad	Select desired voice channel or FSK data channel to establish MSE communications link to CRC, Brigade, or Battalion (refer to TM 9-1430-652-10-4).
RADAR INTERFACE EQUIPMENT II	POWER	ON
	INTEGRATED MODE	ON
	RDR/CPU	ON-LINE
	MEMORY	ON-LINE
	TARGET PROCESSOR	
	BITE	OFF

[1]RADAR SIMULATOR panel switch settings must match RIE switch settings and should closely approximate radar for which RIE was initialized.
[2]Equipment present only in AN/TSQ-73 equipped with MSE/ADI.

Table 3-6. Data Line Switch Settings - Battalion

Link number[2]	Description
0-7	TADIL B/ATDL-1 Sites[1]
10-37	ATDL-1 Fire Unit[1]

[1]Set modem FORMAT switch to IA/TB, BIT RATE BPS switch to 1200, and ATTEN (DB) to 00.
[2]Link to Modem assignment is optional and achieved with CC102 (TM 9-1430-652-10-6).

Table 3-6.1. Data Link Switch Settings - Master Battalion

Link number[2]	Description
0-7	TADIL B/ATDL-1 Sites[1]
10-37	ATDL-1 Fire Unit[1]

[1]Set modem FORMAT switch to IA/TB, BIT RATE BPS switch to 1200, and ATTEN (DB) to 00.
[2]Link to Modem assignment is optional and achieved with CC102 (TM 9-1430-652-10-6).

Table 3-7. Data Link Switch Settings - Brigade

Link number[2]	Description
0-7	TADIL B/ATDL-1 Sites[1]
10-13	ATDL-1 Sites[1]

[1]Set modem FORMAT switch to IA/TB, BIT RATE BPS switch to 1200, and ATTEN (DB) to 00.
[2]Link to Modem assignment is optional and achieved with CC102 (TM 9-1430-652-10-6).

Table 3-8. Modem/Device/Connector Assignments

Modem number[2]	Receiver demodulator physical device address	Transmitter modulator physical device address	Demarkation panel connection[3]
1	100	101	J1
2	102	103	J2
3	104	105	J3
4	106	107	J4
5	110	111	J5
6	112	113	J6
7	114	115	J7
8	116	117	J8
9	120	121	J9
10	122	123	J10
11	124	125	J11
12	126	127	J12
13	130	131	J13
14	132	133	J14
15	134	135	J15
16	136	137	J16
17	140	141	J17
18	142	143	J18
19	144	145	J19
20	146	147	J20
21	150	151	J21
22	152	153	J22
23	154	155	J23
24	156	157	J24
25	160	161	J25
26	162	163	J26
27	164	165	J27
28	166	167	J28
29	170	171	J29
30	172	173	J30
31	174	175	J31
32	176	177	J32

[1]Refer to TM 9-1430-652-10-4 for detailed data link information.
[2]Link to Modem assignment is optional and achieved with CC102 (TM 9-1430-652-10-6).
[3]ADC connections are subject to local comm CEOI.

Section III. SOFTWARE INITIALIZATION

3-10. General. Software initialization consists of loading a master program tape which automatically runs fault detection procedures, adapting the master program tape, if necessary, to prevailing site parameters, and initializing any data links to be used. In the event changing of the site adapted program is necessary, entries are made through the KPU or display console AN keyboard in response to prompts from the ADP.

3-11. Control Commands. Control Commands (CC) are used to establish AN/TSQ-73 operational program variables. These commands are the primary man-machine interface for system initialization. Control commands are also used to load, activate, and terminate computer program configurations or functions; specify site adaptation data; control various logical and physical devices; and perform miscellaneous functions. Control commands contain both fixed and variable data. Fixed data include, as a minimum, the letters CC, followed by a command code of either two or three octal digits. The command code must be within the octal range 00 thru 163. Variable data consist of one or more items following the command code. Typical variable data are position, altitude, time, etc. The value of these items is variable within predetermined limits. If a command contains variable data terms, the items must be separated from the command code and from each other by either a blank space or a comma. Unless otherwise noted, all data items defined in these procedures are required entries and must be entered in the indicated sequence. Leading zeros are not mandatory entries.

a. Response Messages. Messages are printed out on the KPU to provide operator feedback and to provide a CC entry record. These KPU responses are categorized as follows:

(1) *Acknowledge*. This response is generated to acknowledge a valid, legal entry. The KPU output is 77 NNN 40 ACK, where NNN is the two or three digit command code.

(2) *Error*. This response is generated to indicate rejection of a command entry that is caused by entry of an invalid code (Nonfunctional), format error, or data content error. An example of a KPU error printout is 77 NN(N) 35 INPUT MESSAGE IN ERROR. If a CC that is illegal for a brigade-configured system is input, the ADP outputs the message BDE CNFG. Other error messages are shown in figure 3-4.

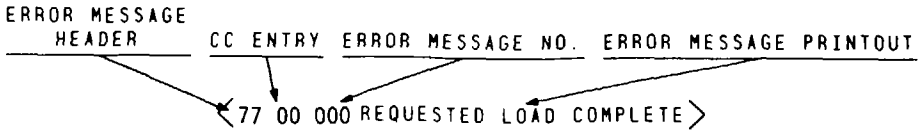
(3) *Special Responses*. Special responses (prompts/alerts) are generated to provide feedback unique to individual commands. When a control command is entered while the MTU is searching, the KPU will print: "KPU CC BUSY." In addition, default values are included in this category.

(4) *Keywords*. In those instances where keywords are used, data may be changed by keyword address without reentering the entire command code sequence.

b. Control Command Entry Procedures. CCs can be entered into the system using the Display Console alphanumeric keyboard (unless punctuation is desired), the Keyboard Printer Unit (KPU), or the ADP Status and Control Panel PROGRAM TEST SELECT thumbwheels (only two-digit CCs with no variable data may be entered). Refer to figure 3-5 for the three methods used to enter system CCs. The Display Console ARO and AN Keyboard are capable of serving as a backup to the KPU for the entry of system CCs and display of associated computer generated responses. The mode is entered by operator actuation of the Display Console CONTRL CMD ENTRY control. Actuation of this' control causes the blanking-out of all the ARO displays. CC entries are then entered via the AN Keyboard and displayed in Row 1 of the ARO. Entries are posted as entered, left to right with a marker to indicate the position of the next character to be entered. Computer responses generated by CC entry are displayed in Rows 3 thru 8 as required. CC entry and computer response formats are identical to those used with the KPU. Return to the normal ARO displays is achieved by operator actuation of the CONTRL CMD ENTRY control. The CC entry mode can be in effect at only one Display Console at a time.

c. Control Command Entries. Refer to TM 9-1430-652-10-6 for detailed CC definitions and figure 3-6 for abbreviated CC definitions.

3-12. Data Entry Errors. If an erroneous entry, illegal action, or equipment error (one time) occurs during software initialization, the computer via the KPU will notify the operator of the condition by repeating a request for entry. The operator then reenters the information correctly.



MESSAGE NO.	PRINTOUT	DEFINITION
00	REQUESTED LOAD COMPLETE>	SYSTEM HAS LOADED REQUESTED CONFIGURATION OR MAP
01	INSUFFICIENT CORE>	AMOUNT OF MEMORY IS NOT SUFFICIENT TO ALLOW LOADING OF CONFIGURATION REQUESTED
02	RESTART REQD>	PRINTED DURING CC PROCESSING. WHEN CODES CC05 (PURGE), CC06 (FLUSH), CC07 (SHUTDOWN), CC20 THRU CC22 OR CC24 THRU CC26 (CONFIGURATION), OR CC107 (OTHR SERV) ARE ENTERED, THE OPERATOR IS ALLOWED 30 SECONDS TO PRESS RESTART SWITCH. IF SWITCH IS NOT PRESSED, CC IS IGNORED AND <77 NN 02 RESTART REQD> IS PRINTED. WHEN CODES CC01 (OWN SITE LOC) CC02 (DLRP), OR CC04 ARE ENTERED, SYSTEM PARAMETERS ARE CHANGED WHETHER RESTART SWITCHCAP IS PRESSED OR NOT
03	SYSTEM TAPE FORMAT ERROR>	SYSTEM TAPE IS BAD
04	SYSTEM TAPE I/O ERROR>	PROBLEM IN SYSTEM TAPE INPUT/OUTPUT HANDLING
05	SYSTEM TAPE IS DISMOUNTED>	SYSTEM TAPE IS NOT INSTALLED ON MTU OR ASSIGNED (CC104) OR ACTIVATED (CC100)
06	MUST LOAD OCP>	OPERATIONAL CONFIGURATION (CC20 THRU CC22 OR CC24 THRU CC26) MUST BE LOADED INTO SYSTEM
07	AUX FUNCTION ACTIVE>	AUXILIARY FUNCTION PROGRAMS ARE IN OPERATION
10	CONFIGURATION NOT ON TAPE>	REQUESTED CONFIGURATION IS NOT ON TAPE
11	SYSTEM RESTART>	SYSTEM RESTART HAS BEEN ACCOMPLISHED
12	BANK XX PURGED>	MEMORY BANK NO. __ HAS BEEN PURGED (CC40)
13	BANK XX NOT PURGED>	MEMORY BANK NO. __ HAS NOT BEEN SUCCESSFULLY PURGED
14	ALL ON LINE BANKS IN USE>	ALL MEMORY BANKS ARE CURRENTLY IN USE
15	INVALID LIST OPTION>	ATTEMPT TO ENTER OTHER THAN N, L OR EX IN LIST FIELD OF CC156
16	SYSTEM PURGED>	SYSTEM HAS BEEN PURGED (CC05)
17	SYSTEM NOT PURGED>	SYSTEM HAS NOT BEEN SUCCESSFULLY PURGED
20	RESET TIME OF DAY>	TIME OF DAY SHOULD BE ENTERED (CC130)
21	LINK NOT COMM ESTAB>	COMMUNICATION WITH REQUESTED DATA LINK IS NOT ESTABLISHED
22	NO SITE AVAILABLE>	SITE LIMIT REACHED. CANNOT HONOR REQUEST FOR ANOTHER SITE SLOT
23	SPECIFIED LINK IN USE>	COMMUNICATION IS ALREADY TAKING PLACE OVER DATA LINK REQUESTED
24	DUP NAME ENTERED>	DEFENDED POINT (CC121), ATDL-1 STATION ADDRESS (CC03, CC114 AND CC120) ENTRY NAME PREVIOUSLY USED
25	CORRIDOR ACTIVE>	SAFE CORRIDOR (CC123) ENTRY ATTEMPTS TO ADD A POINT TO AN ACTIVE CORRIDOR

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Figure 3-4. Error Message Definition (Sheet 1 of 4)

MESSAGE NO.	PRINTOUT	DEFINITION
26	TOO FEW POINTS>	SAFE CORRIDOR (CC123) ENTRY HAS INSUFFICIENT POINTS ENTERED
27	SPEED/ALT LIMITS INVALID>	SAFE CORRIDOR PARAMETERS (CC124) ENTRY INVALID
30	INVALID SPEED LIMITS>	UPPER SPEED NOT 50 DATA MILES GREATER THAN LOWER SPEED (INCREMENTS ARE IN TENS OF DATA MILES) (CC111)
31	POSITION OFF GRID>	ANY COORDINATE ENTRY NOT ON LOCAL GRID (OUT OF RANGE)
32	NO INTERFACE PROGRAM>	INPUT/OUTPUT HANDLER OR DATA RECORDING LEVELS NOT PRESENT
33	DEVICE TIMEOUT>	DEVICE DOES NOT RESPOND TO ACTIVATE COMMAND
34	DEVICE ADDRESS UNASSIGNED>	DEVICE ADDRESS IN EQUIPMENT STATUS TABLE IS NOT VALID
35	INPUT MESSAGE IN ERROR>	IMPROPER ENTRY FOR ANY KPU ENTRY NOT PROVIDED A SPECIFIC ERROR MESSAGE
36	LINK NOT INITIALIZED>	DATA LINK NOT INITIALIZED - ANY ENTRY INVOLVING DATA LINK ACTIVITY (CC114, CC107, CC112, CC102, CC100)
37	MODEM SWITCHES IN ERROR>	MODEM BIT RATE BPS OR FORMAT SWITCH SET INCORRECTLY
40	ACK>	SYSTEM HAS ACKNOWLEDGED CC ENTRY
41	VOLUME PREVIOUSLY DEFINED>	ATTEMPT TO DEFINE A PREVIOUSLY ENTERED MEZ OR WCZ (CC156)
42	NOT USED	
43	TAPE ALREADY IN USE>	ATTEMPT TO ASSIGN A LOGICAL TAPE (THAT IS ALREADY IN USE) TO A PHYSICAL DEVICE (CC104)
44	REASSIGN MEMORY BANK ADDRESSES.... RECONFIGURE>	MEMORY BANKS DO NOT RESPOND UPON BOOT LOAD OR GAPS EXIST IN MEMORY BANK ADDRESSING
45	RIE/VSU NOT AVAILABLE-RESTART SIM>	RIE/VSU CANNOT BE PUT ON-LINE. RELOAD SIMULATION PROGRAM (CC30) AFTER CORRECTING PROBLEM
46	NOT USED	
47	BDE CNFG>	ATTEMPT TO PERFORM BN ONLY ACTION AT BRIGADE
50	LIMITS EXCEEDED>	ATTEMPTED ACTIVATION OF SAFE CORRIDOR (CC124) WHEN NINE OTHER CORRIDORS ARE ACTIVE; EXCEED ALTITUDE LIMIT OF VOLUME (CC157)
51	FSCL PREVIOUSLY ENTERED>	ATTEMPT TO DEFINE A PREVIOUSLY ENTERED FSCL (CC156)
52	OUT OF RANGE>	ATTEMPTED TO ENTER TB BLOCK LIMITS WITH A BLOCK SIZE GREATER THAN 1000 (OCTAL) OR TO ENTER OWN SITE ADDRESS OUTSIDE THE RANGE 100-175 (OCTAL)
53	LINK ACTIVE>	ATTEMPTED TO ENTER OWN SITE POSITION (CC01) DATA LINK REFERENCE POINT (CC102) OR OTHER SERVICE DATA (CC107) WITH ANY LINK ACTIVE. CC107 MAY NOT BE PERFORMED WITH ANY TADIL-B LINK ACTIVE
54	DLRP OFF GRID>	FOR CC01 AND CC02 THIS INDICATES THAT DLRP IS NOW OFF GRID AND A REMOTE DATA LINK CANNOT BE INITIALIZED

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Figure 3-4. Error Message Definition (Sheet 2 of 4)

MESSAGE NO.	PRINTOUT	DEFINITION
55	INVALID ID>	VOLUME OR LINE [id] FIELD IS INVALID (CC156, CC157, CC160)
56	LIMIT ERROR - ACTIVE FSCL>	ATTEMPT TO DISPLAY SECOND FSCL (CC157)
57	ERROR - SAME VOLUME>	ENTER INNER VOLUME ID IN [oz] INSTEAD OF OUTER VOLUME ID (CC157)
60	INVALID ENTRY TYPE>	[t] OR [list] FIELD OF CC156 IS INVALID OR HEADER DESIGNATION FOR CC130 IS INVALID
61	TOO MANY VOLUMES>	WCZ COUNT GREATER THAN 20, MEZ OR FSCL COUNT GREATER THAN 2 FOR CC156
62	MAX VOL DISP REACHED>	VOLUME/LINE AREA OF DISPLAY REFRESH FILE IS FULL
63	MUST DELETE A CIRCLE>	ATTEMPTED TO CHANGE THE CENTER POINT ON A CIRCULAR VOLUME (CC156)
64	VOLUME NOT FOUND>	INVALID VOLUME NUMBER ENTERED (VOLUME NOT IN DATA BASE) (CC156, CC157, CC160)
65	ALTITUDE IN ERROR>	UPPER ALTITUDE NOT 1000 FEET (OR MORE) GREATER THAN LOWER ALTITUDE (INCREMENTS ARE IN 1000s OF FEET) (CC157)
66	SYSTEM MODE ERROR>	ERROR IN CC155 ENTRY
67	CC ABORT>	ACKNOWLEDGES THAT OPERATOR ABORTED THE CC ROUTINE WITH AN "EX" ENTRY IN ANY FIELD. DATA NOT RECOVERED
70	NOT USED	
71	NOT USED	
72	NOT USED	
73	NO CURRENT DATE>	ATTEMPTED TO ACTIVATE SIF CODE VALIDATION (CC151) WITH NO VALID CURRENT DATE IN THE SYSTEM (CC130)
74	TWO DATES FOR SAME TABLE>	ATTEMPTED TO CHANGE DATE OF A NEWLY INITIATED SIF CODE TABLE OR ATTEMPT TO ENTER SAME DATE AS AN EXISTING TABLE (CC151)
75	CURRENT SIF CODES UNDEFINED>	ATTEMPTED TO ACTIVATE AUTOMATIC SIF CODE VALIDATION WITHOUT VALID SIF CODES FOR CURRENT PERIOD IN SYSTEM (CC151)
76	MAX FILTERS IN SYSTEM>	ATTEMPT TO CHANGE DATA LINK TRANSMISSION ZONE TABLE ENTRY AND THE NUMBER OF TRANSMISSION ZONES EQUALS OR EXCEEDS 20 (CC111)
77	INVALID POSITION 2>	THE SECOND POSITION DEFINED FOR A RECTANGULAR TRANSMISSION ZONE IS NOT NORTHEAST OF THE FIRST POSITION ENTERED (CC111)
100	INVALID TABLE SPECIFIED>	ATTEMPTED TO LIST, DELETE OR CHANGE A NONEXISTENT SIF CODE TABLE (CC151)
101	TWO TABLES ALREADY EXIST>	ATTEMPTED TO INITIATE A THIRD SIF CODE TABLE (CC151)
102	ENTER VALID START TIME>	ATTEMPT TO ENTER A STOP TIME WITHOUT PREVIOUSLY ENTERING A VALID START TIME (CC160)

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Figure 3-4. Error Message Definition (Sheet 3 of 4)

MESSAGE NO.	PRINTOUT	DEFINITION
103	TADIL-B ILLEGAL FOR PADS-aa>	ATTEMPT TO ENTER UNIT ADDRESS ALPHAS THAT DESIGNATES A TIED TADIL-B UNIT
104	SECOND VALUE MUST BE GREATER THAN OR EQUAL TO ITS CORRESPONDING FIRST >	ATTEMPT TO ENTER A SECOND VALUE OF MISSILE COUNT THRESHOLD OR THREAT PRIORITY THAT IS LESS THAN THE CORRESPONDING FIRST VALUE (CC146 AND CC147)
105	PADS TABLE FULL UNIT ADDRESS NOT ACCEPTED-aa >	ATTEMPT TO ENTER VALID UNIT ADDRESS WHEN THE PAD TABLE IS FULL (CC147)
106	25 ADDRESS LIMIT EXCEEDED, LAST ADDRESS ACCEPTED -aa>	ATTEMPT TO ENTER TOO MANY ADDRESSES AT ONE TIME IN A STRING. LAST ADDRESS ACCEPTED (CC147)
107	INVALID UNIT ADDRESS ALPHAS -aa>	ATTEMPT TO ENTER ILLEGAL ATDL-1 UNIT ADDRESS (CC147)
110	UNIT NOT FOUND >	ATTEMPTED TO DELETE A UNIT NOT IN THE PU/RU TABLE (CC112)
111	PU/RU TABLE FULL >	ATTEMPTED TO ENTER A UNIT WHEN THE PU/RU TABLE IS FULL (CC112)

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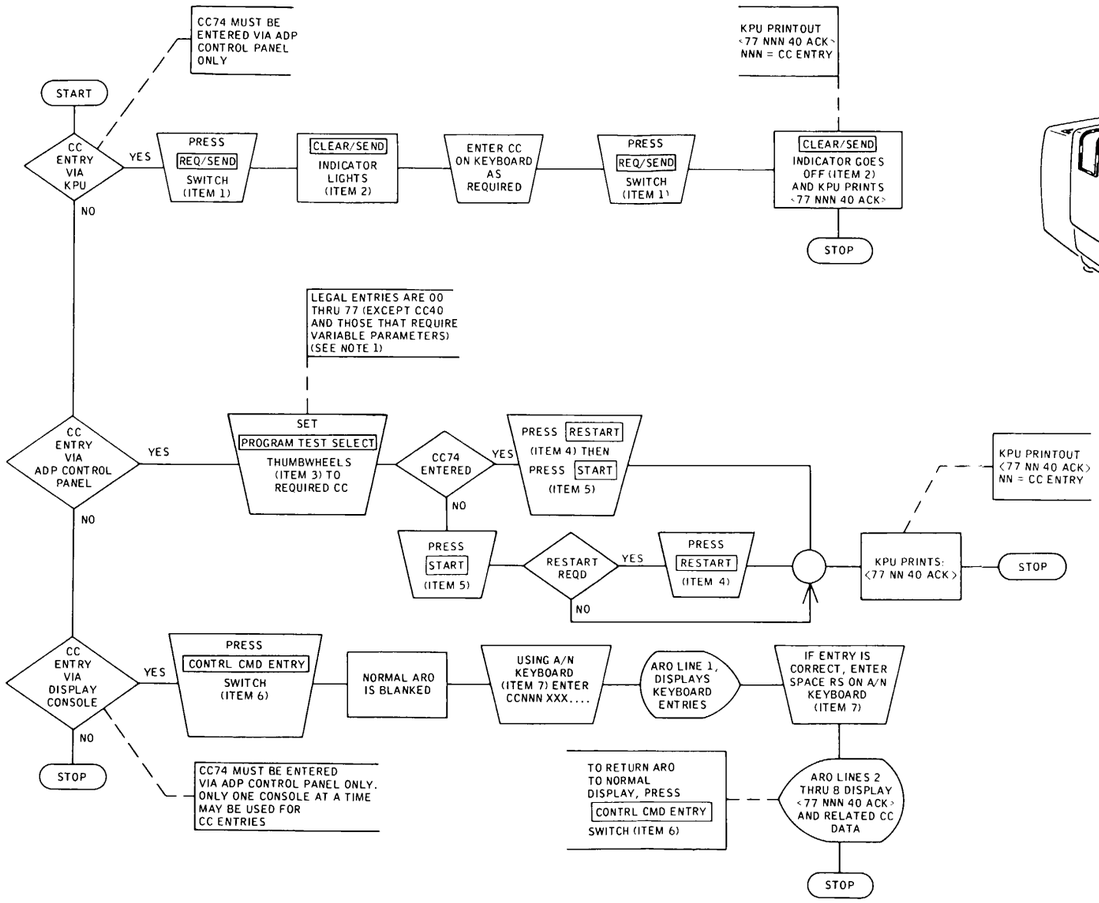
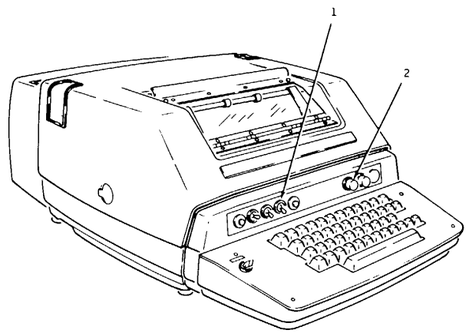
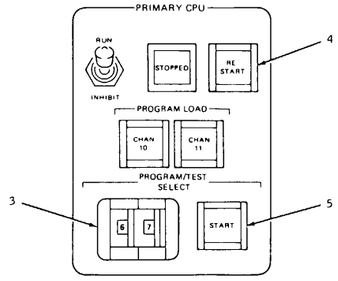
Figure 3-4. Error Message Definition (Sheet 4 of 4)





KPU



PART OF ADP STATUS AND CONTROL PANEL

NOTES:

1. CC40 CAN BE ENTERED AT KPU OR CONSOLE.
2. [ ] INDICATES EQUIPMENT MARKING.

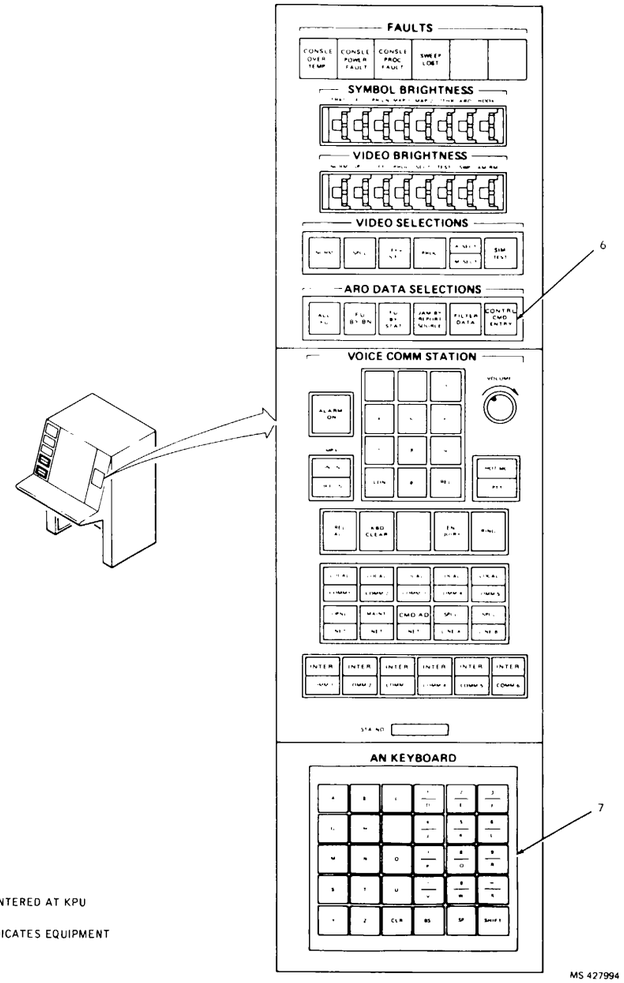


Figure 3-5. Control Command Entry Procedures

CC00-NONFUNCTIONAL

CC01-ENTER OWN SITE LOCATION●*
(REQUIRES RESTART)
ENTRIES-CC01 POS ALT △GMT

CC02-ENTER DATA LINK REFERENCE POINT●*
(REQUIRES RESTART)
ENTRIES-CC02 POS

CC03-ENTER OWN STATION ADDRESS●*
ENTRIES-CC03 ADDRESS

CC04-DESIGNATE NUMBER OF ACTIVE CONSOLES●*
(REQUIRES RESTART)
ENTRIES-CC04 ACTIVE CONSOLES

CC05-SYSTEM PURGE (REQUIRES RESTART)
ENTRIES-CC05

CC06-FLUSH VOLATILE FILES (EXCEPT MAPS)
AND RESTART (REQUIRES RESTART)
ENTRIES-CC06

CC07-ORDERLY SHUTDOWN (REQUIRES RESTART)
ENTRIES-CC07

CC10-DISPLAY DIAGNOSE QUEUE
ENTRIES-CC10

CC11-PRINT EQUIPMENT STATUS TABLE
ENTRIES-CC11 n
EXAMPLE-CC11 7

CC12-START DATA RECORDING
ENTRIES-CC12

CC13-STOP DATA RECORDING
ENTRIES-CC13

CC17-TERMINATE AUXILIARY FUNCTION
ENTRIES-CC17

CC20 THRU CC22 AND CC24 THRU CC26 LOAD
OPERATIONAL CONFIGURATION
(REQUIRES RESTART)
ENTRIES
CC20 BRIGADE: SINGLE OR DUAL CPU, NORMAL OPERATIONS, AUX FUNCTION

CC21 BRIGADE: SINGLE OR DUAL CPU, ONE MEMORY DOWN, NORMAL OPERATIONS, BUT NO AUX FUNCTION (NOTES 3 AND 4)

CC22 BRIGADE: SINGLE OR DUAL CPU, ONE MEMORY DOWN, REDUCED TRACKS, AUX FUNCTION (NOTES 3 AND 4)

CC24 BATTALION: DUAL CPU, NORMAL OPERATIONS, AUX FUNCTION (EXCEPT RAID DATA GENERATION)

CC25 BATTALION: DUAL CPU, ONE MEMORY DOWN, NORMAL OPERATIONS, BUT NO AUX FUNCTION (NOTES 3 AND 4)

CC26 BATTALION: SINGLE OR DUAL CPU, ONE MEMORY DOWN, REDUCED TRACKS, AUX FUNCTION (NOTES 3 AND 4)

CC30 THRU CC37-LOAD AUXILIARY CONFIGURATION
ENTRIES-CC30-SIMULATION PROGRAM ♦
CC31-RAID DATA GENERATION PROGRAM
CC32-DATA REDUCTION PRINTOUT PROGRAM (FROM BOOTLOAD ONLY)
CC33-SIMULATION PLAYBACK PROGRAM ♦
CC34-FIELD UTILITIES PROGRAM
CC35-NONFUNCTIONAL
CC36-MAP GENERATION PROGRAM
CC37-SITE ADAPTATION*
-TAPE-TO-TAPE COPY (FROM BOOTLOAD ONLY)

CC40-PURGE UNUSED MEMORIES*(NOTE 5)
ENTRIES-CC40

CC50 THRU CC56-LOAD FAULT ISOLATION
CONFIGURATION
ENTRIES-CC50-RIE FI
CC51-VSU FI
CC52-DDG FI
CC53-KPU FI
CC54-MTU FI
CC55-DATA COMM FI
CC56-DISPLAY CONSOLE FI

CC60-WORST CASE MEMORY TEST
ENTRIES-CC60

CC61-RIE TEST (MODE IV TEST)
ENTRIES-CC61

CC74-MEMORY TO TAPE DUMP (NOTE 2)
ENTRIES-CC74

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Figure 3-6. Abbreviated CC Definitions (Sheet 1 of 4)

CC100-ACTIVATE LOGICAL DEVICE OR DATA LINK

	BATTALION	BRIGADE
ENTRIES-CC100	0 THRU 7	CC100 0 THRU 13
	CC100 10 THRU 37	CC100 40 THRU 47●
	CC100 40 THRU 47●	CC100 52 THRU 55●
	CC100 50 THRU 51	CC100 61
	CC100 52 THRU 55●	CC100 72●
	CC100 61	
	CC100 72●	

CC101-DEACTIVATE LOGICAL DEVICE OR DATA LINK

ENTRIES-CC101 n

CC102-ASSIGN LINK NUMBER TO MODEM●*

	BATTALION	BRIGADE
ENTRIES-CC102 n ■	CC102 0 THRU 37.	CC102 0 THRU 13.
	1 THRU 32	1 THRU 20

EXAMPLE-CC102 0 1

CC104-ASSIGN LOGICAL TAPE TO PHYSICAL TAPE UNIT

ENTRIES-CC104 n MLU ■
EXAMPLE-CC104 5 MLU 1

CC105-CANCEL LOGICAL TAPE ASSIGNMENT

ENTRIES-CC105 n

CC106-SET DATA LINK FILTER●*<

ENTRIES-CC106 lk Ss IN SM sm
EXAMPLE-CC106 3 S OFF IN OFF SM OFF

CC107-ENTER OTHER SERVICE DATA●*
(REQUIRES RESTART)

ENTRIES-CC107 n ■
EXAMPLE-CC107 103 2000 2777

CC110-CHANGE DATA LINK TRANSMISSION ZONE STATUS●*

ENTRIES-CC110 n ■
EXAMPLE-CC110 1 ON

CC111-SET DATA LINK TRANSMISSION ZONE●*<
(NOTE 6)

ENTRY-CYLINDRICAL
CC111 lk C pos H a l ID ld
LS ls US us D d
ENTER RADIUS (DM) (prompt)
r

EXAMPLE-CYLINDRICAL
CC111 1 C G 42 20 00 N 112 10 00 W H
+25 ID 0.2.4 LS 100 US 150 D ON
ENTER RADIUS (DM)
50

ENTRY-RECTANGULAR
CC111 lk R pos 1 H a ID ld
LS ls US us D d
ENTER POS 2 (prompt)
pos 2

EXAMPLE-RECTANGULAR
CC111 2 R G 42 00 00 N 124 10 00
W H -27 ID 2.4 LS 10 US
150 D ON
ENTER POS 2
G 42 30 00 N 123 30 00 W

CC112-TADIL-B LINK COMMAND MESSAGE CRITERIA●*

ENTRIES-CC112 s n g f function
EXAMPLE-CC112 IN 71 AF A N

CC114-INITIALIZE DATA LINK●*

ENTRIES-CC114 lk n sa t alt (TADIL-B)
CC114 lk a x g alt (ATDL-1)
EXAMPLE-CC114 0 71 FA FPU (TADIL-B)
CC114 4 AC X A 1000 (ATDL-1 SITE)
CC114 7 PC P R 1000 (PATRIOT SITE)
CC114 10 BC 2 R 1000 (HAWK FUs)

CC115-ENTER TRANSMITTABLE SITE●*

ENTRIES-CC115 n p a
EXAMPLE-CC115 AF G 42 18 00 N 120 35
00 W 2000

CC116-SELECT TRACK NUMBER FOR PPI DISPLAY*

ENTRIES-CC116 x
EXAMPLE-CC116 TB

CC117-ENTER STATE OF ALERT/AIR RAID WARNING*

ENTRIES-CC117 ALERT
EXAMPLE-CC117 Y

CC120-IDENTIFY SIMULATED SAM UNIT*♦

ENTRIES-CC120 t FU addr pos alt lk
EXAMPLE-CC120 HAWK 2 08 G 42 10 10
N 114 20 10 W 500 27

CC121-ENTER DEFENDED POINT●*

ENTRIES-CC121 id radius pri pos alt; OR
CC121 id radius pri link no. (FOR FU)
EXAMPLE-CC121 F 5 3 G 43 37 56 N 114
19 30 W 1000
CC121 L 10 2 27 (FOR FU)

CC122-DELETE DEFENDED POINT*

ENTRIES-CC122 id
EXAMPLE-CC122 F

CC123-ENTER OR CHANGE SAFE CORRIDOR POINT●*

ENTRIES-CC123 id POINT LOCATION
EXAMPLE-CC123 A B1 G 41 8 45 N 115 38 22 W

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Figure 3-6. Abbreviated CC Definitions (Sheet 2 of 4)

CC124-COMPLETE OR CHANGE SAFE CORRIDOR PARAMETERS ● *

ENTRIES-CC124 id alt limits speed limits status delete
EXAMPLE-CC124 A LA 21 UA 25 LS 20 US 50 ON
CC124 A DL (DELETE)

CC125-ACTIVATE AND DEACTIVATE TIMES FOR SAFE CORRIDORS ● *

ENTRIES-CC125 id H, M, S, H_2, M_2, S_2,
EXAMPLE-CC125 A 9 15 0 13 5 30

CC126-ENTER HEIGHT FINDER ● *

ENTRIES-CC126 n p a
EXAMPLE-CC126 2 G 43 37 20 N 119 18 32 W 1000

CC127-SET SYSTEM FAKER MODE *

ENTRIES-CC127 a t
EXAMPLE-CC127 ON 120
CC127 OFF

CC130-ENTER TIME OF DAY OR DATE

ENTRY-CC130 T h m s
EXAMPLE-CC130 T 18 45 20
ENTRY-CC130 D mo d y
EXAMPLE-CC130 D 3 20 90
ENTRY-CC130 LI

CC131-SET OPEN/NOISY ALERT THRESHOLD ● *

ENTRIES-CC131 l n
EXAMPLE-CC131 5 20

CC132-SET PARITY ERROR ALERT THRESHOLD ● *

ENTRIES-CC132 l n
EXAMPLE-CC132 10 128

CC134-SET MANUAL TRACK UPDATE TIME ● *

ENTRIES-CC134 t
EXAMPLE-CC134 500

CC135-AUTOMATIC TRACK INITIATE CONTROL PARAMETERS ● * ♦

ENTRIES-CC135 kk nn kk nn .... kk nn
EXAMPLE-CC135 RT 50 TL 43 AR 17 LV 50 UV 200

CC136-ENTER SYSTEM PARAMETERS ● *

ENTRIES-CC136 f s j l r c
EXAMPLE-CC136 FU 40 ST 20 JS 8 LP 70 RP 70 CR OFF

CC137- ENTER HAWK ASSIGNMENT ZONE (HAZ) RADIUS ● *

ENTRIES-CC137 FU address radius
EXAMPLE-CC137 BA001 15

CC143-ACTIVATE/DEACTIVATE MASTER BATTALION ■

ENTRIES-CC143 type of Bn
EXAMPLE-CC143 H

CC144-ENTER AUTOMATIC WEAPONS ASSIGNMENT PARAMETERS ● *<

ENTRIES-CC144 function
EXAMPLE-CC144 IN 120 45 10

CC145-ENTER PADS PARAMETERS ● *<

ENTRIES-CC145 function
EXAMPLE-CC145 IN 0 20 10 1 15 40 40

CC146-ENTER DEFENSE PRIORITY/ MISSILE COUNT THRESHOLDS ● *<

ENTRIES-CC146 function
EXAMPLE-CC146 IN 50 2 250 4 75 3 375 5

CC147-ENTER SUBORDINATE PRIORITY/MISSILE COUNT THRESHOLDS ● *<

ENTRIES-CC147 function
EXAMPLE-CC147 IN AD 20 2 40 4 30 3 60 5

CC151-AUTOMATIC SIF CODE VALIDATION ● *<

(REFER TO TM 9-1430-652-10-7)

CC152-(REFER TO TM 9-1430-652-10-7) ● *<

CC153-(REFER TO TM 9-1430-652-10-7) ● *<

CC154-(REFER TO TM 9-1430-652-10-7) ● *<

CC155-ENTER SYSTEM MODE *<

ENTRY-CC155 m
EXAMPLE-CC155 H

CC156-ENTER OR CHANGE POSITION OF A VOLUME/LINE ● *<

ENTRY-CYLINDRICAL
CC156 id nnn t 1 list
ENTER RADIUS AND POSITION (prompt)
r pos
EXAMPLE-CYLINDRICAL
CC156 MT 212 I 1
ENTER RADIUS AND POSITION
100 G 44 10 00 N 113 15 17 W
ENTRY-RECTANGULAR
CC156 id nnn t 2 list
ENTER POSITION OF POINT 1 (prompt)
pos1
ENTER POSITION OF POINT 2 (prompt)
pos2
EXAMPLE-RECTANGULAR
CC156 MT I 2
ENTER POSITION OF POINT 1
G 43 00 00 N 125 00 00 W
ENTER POSITION OF POINT 2
G 44 00 00 N 123 00 00 W

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Figure 3-6. Abbreviated CC Definitions (Sheet 3 of 4)

ENTRY-FSCL
CC156 id nnn t n list
ENTER POSITION OF POINT 1 (prompt)
pos1
ENTER POSITION OF POINT 2 (prompt)
pos2
etc. to point n
EXAMPLE-FSCL
CC156 FS 1 I 4
ENTER POSITION OF POINT 1
G 43 10 10 N 110 50 50 W
ENTER POSITION OF POINT 2
G 46 20 30 N 115 10 50 W
ENTER POSITION OF POINT 3
G 46 50 50 N 122 10 40 W
ENTER POSITION OF POINT 4
G 44 50 50 N 126 10 35 W

CC157-COMPLETE OR CHANGE PARAMETERS OF VOLUME/LINE ● * <

ENTRY-CC157 id nnn del LA la UA ua pd S OZ ozid
EXAMPLE-CC157 WT 212 LA 25 UA 50 ALL ON
EXAMPLE-CC157 MT 1 DL (DELETE)

CC162-ENTER ADL ENGAGE COMMAND
PROCESSING MODE ● * <
ENTRY-CC162 function
EXAMPLE-CC162 IN A

CC163-ENTER INTELLIGENCE/EW PROCESSING MODE * <
ENTRY-CC163 - function
EXAMPLE - CC163 LI

NOTES:

1. ● INDICATES THAT CC IS SITE ADAPTABLE.
   * INDICATES THAT CC IS ONLY AVAILABLE IN AN OPERATIONAL CONFIGURATION (CC20 THRU CC22 AND CC24 THRU CC26) AND SYSTEM TAPE MUST BE ON LINE.
   ♦ AVAILABLE ONLY IN BATTALION CONFIGURATIONS AND NOT APPROPRIATE FOR PATRIOT.
   ■ INDICATES CC ONLY AVAILABLE IN BATTALION OPERATIONAL CONFIGURATIONS (CC24 THRU CC26).
   < THIS COMMAND MAY ALSO BE ENTERED VIA PROMPTS.

2. MUST BE ENTERED AT ADP STATUS AND CONTROL PANEL FOLLOWED BY PRESSING RESTART AND THEN START SWITCHES.

3. ADDITIONAL AUXILIARY FUNCTIONS AVAILABLE IF FOURTH MEMORY BANK IS ON LINE (REFER TO TABLE 12-1.1).

4. IF RECONFIGURING BECAUSE OF LOSS OF LOGICAL MEMORY BANK 0 OR 1, A NEW BOOTLOAD IS REQUIRED BEFORE RECONFIGURATION.

5. ONLY LOGICAL MEMORY BANKS 2 AND 3 CAN BE PURGED.

6. KPU WILL ACCEPT ONLY 64 CHARACTERS. MORE THAN ONE CONTROL COMMAND MAY BE REQUIRED TO COMPLETE DESIRED ENTRY.

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Figure 3-6. Abbreviated CC Definitions (Sheet 4 of 4)

3-13. Position Entry Formats. When positional information is required during software procedures, three separate formats may be used (unless a specific format is called for) for entry into the program. One format must be maintained throughout initialization.

a. Geographic. Geographic entries are identified by the letter G, followed by latitude and longitude position in degrees, minutes, seconds, and direction indicator. Latitudes may not exceed 84 degrees north or 80 degrees south; longitudes may not exceed 180 degrees east or west.

Example: G 55 45 30 N 37 37 50 E

b. Universal Transverse Mercator. Universal transverse mercator (UTM) position entries are identified by the initial entry U followed by the 15 digit UTM position. Entries may not exceed 80 degrees south latitude or 84 degrees north latitude.

Example: U 1 31 500000 9000000

c. World Geographic Reference System (GEOREF). In the GEOREF grid system, entries must be 8 alpha and numeric characters. Entries are identified to the computer by the letters GR.

Example: GR EJPB3348

3-14. Magnetic Tape Unit Cartridge Removal and Installation. The MTU Cartridge is a sealed assembly which is inserted in the MTU when in use. A manual lockout of the write function is provided to prevent inadvertent destruction of recorded tapes. The Protect switch is not an operating control; it is manually locked to remain in either the PROT or blank position. Refer to figure 3-7 for cartridge installation and figure 3-8 for cartridge removal procedures.

When operating MTU, the following should be observed:

CAUTION

If the cartridge is to remain in the MTU for an extended period (one or more hours), the tape must be rewound to the BOT marker before the waiting period begins. If tape is not at the beginning or end of tape when power is turned off, an indent is made on tape and may damage tape program.

a. Recorded Tape Protection. When shutting down equipment (or if MTU is turned off), MTU EOT or BOT indication must be obtained before turning off power.

b. Affixing Labels. When affixing labels to the tape cartridge, make sure that labels do not cover window or impede transport read/write operations. This is especially true when a classified tape is recorded and a security label is affixed.

3-15. ADP Operational Checkout (Boot Load). The following procedure should be used only to verify that both CPUs are fully operational. The normal procedure for bootstrap load is located on figures 3-10 or 3-11 depending on which MTU is being used to load program. The master program tape loading procedure consists of installing the master program tape in MTU (paragraph 3-14) and loading the tape data into the memories as described in figure 3-9. The master program tape automatically performs a fault detection search when it is loaded. If a fault is found, the diagnose code for that fault will be displayed for the CPU being used (refer to TM 9-1430-655-20-1).

NOTE

Disregard ADP status and control panel DIAGNOSE CODE readout indications unless a TMON is printed on KPU. Refer to TM 9-1430-655-20-1 for troubleshooting information.

Each time the system is bootloaded, the computer checks the operational status of the memory banks and the KPU prints whether they are online or offline (fig. 3-9, 3-10, and 3-11).

The number of control commands that can be entered from a nonoperational configuration (bootload) is limited. Refer to figure 3-6. Asterisk (*) control commands require an operational configuration.

3-15.1. Operational Configurations. Tables 3-9 and 3-9.1 list each configuration and the auxiliary functions possible while in that configuration. Each of these commands is used to load a particular Air Defense operational configuration. Control commands 20 thru 22 are for Brigade Air Defense operation. Control commands 24 thru 26 are for Battalion Air Defense operation. Control command 20 for Brigade and control command 24 for Battalion provide a maximum track capacity during normal operations.

NOTE

If a site adapted tape is to be generated, the system must be configured in an operational configuration allowing site adaptation (refer to table 3-9). Then the desired site adaptable control commands from figures 3-12 and 3-13 are entered and procedures in figure 3-14 are performed.

The remaining commands are for degraded modes of operation. Each command must be followed within 30 seconds by a RESTART action. Figure 3-11.1 provides procedures for loading the system in the various operational configurations.

3-15.2. Master Battalion (CC143). The master battalion function is provided for use in an emergency condition where the AN/TSQ-73 brigade system is incapable of command and control. In this situation, one or all battalions may assume both brigade and battalion capabilities by becoming master battalions (CC143). This procedure involves realigning data links with TADIL-B and PATRIOT ICC data links determined by SOP. See figure 3-11.2 for activation procedures. PATRIOT ICCs must be

PATRIOT ICC data links determined by SOP. See figure 3-11.2 for activation procedures. PATRIOT ICCs must be linked as subordinate units to AN/TSQ-73 systems. Reference unit SOPs for determining when and how the master battalion function will be utilized.

3-16. Site Initialization and Own Site Relocation. Figure 3-12 provides site initialization procedures for entering site-adapted data and own site relocation. Each time a new master tape is installed, the ADP must be programmed (site-adapted) to respond with respect to the site location. During this process, the system saves the positional input (UTM, Geographic, or GEOREF) of all fixed points (FUs, STs, SCs, DPs, and HFs), link transmission zone and volumes as a separate record on the new site-adapted tape. This same site-adapted tape can be used at the next location through utilization of the CCO1/Relocation command. Upon initiating the CCO1 REART action, any relocated fixed point file computed to be off-grid will be set as invalid and will no longer be displayed on the PPI. The files which have been relocated on-grid will be redisplayed on the PPI relative to the new own-site position. A rectangular volume is off-grid when any point of the volume is off-grid. Acylindrical volume will remain on-grid as long as the center point is on-grid. Local operating procedures should cover corrective action for off-grid points.

NOTE

Upon arrival at new location, site adaptation should be used to generate a new location site-adapted tape utilizing the CCO1/Relocation command. If time does not permit, then a CCO1/Relocation command must be entered each time the system is reconfigured until a new site adapted tape is generated.

Format entry codes are as follows:

a = alpha character

n = numeric character

x = alpha or numeric character

3-17. Program Data Entry. Program data consists of site and non-site adaptable data which must be entered to provide operating parameters for the operational program. This includes such items as track capacities, fire unit data, data link data, defining defended points and safe corridor locations, etc. Refer to TM 9-1430-652-10-6 for detailed computer command code (CC) definitions. The procedures necessary to enter program data into the system are provided in figure 3-13.

3-18. Site-Adapted Tape Generation. Once all necessary changes (figure 3-12) and program data entries (figure 3-13) have been made, a site-adapted tape may be generated. A site-adapted tape, once generated, makes reentry of site-adaptable program data unnecessary since all data will be recorded on the tape. The procedures provided in figure 3-14 are used to generate a site-adapted tape.

3-19. Tape-to-Tape Copy Function. Any system tape can be duplicated on a scratch tape simply by entering CC37 immediately after the system is bootloaded. Figure 3-15 provides the procedure for tape-to-tape copy.

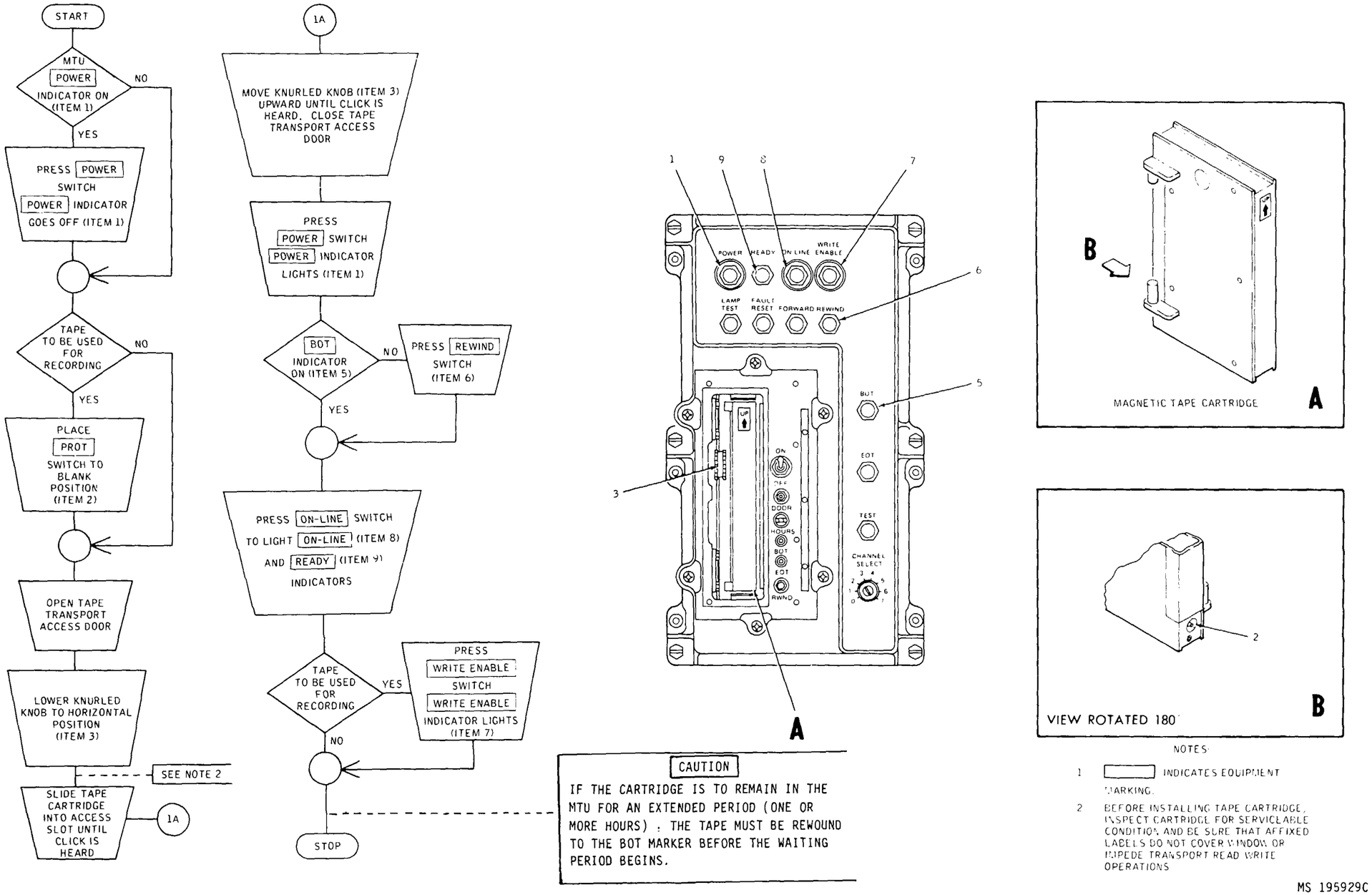


Figure 3-7. Magnetic Tape Unit Cartridge Installation

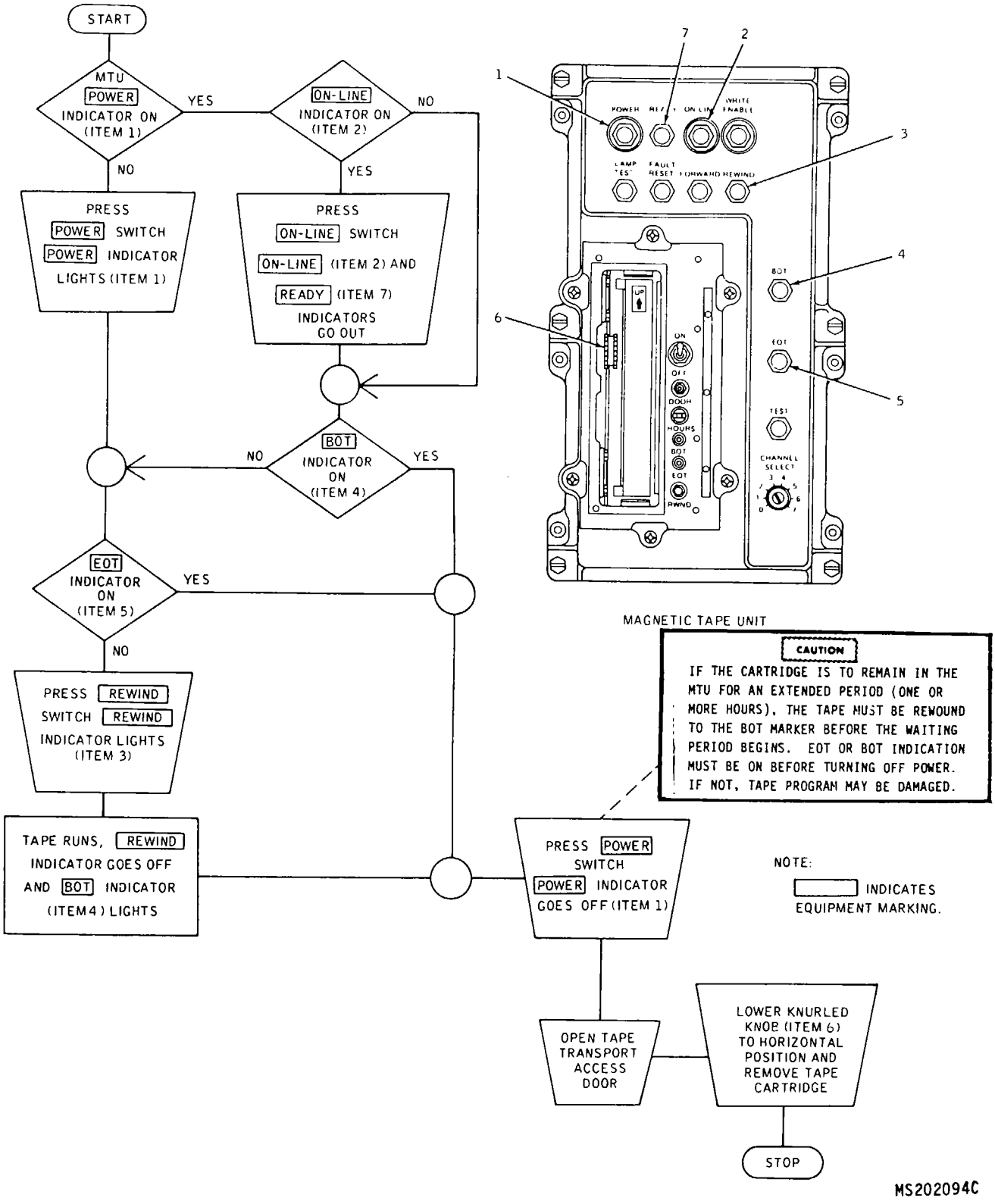
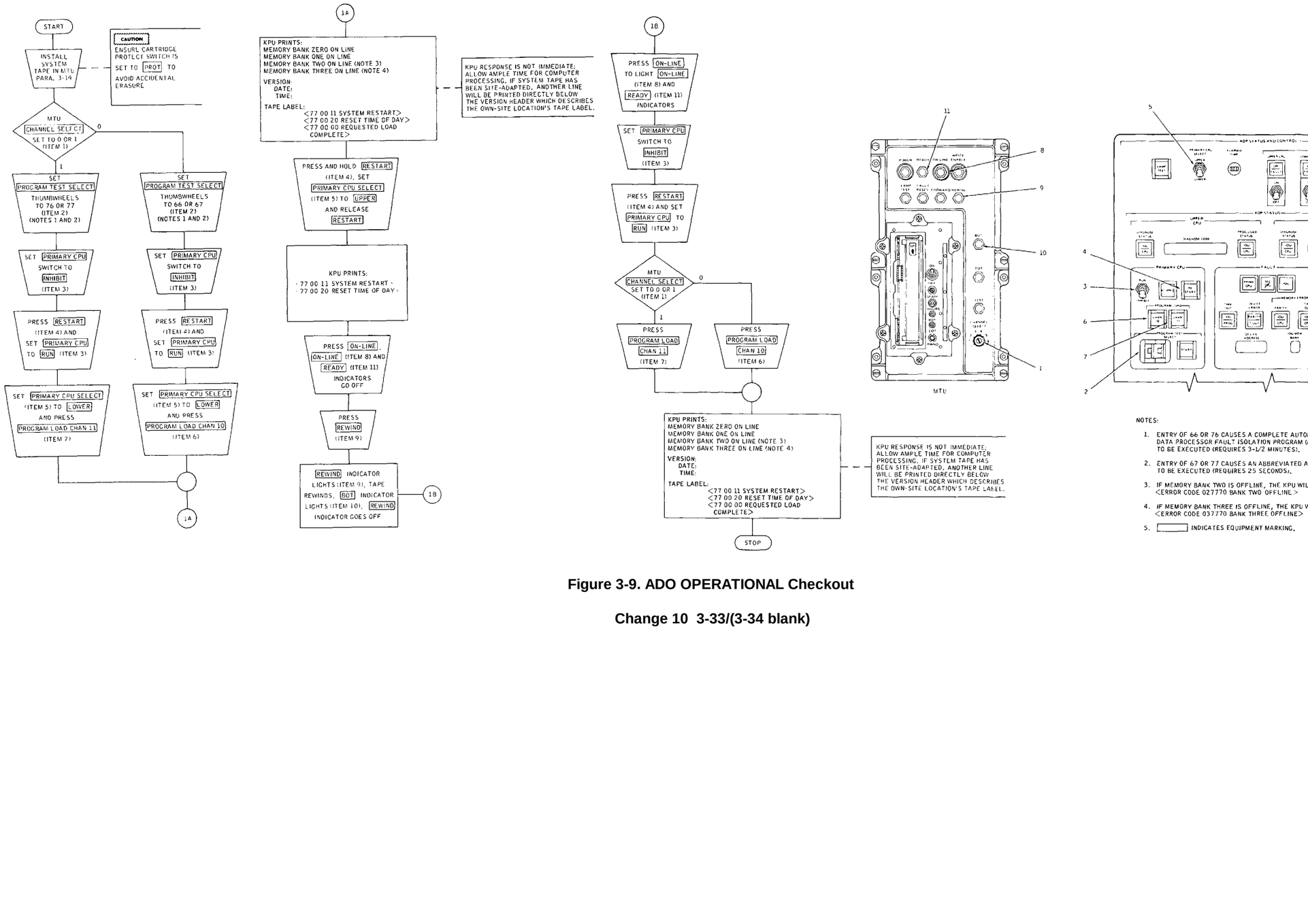


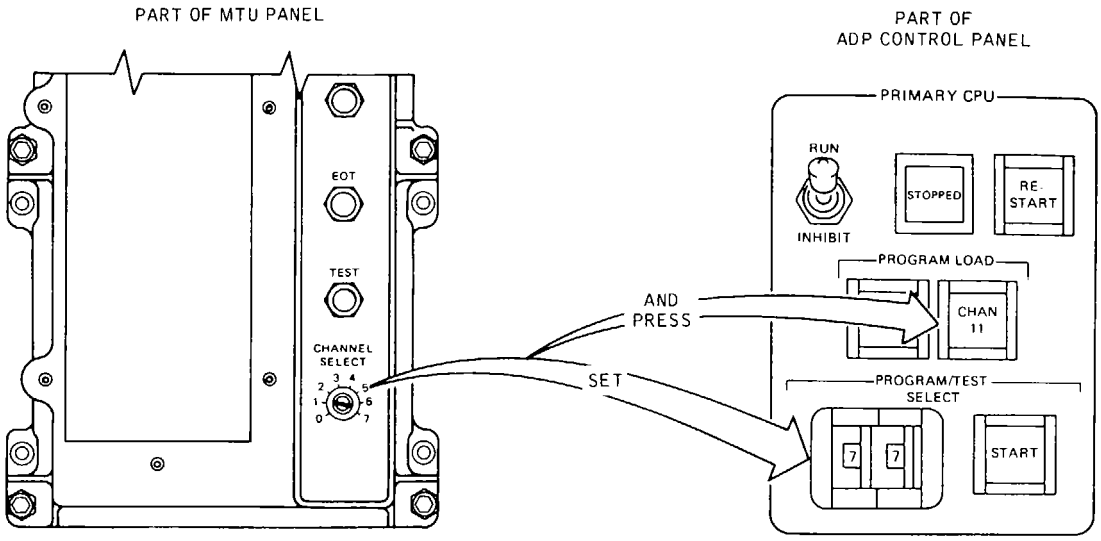
Figure 3-8. Magnetic Tape Unit Cartridge Removal



NOTES:

1. ENTRY OF 66 OR 76 CAUSES A COMPLETE AUTOMATIC DATA PROCESSOR FAULT ISOLATION PROGRAM (ADPFI) TO BE EXECUTED (REQUIRES 3-1/2 MINUTES).
2. ENTRY OF 67 OR 77 CAUSES AN ABBREVIATED ADPFI TO BE EXECUTED (REQUIRES 25 SECONDS).
3. IF MEMORY BANK TWO IS OFFLINE, THE KPU WILL PRINT: <ERROR CODE 027770 BANK TWO OFFLINE >
4. IF MEMORY BANK THREE IS OFFLINE, THE KPU WILL PRINT: <ERROR CODE 037770 BANK THREE OFFLINE>
5. [ ] INDICATES EQUIPMENT MARKING.

Figure 3-9. ADO OPERATIONAL Checkout



IF THE SYSTEM TAPE IS MOUNTED IN THE MTU WITH CHANNEL SELECT SWITCH SET TO 1

PROCEDURE

1. VERIFY MTU TAPE CARTRIDGE IS INSTALLED (FIGURE 3-7)
2. VERIFY MTU [POWER] IS LIT AND [READY] AND [ON-LINE] INDICATORS ARE OFF
3. PRESS [REWIND] SWITCH-VERIFY [BOT] INDICATOR LIGHTS
4. PRESS [ON-LINE] SWITCH-VERIFY [READY] AND [ON-LINE] INDICATORS LIGHT
5. SET ADP CONTROL PANEL [PRIMARY CPU SELECT] SWITCH TO [UPPER]
6. ENTER [77] ON [PROGRAM/TEST SELECT] THUMBWHEELS TO SELECT ABBREVIATED ADPFI OR
   ENTER [76] ON [PROGRAM/TEST SELECT] THUMBWHEELS TO SELECT COMPLETE ADPFI
7. SET [PRIMARY CPU RUN/INHIBIT] SWITCH TO [INHIBIT] AND PRESS [PRIMARY CPU RESTART] SWITCH
8. SET [PRIMARY CPU RUN/INHIBIT] SWITCH TO [RUN]
9. PRESS [PROGRAM LOAD CHAN 11] SWITCH
10. VERIFY KPU PRINTS:

    MEMORY BANK ZERO ON LINE
    MEMORY BANK ONE ON LINE
    MEMORY BANK TWO ON LINE (NOTE 1)
    MEMORY BANK THREE ON LINE (NOTE 2)
    VERSION:
    DATE:
    TIME:

    TAPE LABEL:

    <77 00 11 SYSTEM RESTART>
    <77 00 20 RESET TIME OF DAY>
    <77 00 00 REQUESTED LOAD COMPLETE>

11. REFER TO FIGURE 3-1 FOR NEXT PROCEDURE

NOTES:

1. IF MEMORY BANK TWO IS OFFLINE, THE KPU WILL PRINT:
   <ERROR CODE 027770 BANK TWO OFFLINE>
2. IF MEMORY BANK THREE IS OFFLINE, THE KPU WILL PRINT:
   <ERROR CODE 037770 BANK THREE OFFLINE>
3. [ ] INDICATES EQUIPMENT MARKING.

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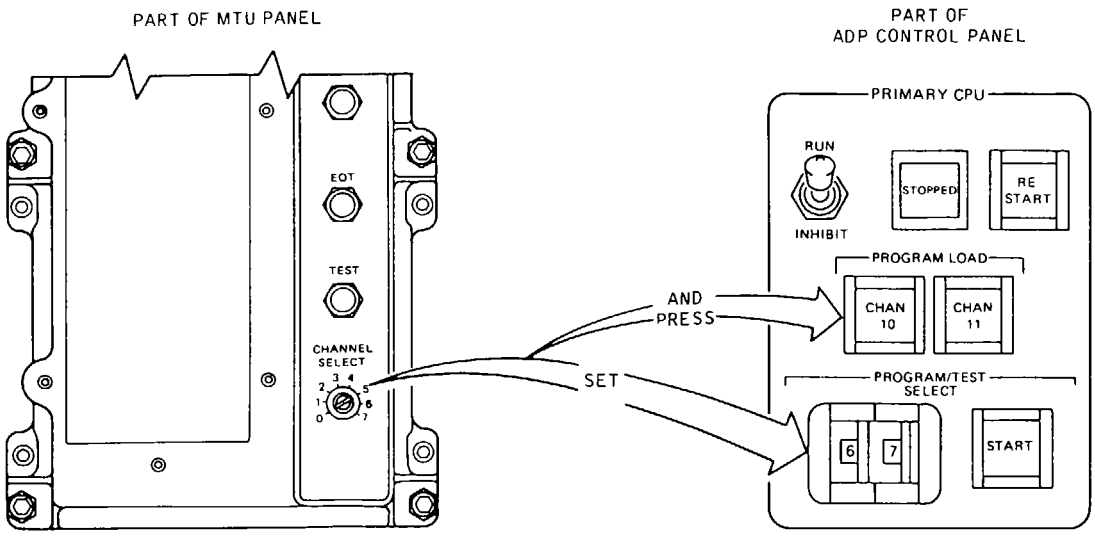
Figure 3-10. Normal Bootstrap Load-Channel 11



IF THE SYSTEM TAPE IS MOUNTED IN THE MTU WITH CHANNEL SELECT SWITCH SET TO 0

PROCEDURE

1. VERIFY MTU TAPE CARTRIDGE IS INSTALLED (FIGURE 3-7)
2. VERIFY MTU [POWER] IS LIT AND [READY] AND [ON-LINE] INDICATORS ARE OFF
3. PRESS [REWIND] SWITCH-VERIFY [BOT] INDICATOR LIGHTS
4. PRESS [ON-LINE] SWITCH-VERIFY [READY] AND [ON-LINE] INDICATORS LIGHT
5. SET ADP CONTROL PANEL [PRIMARY CPU SELECT] SWITCH TO [UPPER]
6. ENTER [67] ON [PROGRAM/TEST SELECT] THUMBWHEELS TO SELECT ABBREVIATED ADPFI OR
   ENTER [66] ON [PROGRAM/TEST SELECT] THUMBWHEELS TO SELECT COMPLETE ADPFI
7. SET [PRIMARY CPU RUN/INHIBIT] SWITCH TO [INHIBIT] AND PRESS [PRIMARY CPU RESTART] SWITCH
8. SET [PRIMARY CPU RUN/INHIBIT] SWITCH TO [RUN]
9. PRESS [PROGRAM LOAD CHAN 10] SWITCH
10. VERIFY KPU PRINTS:

    MEMORY BANK ZERO ON LINE
    MEMORY BANK ONE ON LINE
    MEMORY BANK TWO ON LINE (NOTE 1)
    MEMORY BANK THREE ON LINE (NOTE 2)
    VERSION:
    DATE:
    TIME:

    TAPE LABEL:

    <77 00 11 SYSTEM RESTART>
    <77 00 20 RESET TIME OF DAY>
    <77 00 00 REQUESTED LOAD COMPLETE>

11. REFER TO FIGURE 3-1 FOR NEXT PROCEDURE

NOTES:

1. IF MEMORY BANK TWO IS OFFLINE, THE KPU WILL PRINT:
   ·ERROR CODE 027770 BANK TWO OFFLINE>
2. IF MEMORY BANK THREE IS OFFLINE, THE KPU WILL PRINT:
   ·ERROR CODE 037770 BANK THREE OFFLINE>
3. [ ] INDICATES EQUIPMENT MARKING.

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Figure 3-11. Normal Bootstrap Load-Channel 10

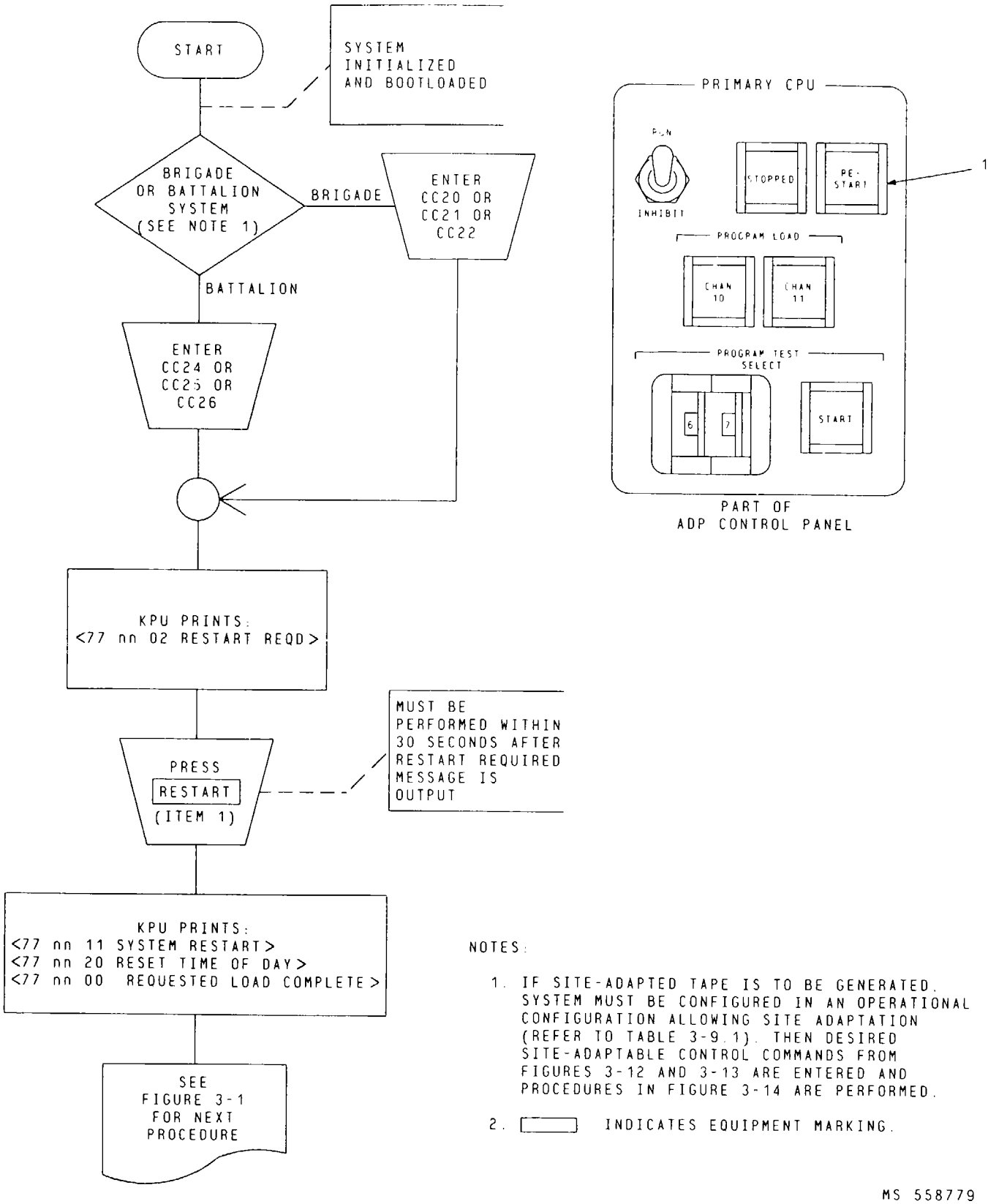


Figure 3-11.1. System Configuration

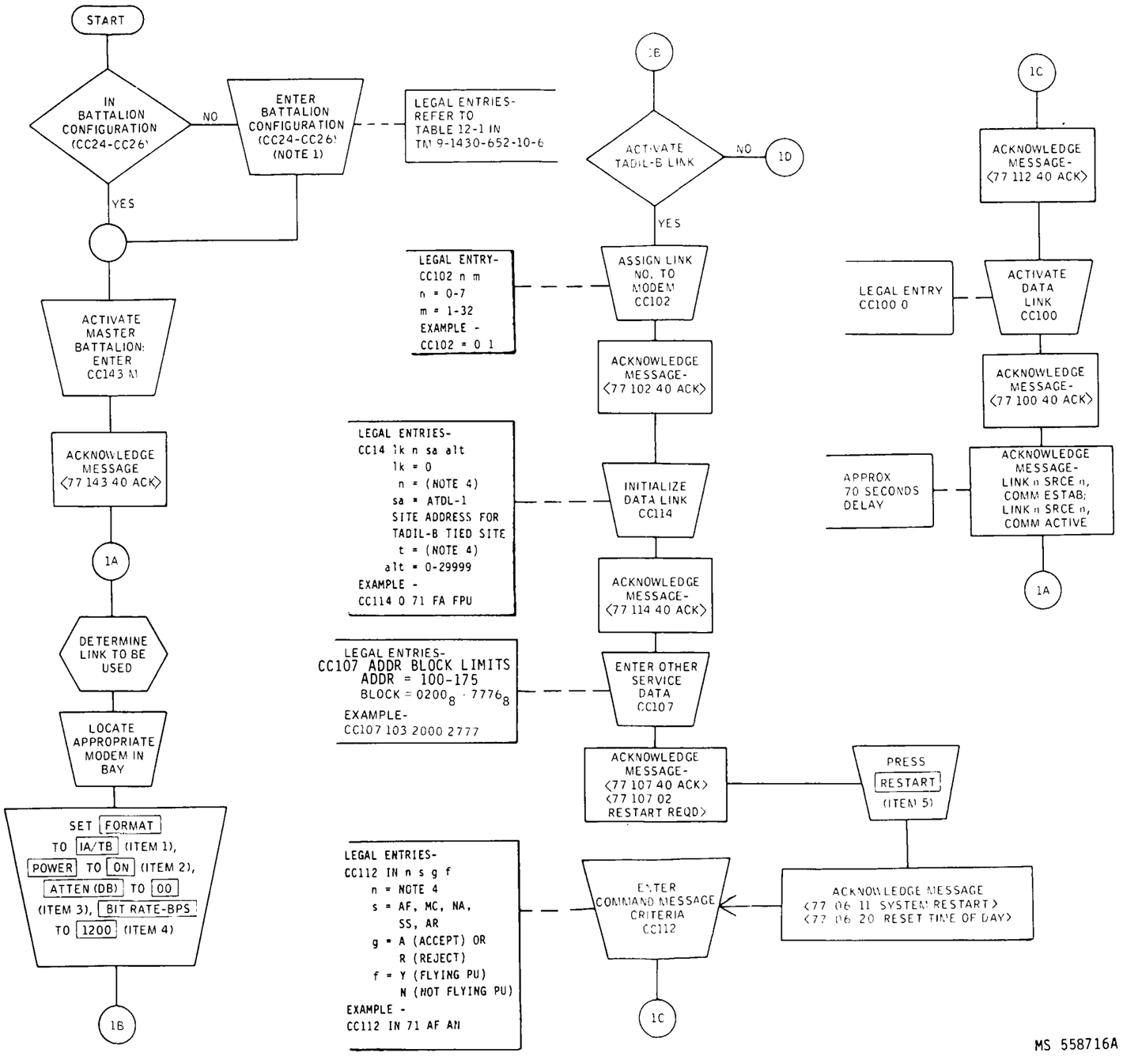
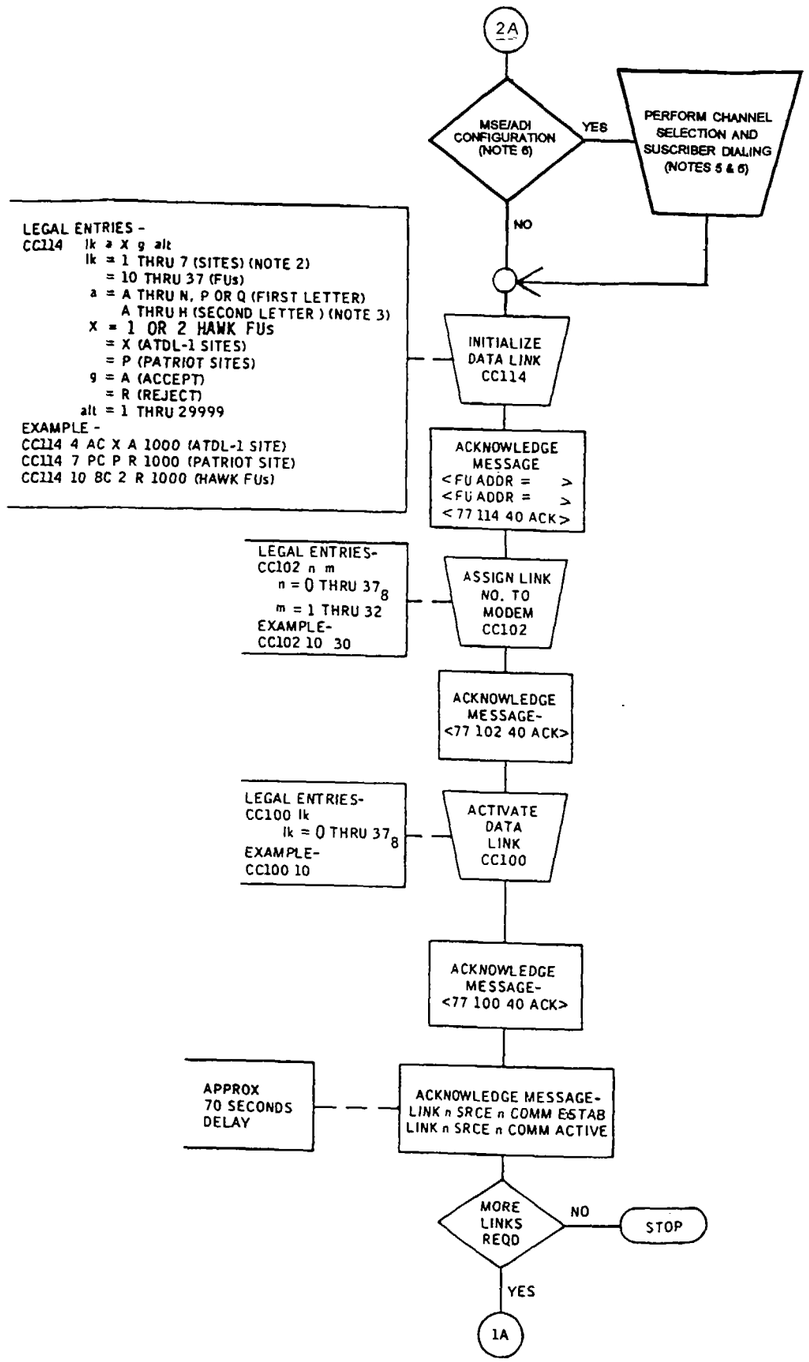
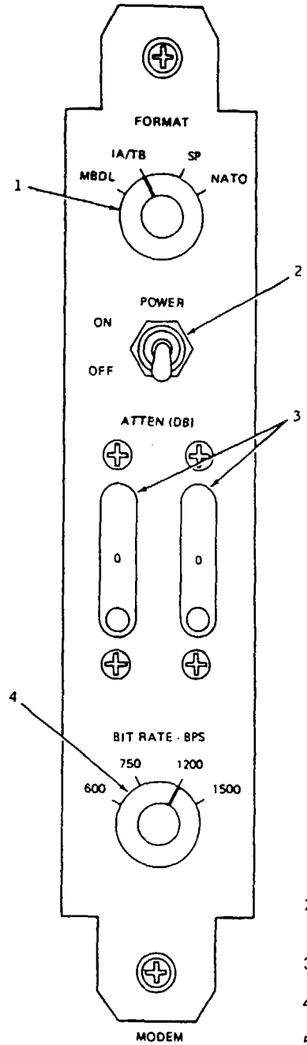
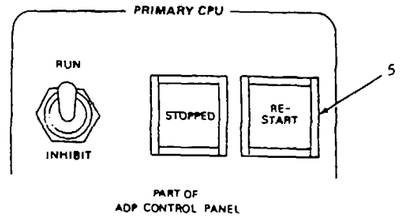


Figure 3-11.2. Activate Master Battalion Data Link (Sheet 1 of 2)







NOTES:

1. CONTROL COMMAND MUST BE FOLLOWED WITHIN 30 SECONDS BY PRESSING START AND RESTART SWITCHES AT ADP STATUS AND CONTROL PANEL.
2. BATTALIONS AND PATRIOT ICC USE SITE ATDL-1 DATA LINKS.
3. GENERAL ADDRESS, QH, IS NOT A VALID ENTRY.
4. REFER TO (C) TM 9-1430-652-10-7.
5. SEE FIGURE 10-29.1
6. EQUIPMENT PRESENT ONLY IN AN/TSQ-73 EQUIPPED WITH MSE/ADI.
7. ▭ INDICATES EQUIPMENT MARKING.

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Figure 3-11.2. Activate Master Battalion Data Link (Sheet 2 of 2)

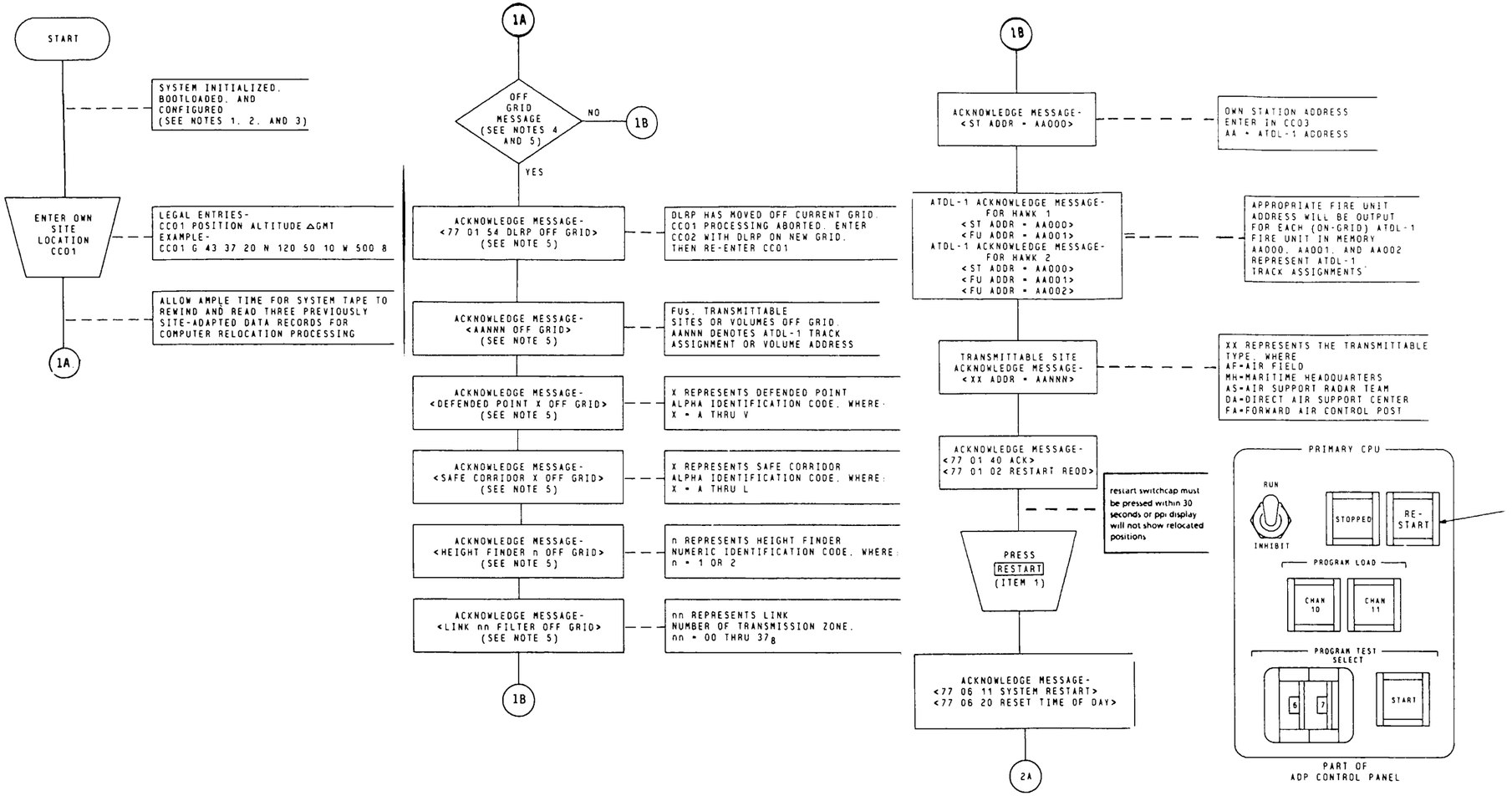

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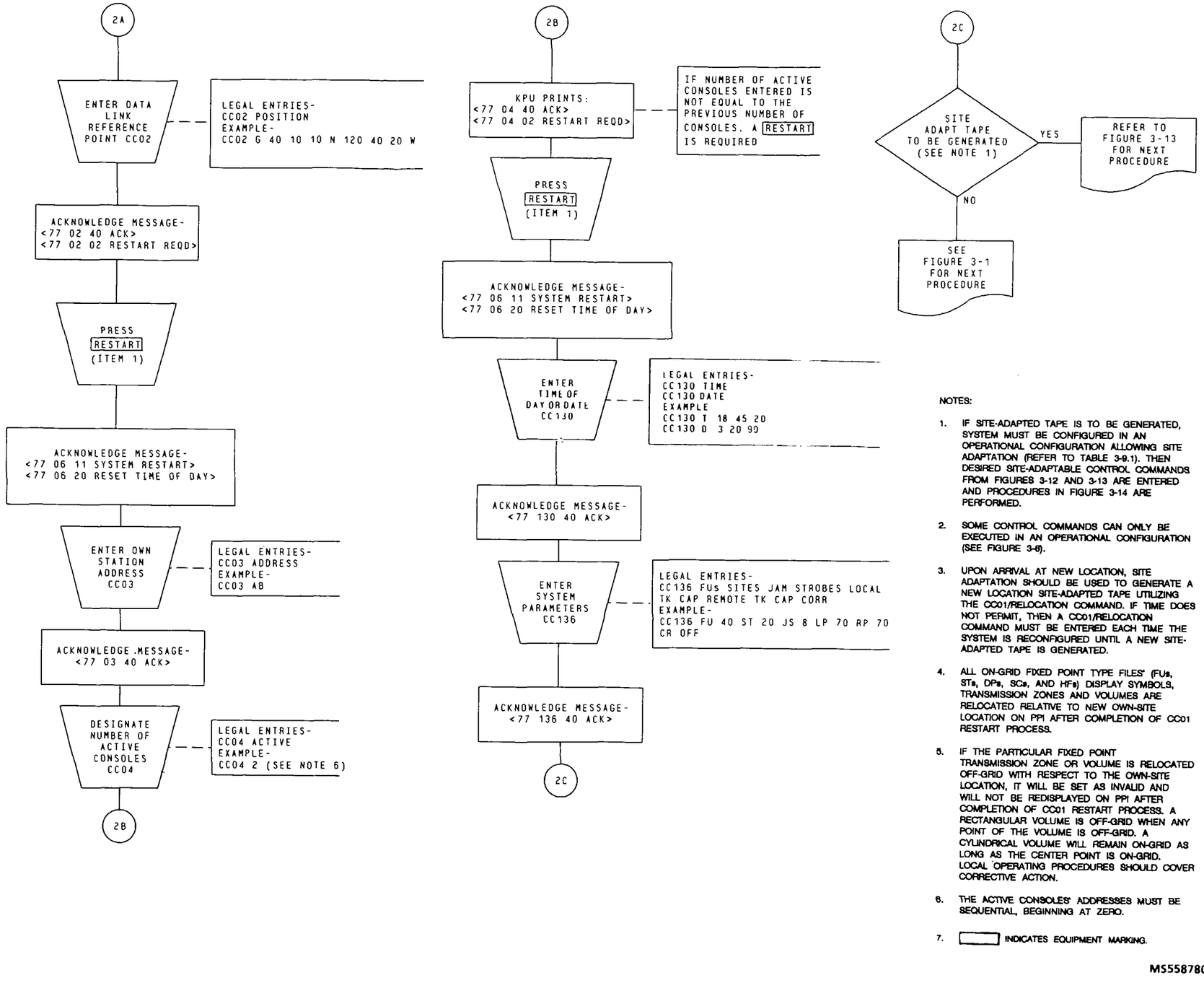
Figure 3-12. Site Initialization Procedure (Sheet 1 of 2)



NOTES:

1. IF SITE-ADAPTED TAPE IS TO BE GENERATED, SYSTEM MUST BE CONFIGURED IN AN OPERATIONAL CONFIGURATION ALLOWING SITE ADAPTATION (REFER TO TABLE 3-9.1). THEN DESIRED SITE-ADAPTABLE CONTROL COMMANDS FROM FIGURES 3-12 AND 3-13 ARE ENTERED AND PROCEDURES IN FIGURE 3-14 ARE PERFORMED.
2. SOME CONTROL COMMANDS CAN ONLY BE EXECUTED IN AN OPERATIONAL CONFIGURATION (SEE FIGURE 3-6).
3. UPON ARRIVAL AT NEW LOCATION, SITE ADAPTATION SHOULD BE USED TO GENERATE A NEW LOCATION SITE-ADAPTED TAPE UTILIZING THE CC01/RELOCATION COMMAND. IF TIME DOES NOT PERMIT, THEN A CC01/RELOCATION COMMAND MUST BE ENTERED EACH TIME THE SYSTEM IS RECONFIGURED UNTIL A NEW SITE-ADAPTED TAPE IS GENERATED.
4. ALL ON-GRID FIXED POINT TYPE FILES' (FUs, STs, DPs, SCs, AND HFs) DISPLAY SYMBOLS, TRANSMISSION ZONES AND VOLUMES ARE RELOCATED RELATIVE TO NEW OWN-SITE LOCATION ON PPI AFTER COMPLETION OF CC01 RESTART PROCESS.
5. IF THE PARTICULAR FIXED POINT TRANSMISSION ZONE OR VOLUME IS RELOCATED OFF-GRID WITH RESPECT TO THE OWN-SITE LOCATION, IT WILL BE SET AS INVALID AND WILL NOT BE REDISPLAYED ON PPI AFTER COMPLETION OF CC01 RESTART PROCESS. A RECTANGULAR VOLUME IS OFF-GRID WHEN ANY POINT OF THE VOLUME IS OFF-GRID. A CYLINDRICAL VOLUME WILL REMAIN ON-GRID AS LONG AS THE CENTER POINT IS ON-GRID. LOCAL OPERATING PROCEDURES SHOULD COVER CORRECTIVE ACTION.
6. THE ACTIVE CONSOLES' ADDRESSES MUST BE SEQUENTIAL, BEGINNING AT ZERO.
7. [ ] INDICATES EQUIPMENT MARKING.

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Figure 3-12. Site Initialization Procedure (Sheet 2 of 2)

Table 3-9. Operational Configuration Definitions

CC command	Definition
CC20	Brigade Army Air Defense Mission, normal operations, single or dual CPU, and one auxiliary function available (Refer to table 3-9.1) (Raid Data Generation [CC31], Field Utilities [CC34], Map Generation [CC36], Site Adaption [CC37], or any one fault isolation program [CC50-56]).
CC21	Brigade Army Air Defense Mission, single or dual CPU, one memory down, normal operations, but no auxiliary function available. (Some auxiliary functions available if fourth memory bank is on line. Refer to table 3-9.1.)
CC22	Brigade Army Air Defense Mission, single or dual CPU, one memory down, reduced track capacity, and one auxiliary function available (Refer to table 3-9.1) (Field Utilities [CC34], Map Generation [CC36], Site Adaption [CC37], or any one fault isolation program [CC50-56]).
CC23	Nonfunctional.
CC24	Battalion Army Air Defense Mission, normal operations, dual CPU only, and one auxiliary function available (Refer to table 3-9.1) (Simulation [CC30], Simulation Playback [CC33], Field Utilities [CC34], Map Generation [CC36], Site Adaption [CC37], or any one fault isolation program [CC50-56]). (Raid Data Generation [CC31] is not available.)
CC25	Battalion Army Air Defense Mission, dual CPU only, one memory down, normal operations, but no auxiliary function available. (Some auxiliary functions available if fourth memory bank is on line. Refer to table 3-9.1.)
CC26	Battalion Army Air Defense Mission, single or dual CPU, one memory down, reduced track capacity, and one auxiliary function available (Refer to table 3-9.1) (Simulation [CC30], Simulation Playback [CC33], Field Utilities [CC34], Map Generation [CC36], Site Adaption [CC37], or any one fault isolation program [CC50-56]).
CC27	Nonfunctional.

NOTES:

1. Entering master battalion (CC143) will enhance battalion (CC24-CC26) capabilities by including brigade functions. Refer to table 12-1 and Unit SOP.

2. A new bootload is required before entering a site adaptation configuration.

3. If the system is operating in CC24 or CC25 configuration upon receipt of TMON 702610 (secondary CPU), the system must be configured to CC26 if operations are to continue.

4. When reconfiguring from a single CPU to a dual CPU operational configuration, a CC100 61 must be entered prior to loading operational configuration. When reconfiguring from a dual CPU to a single CPU operational configuration, a CC101 61 must be entered prior to loading operational configuration.

5. If reconfiguring because of loss of logical memory bank 0 or 1, a new bootload is required before reconfiguration.

Table 3-9.1 Auxiliary Functions Available in Configurations

AUXILIARY CONFIGURATION	OPERATIONAL CONFIGURATION										
	BOOTLOAD	CC20	CC21 MEMORIES AVAILABLE		CC22 MEMORIES AVAILABLE		CC24	CC25 MEMORIES AVAILABLE		CC26 MEMORIES AVAILABLE	
			4	3	4	3		4	3	4	3
CC30 SIMULATION	NO	NO	NO	NO	NO	NO	YES	YES	NO	YES	YES
CC31 RAID DATA GENERATION	YES	YES	YES	NO	YES	NO	NO	YES	NO	YES	NO
CC32 DATA REDUCTION	YES	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
CC33 SIMULATION PLAYBACK	NO	NO	NO	NO	NO	NO	YES	YES	NO	YES	YES
CC34 FIELD UTILITIES	YES	YES	YES	NO	YES	YES	YES	YES	NO	YES	YES
CC35 (NON FUNCTIONAL)											
CC36 MAP GENERATION	YES	YES	YES	NO	YES	YES	YES	YES	NO	YES	YES
CC37 SITE ADAPTATION	YES	YES	YES	NO	YES	YES	YES	YES	NO	YES	YES

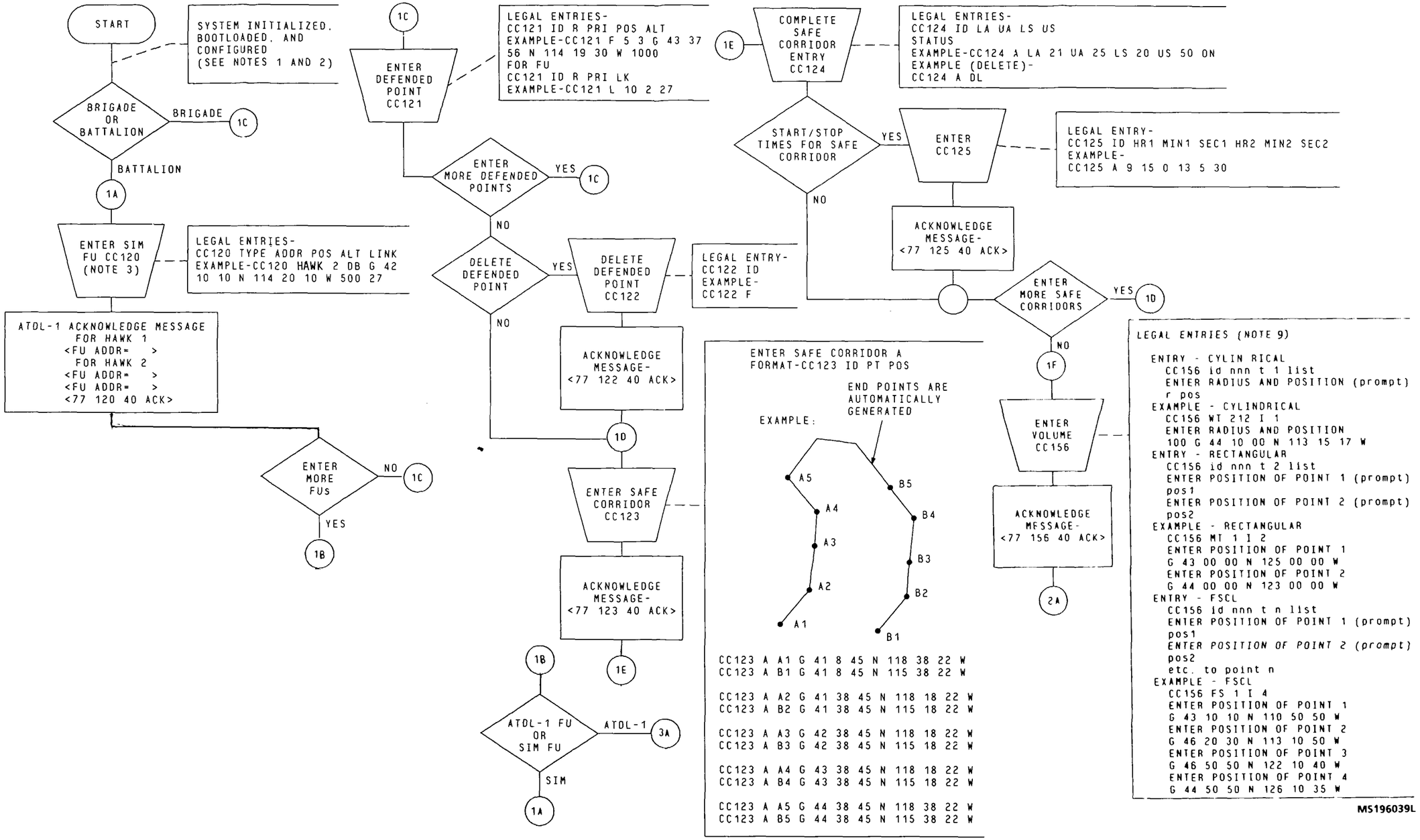


Figure 3-13. Program Data Entry (Sheet 1 of 6)

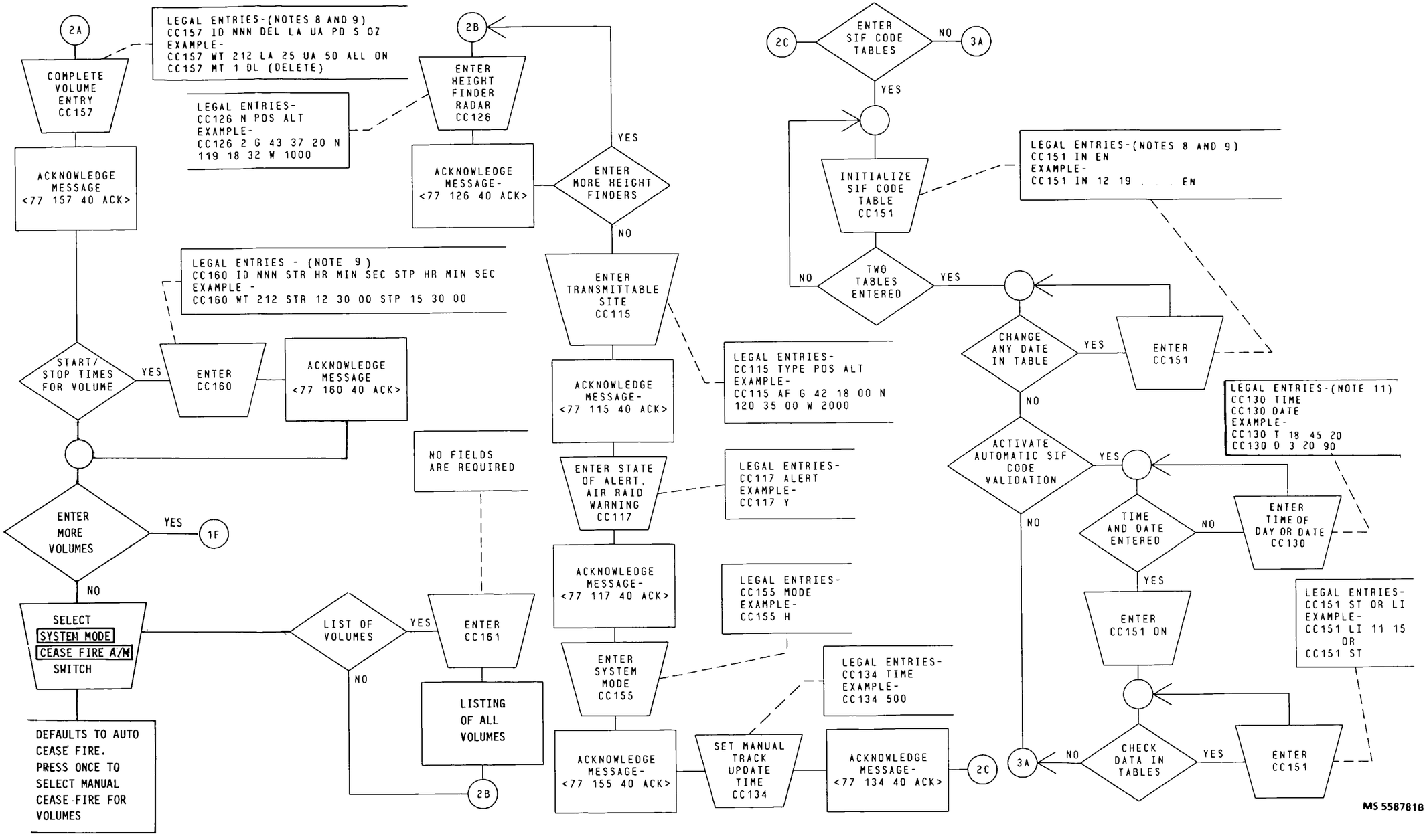


Figure 3-13. Program Data Entry (Sheet 2 of 6)

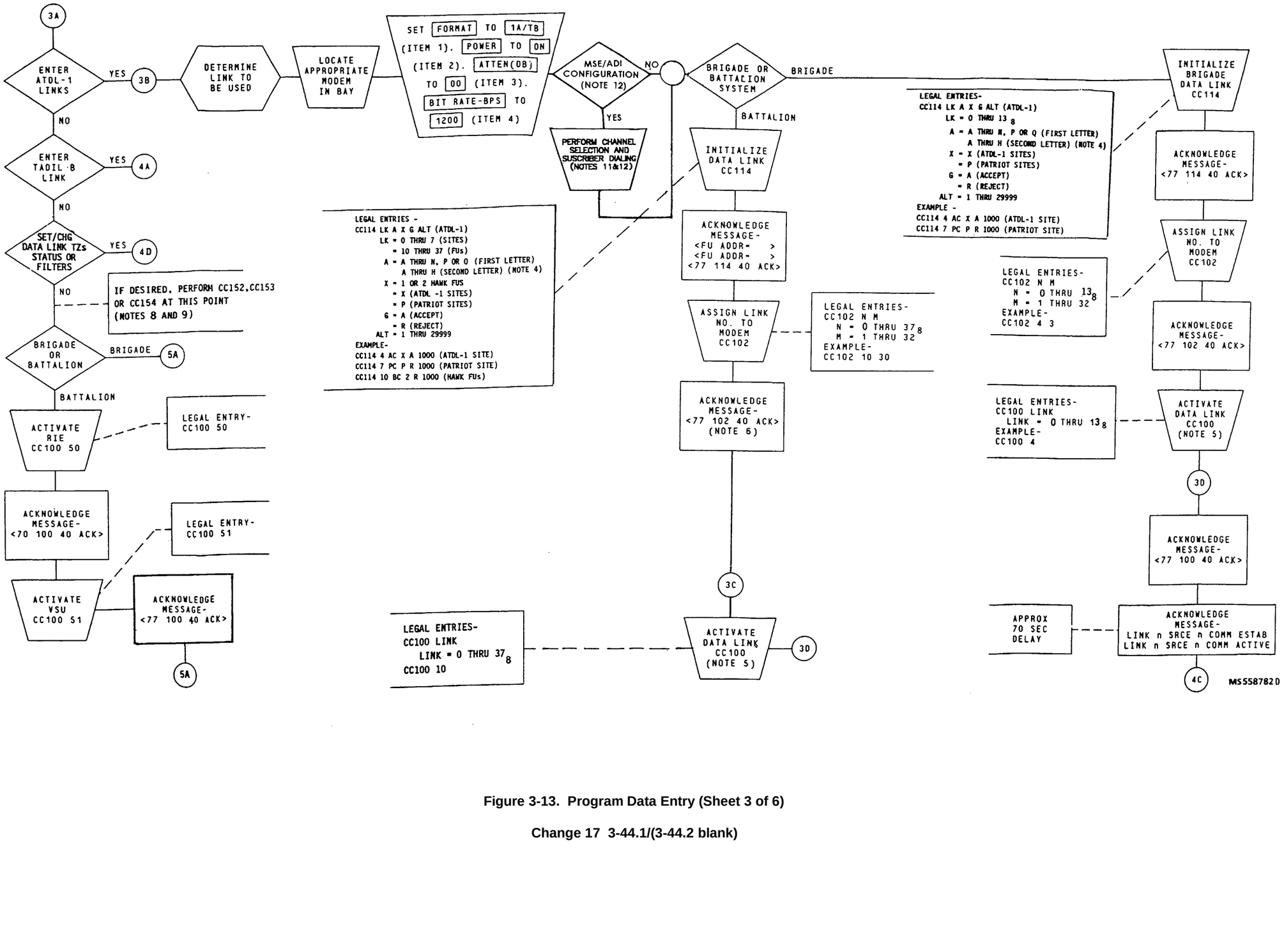


Figure 3-13. Program Data Entry (Sheet 3 of 6)

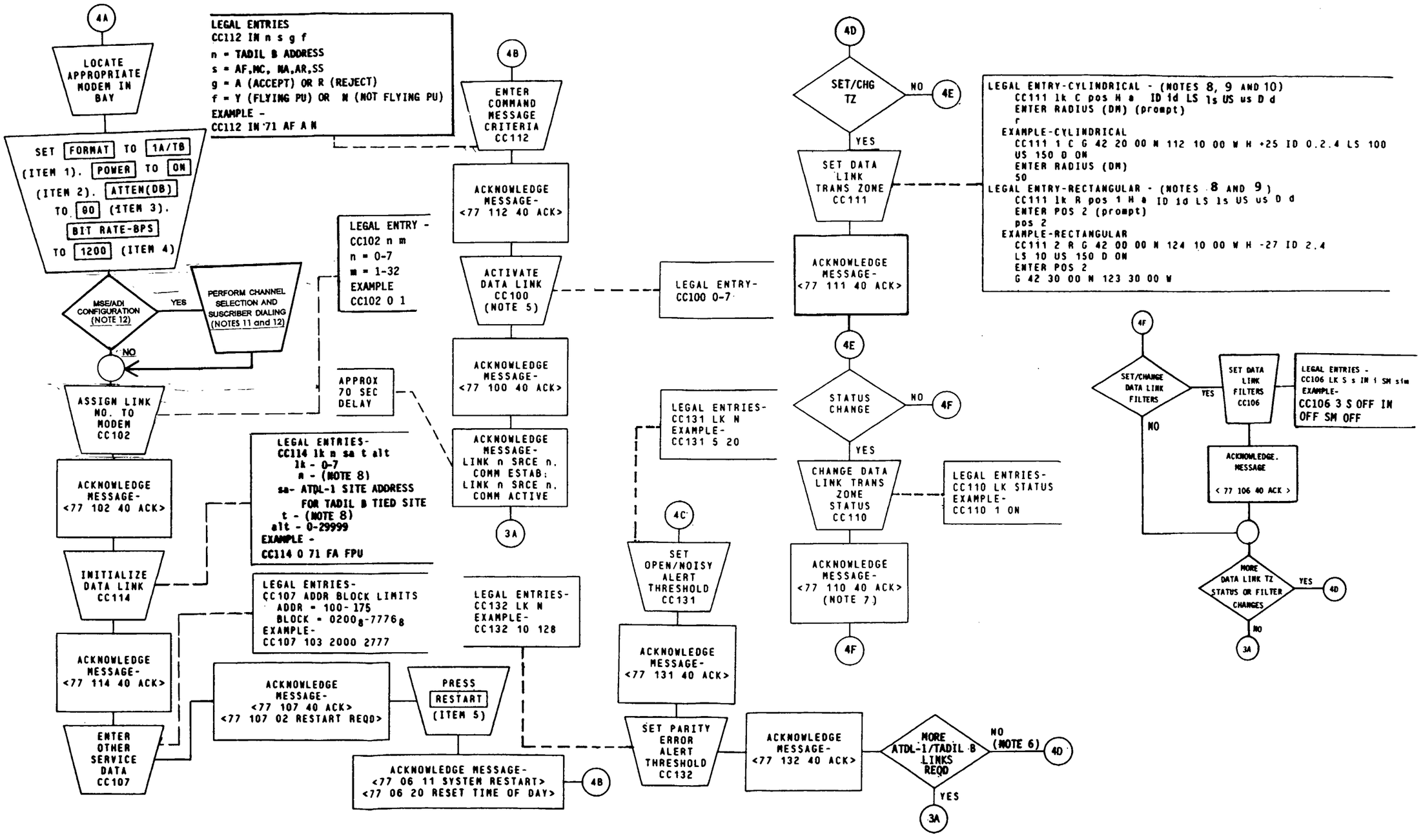


Figure 3-13. Program Data Entry (Sheet 4 of 6)

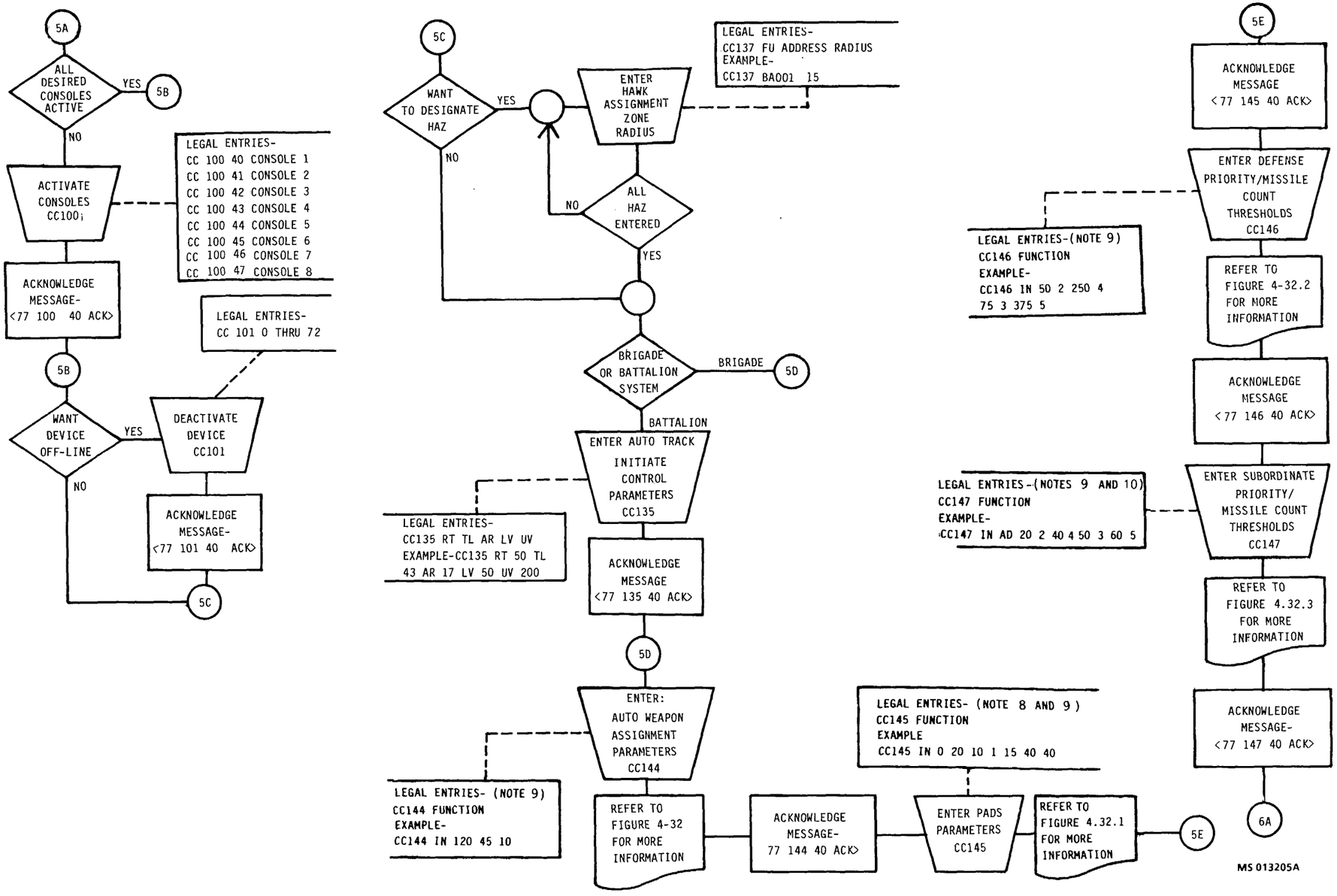
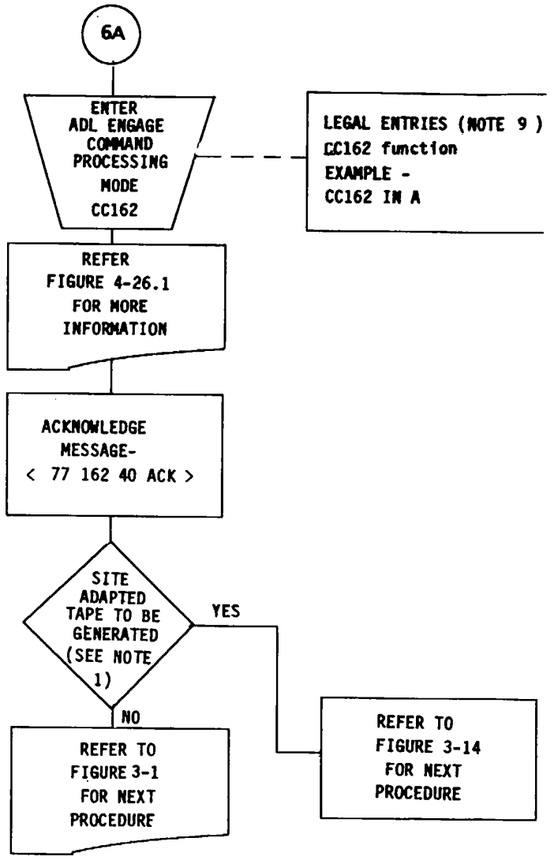
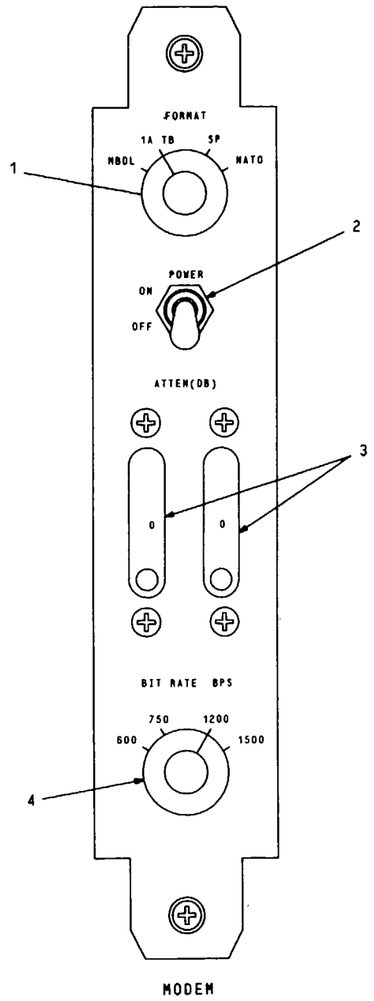
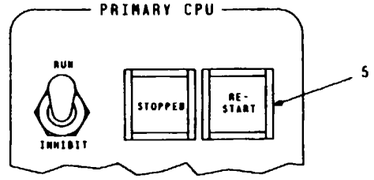


Figure 3-13. Program Data Entry (Sheet 5 of 6)







NOTES:

1. IF SITE ADAPTED TAPE IS TO BE GENERATED, SYSTEM MUST BE CONFIGURED IN AN OPERATIONAL CONFIGURATION ALLOWING SITE ADAPTATION (REFER TO TABLE 3-9.1). THEN DESIRED SITE ADAPTABLE CONTROL COMMANDS FROM FIGURES 3-12 AND 3-13 ARE ENTERED AND PROCEDURES IN FIGURE 3-14 ARE PERFORMED.
2. SOME CONTROL COMMANDS CAN ONLY BE EXECUTED IN AN OPERATIONAL CONFIGURATION (SEE FIG. 3-6).
3. AFTER SIM FUs ARE ENTERED, OPERATOR MAY ASSIGN FU MISSILE COUNT, STATUS, AND DDG ROW NUMBER FOR SIM FUs.
4. GENERAL ADDRESS, QH, IS NOT VALID.
5. ACTIVATION OF DATA LINKS (CC100) IS NOT SITE ADAPTABLE.
6. DDG ROW NUMBER FOR AN ATDL-1 FU MAY BE SITE-ADAPTED BY NUMBER HOOKING FU. FU WILL APPEAR AT EXTREME EDGE OF PPI. DDG ROW NUMBER IS THEN ENTERED. AFTER LINKS ARE ESTABLISHED AND ATDL-1 FUs DISPLAYED, OPERATOR MAY ASSIGN MISSILE COUNT AND STATUS FOR ATDL-1 FUs.
7. EACH LINK ARO TRANSMISSION ZONE INFORMATION AND ORIGIN POINT(S) SHOULD BE CHECKED BY ACTIVATING [VOLUME] AND [FILTER DATA] (SEE FIG. 4-45.1).
8. REFER TO (C) TM9-1430-652-10-7
9. COMMAND IS PLACED IN PROMPT-DRIVEN MODE BY ENTERING ONLY THE COMMAND CODE.
10. KPU WILL ACCEPT ONLY 64 CHARACTERS. MORE THAN ONE CONTROL COMMAND MAY BE REQUIRED TO COMPLETE DESIRED ENTRY.
11. SEE FIGURE 10-29.1
12. EQUIPMENT PRESENTED ONLY IN AN/TSQ-73 EQUIPPED WITH MSE/ADI.
13. [ ] INDICATES EQUIPMENT MARKING.

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Figure 3-13. Program Data Entry (Sheet 6 of 6)

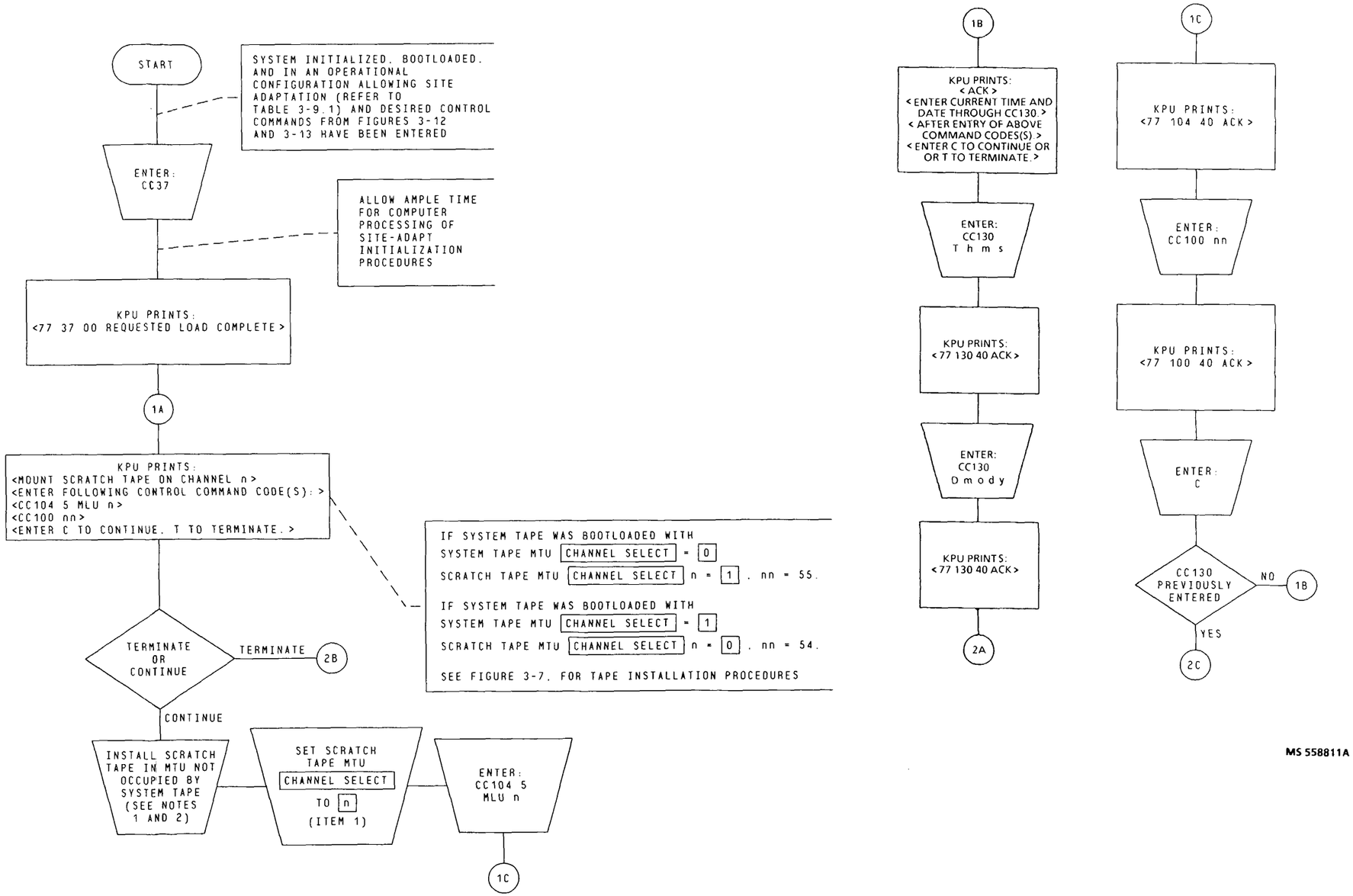


Figure 3-14. Site Adapted Tape Generation (Sheet 1 of 3)

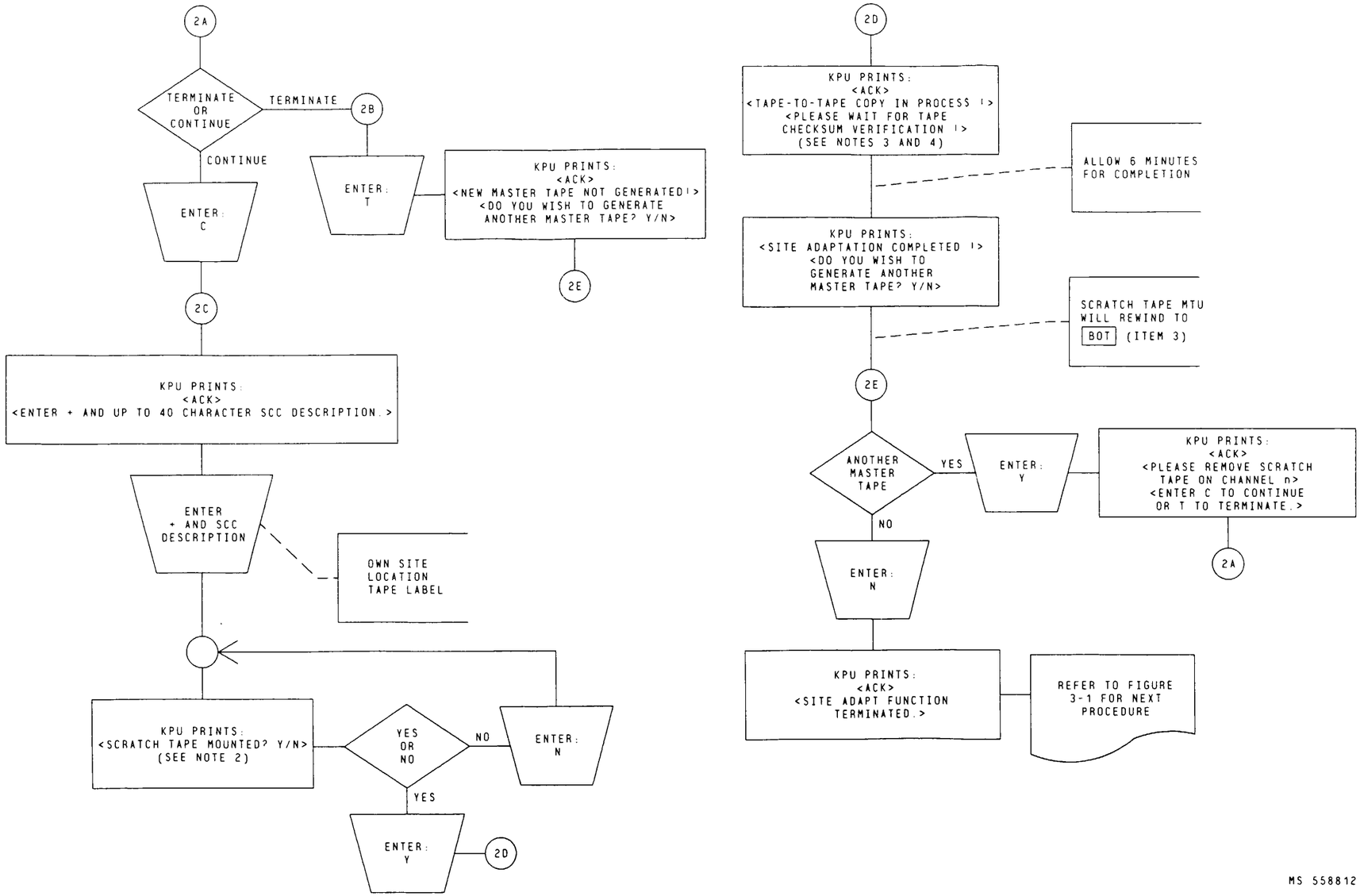
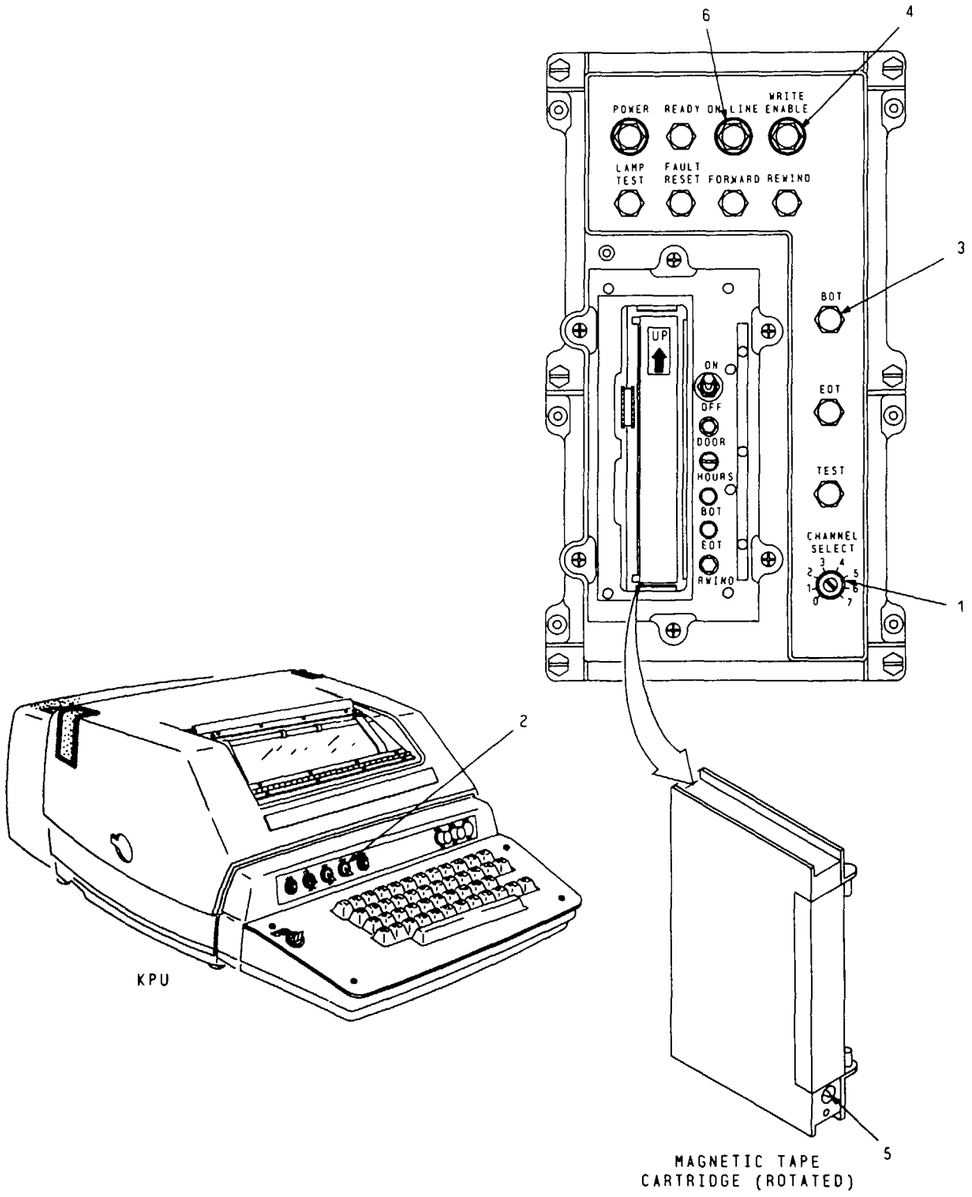


Figure 3-14. Site Adapted Tape Generation (Sheet 2 of 3)



NOTES:

1. THE PROT SWITCH (ITEM 5) ON THE SCRATCH TAPE MUST BE IN THE BLANK POSITION AND WRITE ENABLE INDICATOR (ITEM 4) OF THE SCRATCH TAPE MTU MUST BE LIT.

2. IF EITHER OF THE FOLLOWING MESSAGES
   <SET WRITE ENABLE SWITCH> OR
   <SCRATCH TAPE NOT ON-LINE>
   IS OUTPUT, CHECK ITEMS 1, 4, AND 6 FOR PROPER SETTINGS. ENTER R IN RESPONSE TO <ENTER R TO RETRY OR T TO TERMINATE.> AND THEN ENTER APPROPRIATE RESPONSE AFTER MESSAGE <SCRATCH TAPE MOUNTED ? Y/N>.

3. IF ERROR MESSAGES:
   <MASTER TAPE HANDLING ERROR!>
   <TAPE I/O ERROR>
   <ENTER R TO RETRY, T TO TERMINATE>
   ARE OUTPUT ON KPU.
   ENTER EITHER R (RETRY) OR T (TERMINATE) BY ENTERING REQ SEND (ITEM 2) THEN APPROPRIATE RESPONSE (R OR T) AND REQ SEND (ITEM 2) AGAIN. IF R (RETRY) WAS ENTERED, BOTH MTUs WILL REWIND AND TAPE-TO-TAPE COPY PROCESS WILL START AGAIN. RETRY AT LEAST TWICE. IF MTU DOESN'T REWIND, REFER TO NOTE 5. IF T WAS ENTERED, THE FOLLOWING ERROR MESSAGE <NEW MASTER TAPE NOT GENERATED!> IS OUTPUT. REBOOT SYSTEM AND REFER TO FIGURE 3-1 FOR STARTING POINT.

4. IF ERROR MESSAGES:
   <NEW MASTER WRITE ERROR>
   <TAPE I/O ERROR>
   <ENTER C TO CONTINUE OR T TO TERMINATE>
   ARE OUTPUT, ENTER EITHER C (CONTINUE) OR T (TERMINATE) BY ENTERING REQ SEND (ITEM 2) THEN APPROPRIATE RESPONSE (C OR T) AND REQ SEND (ITEM 2) AGAIN.
   IF C (CONTINUE) IS ENTERED, AN ATTEMPT IS MADE TO WRITE TO THE SAME SCRATCH TAPE AGAIN. IF TAPE FAULT REOCCURS, REMOVE THE FAULTY SCRATCH TAPE AFTER REQUESTING SCRATCH TAPE MTU BE PLACED OFF-LINE (CC101 mm). INSTALL NEW SCRATCH TAPE IN MTU, PLACE MTU ON-LINE (CC100 mm), AND ENTER C (CONTINUE). IF FAULT CONTINUES AFTER SECOND RETRY, REBOOT SYSTEM AND REFER TO FIGURE 3-1 FOR STARTING POINT.

5. IF AFTER THE SECOND RETRY THE PROBLEM STILL EXISTS, TURN THE SUSPECT MTU OFF-LINE (MASTER: CC101 nn OR SCRATCH: CC101 mm) AND BACK ONLINE (MASTER: CC100 nn OR SCRATCH: CC100 mm) AND RETRY A THIRD TIME. IF PROBLEM CONTINUES, PRESS REWIND, ENTER APPROPRIATE CC105 AND CC101 CONTROL COMMANDS, SWAP TAPE AND ENTER APPROPRIATE CC104 AND CC100 CONTROL COMMANDS, AND RETRY A FOURTH TIME. IF AFTER THE FOURTH RETRY, AN MTU PROBLEM STILL EXISTS, TURN THE SUSPECT MTU OFF-LINE AGAIN AND TROUBLESHOOT. THESE PROCEDURES ARE NECESSARY IN ORDER THAT ENTERED SITE-ADAPT OR RELOCATION DATA IS NOT LOST.

6. ▭ INDICATES EQUIPMENT MARKING.

Figure 3-14. Site Adapted Tape Generation (Sheet 3 of 3)

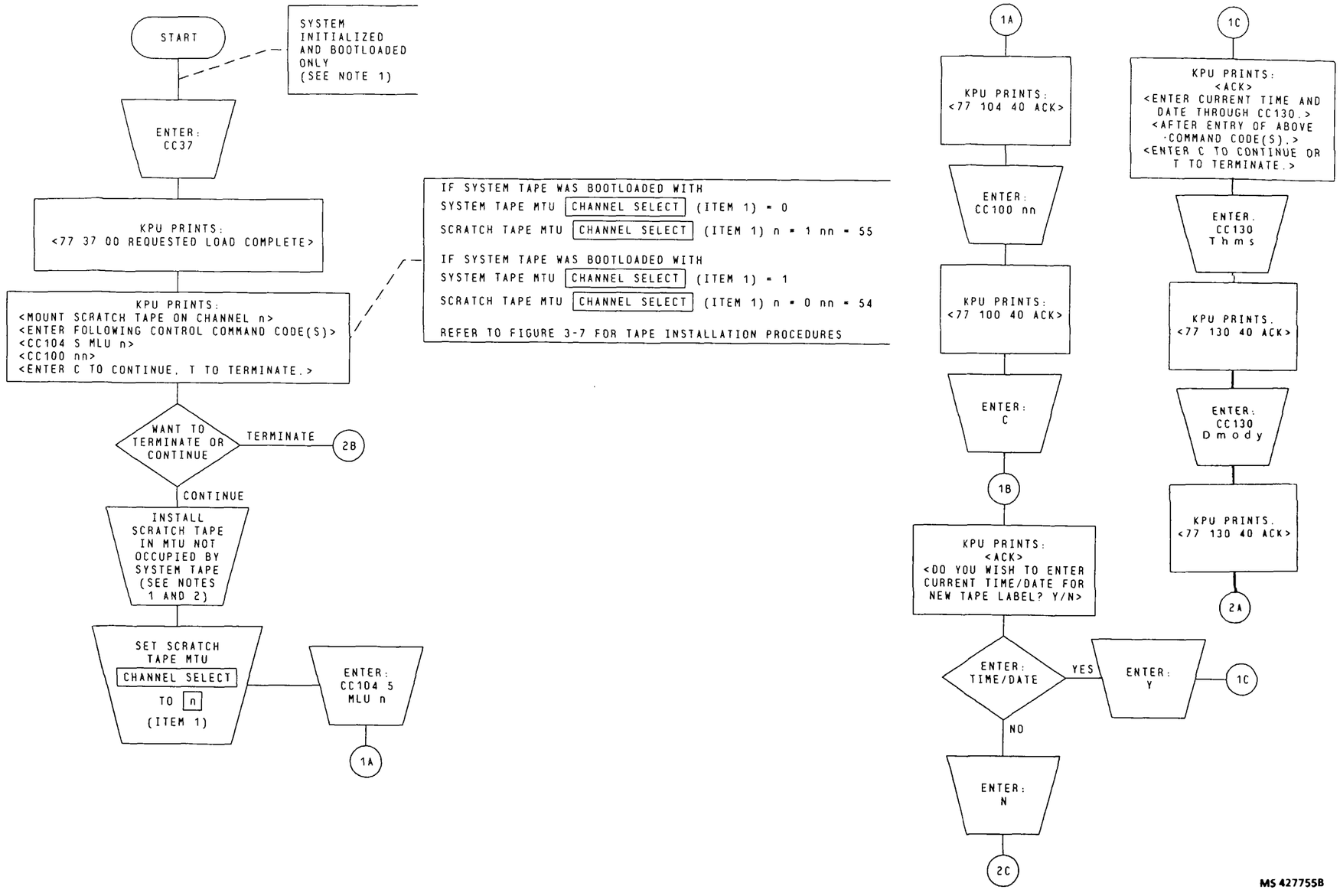


Figure 3-15. Tape to Tape Copy (Sheet 1 of 3)

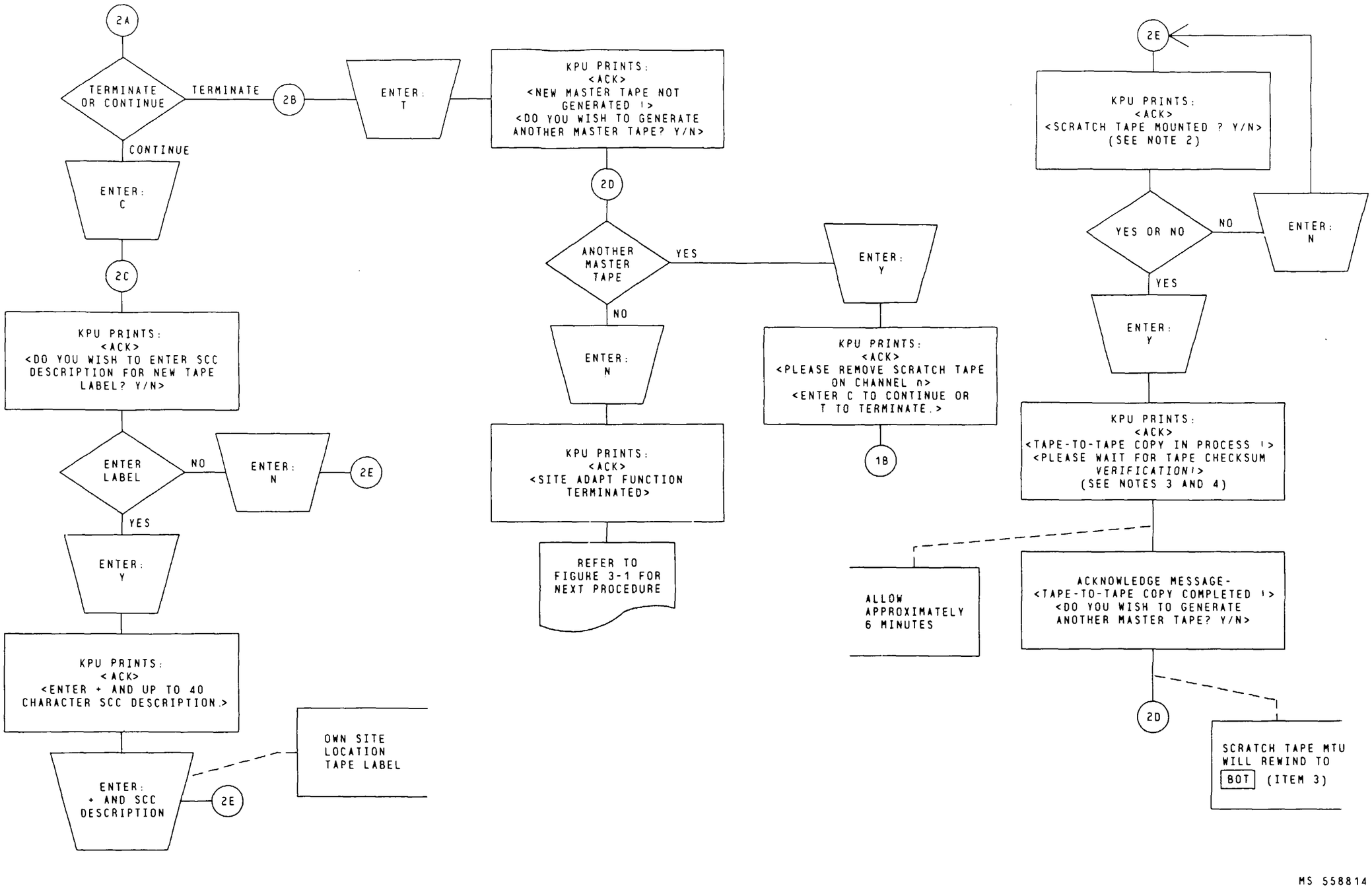
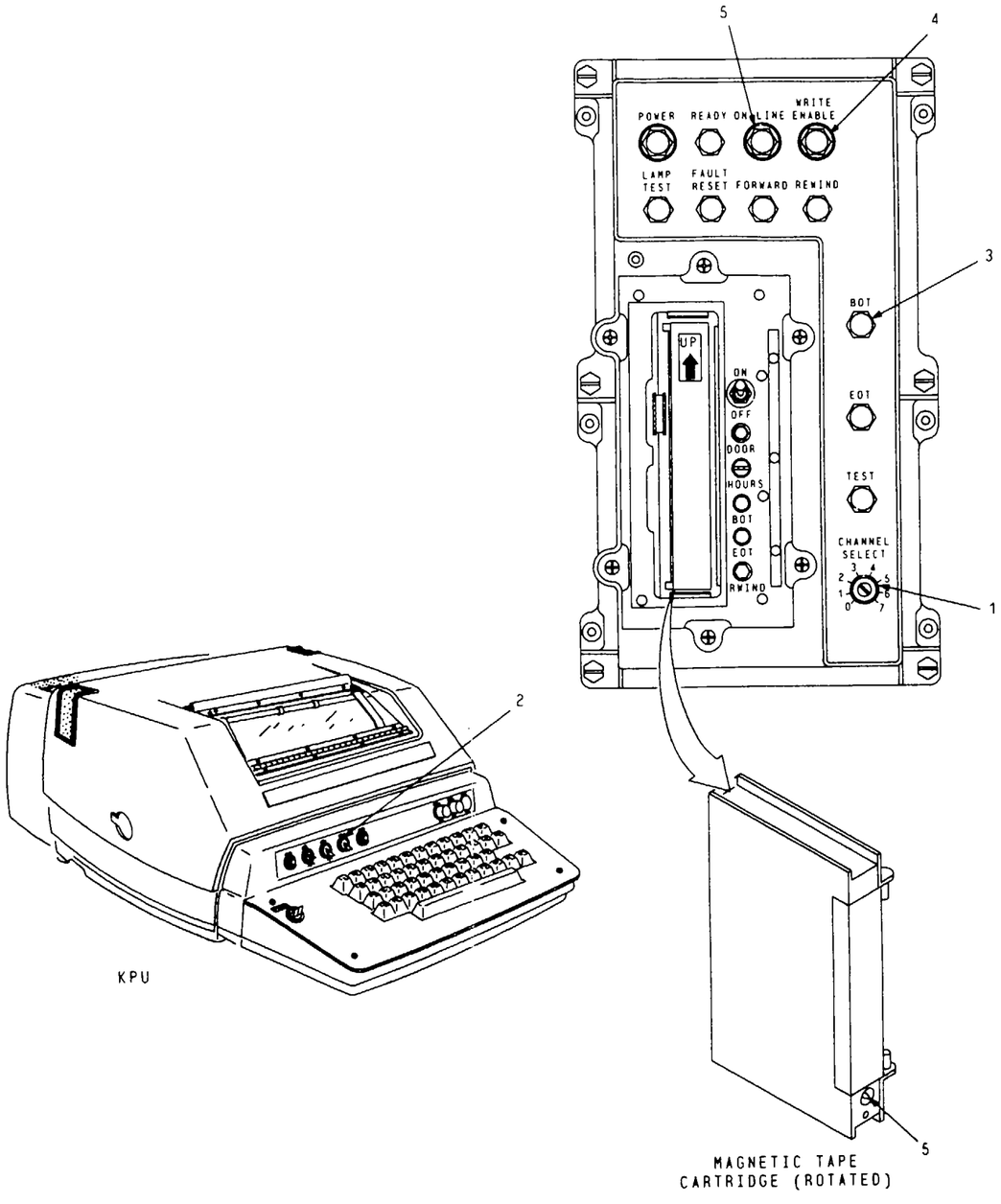


Figure 3-15. Tape-to-Tape Copy (Sheet 2 of 3)



NOTES.

1. THE PROT SWITCH (ITEM 5) ON THE SCRATCH TAPE MUST BE IN THE BLANK POSITION AND THE WRITE ENABLE INDICATOR (ITEM 4) OF THE SCRATCH TAPE MTU MUST BE LIT.

2. IF EITHER OF THE FOLLOWING ERROR MESSAGES: <SET WRITE ENABLE SWITCH> OR <SCRATCH TAPE NOT ON-LINE> IS OUTPUT. CHECK ITEMS 1, 4, AND 5 FOR PROPER SETTINGS. ENTER R IN RESPONSE TO <ENTER R TO RETRY OR T TO TERMINATE.> AND THEN ENTER APPROPRIATE RESPONSE AFTER MESSAGE <SCRATCH TAPE MOUNTED ? Y/N>.

3. IF ERROR MESSAGES:

   <MASTER TAPE HANDLING ERROR!>
   <TAPE I/O ERROR>
   <ENTER R TO RETRY, T TO TERMINATE>

   ARE OUTPUT ON KPU. ENTER EITHER R (RETRY) OR T (TERMINATE) BY ENTERING REQ SEND (ITEM 2) THEN APPROPRIATE RESPONSE (R OR T) AND REQ SEND (ITEM 2) AGAIN. IF R (RETRY) WAS ENTERED, BOTH MTUs WILL REWIND AND TAPE-TO-TAPE COPY PROCESS WILL START AGAIN. TRY REMOUNTING TAPES, BOOTLOADING, AND CC37 AGAIN. IF PROBLEM REMAINS, REBOOT SYSTEM WITH ANOTHER SYSTEM TAPE AND TRY AGAIN. IF T WAS ENTERED, THE FOLLOWING ERROR MESSAGE: <NEW MASTER TAPE NOT GENERATED!> IS OUTPUT. REBOOT SYSTEM AND REFER TO FIGURE 3-1 FOR STARTING POINT.

4. IF ERROR MESSAGES:

   <NEW MASTER WRITE ERROR>
   <TAPE I/O ERROR>
   <ENTER C TO CONTINUE OR T TO TERMINATE>

   ARE OUTPUT. ENTER EITHER C (CONTINUE) OR T (TERMINATE) BY ENTERING REQ SEND (ITEM 2) THEN APPROPRIATE RESPONSE (C OR T) AND REQ SEND (ITEM 2) AGAIN. IF C (CONTINUE) IS ENTERED, AN ATTEMPT IS MADE TO WRITE TO THE SAME SCRATCH TAPE AGAIN. IF TAPE FAULT REOCCURS, REMOVE THE FAULTY SCRATCH TAPE AFTER REQUESTING SCRATCH TAPE MTU BE PLACED OFF-LINE (CC101 mm). INSTALL NEW SCRATCH TAPE IN MTU. PLACE MTU ON-LINE (CC100 mm), AND ENTER C (CONTINUE). IF FAULT CONTINUES AFTER SECOND RETRY, REBOOT SYSTEM AND REFER TO FIGURE 3-1 FOR STARTING POINT. IF T (TERMINATE) IS ENTERED, REMOVE THE FAULTY SCRATCH TAPE AND RETURN TO START OF FLOWCHART.

5. [ ] INDICATES EQUIPMENT MARKING.

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Figure 3-15. Tape-to-Tape Copy (Sheet 3 of 3

CHAPTER 4

OPERATING INSTRUCTIONS

Section I. OPERATION UNDER USUAL CONDITIONS

4-1. General. Normal operations are performed in one of five console modes: monitor, tracking, tactical, tracking/tactical, or test. The selection of any mode is determined by the operator. Operating procedures in this section will be described by functions and provided in figures 4-1 thru 4-54. Figure 4-55 provides procedures for One-Minute Emergency Reconfiguration of system.

4-2. Test Monitor (TMON) Indications. When TMON fault indications are displayed on the KPU printout, data display group, or DIAGNOSE CODE readout, perform the following:

a. Determine whether the indicated faulty unit is online. If the unit is offline, either bring it online or disregard TMON.

b. Refer to section II of this chapter.

4-3. Monitor Mode Operating Procedure. When the display console is in the monitor mode, the operator may select the display he wishes to see but no action taken will result in a change to the data base. Operating procedures available in the monitor mode are illustrated in figure 4-1. Each procedure is a stand-alone procedure and may be performed at any time the operator wishes unless the procedure states otherwise.

4-4. Tracking Mode. Operating procedures available in the tracking mode are illustrated in figure 4-2. Additionally, all monitor mode procedures may be performed while in the tracking mode.

4-5. Tactical Mode. Operating procedures available in the tactical mode are illustrated in figure 4-3. Additionally, all monitor mode procedures may be performed while in the tactical mode.

4-6. Tracking/Tactical Mode. The tracking/tactical mode combines the procedures of the tracking, tactical and monitor modes of operation. Additionally, Automatic Data Link functions are active in this mode. Operating Procedures available in tracking/tactical mode are illustrated in figure 4-4.

4-7. Test Mode. When the console is in the test mode, all video except programmed test pattern (fig. 4-34) is inhibited. The displayed test pattern is used to check symbol and line generation, line size, and display area symmetry. The test pattern may also be used to set symbol display brightness prior to operation. Operating procedures available in Test Mode are illustrated in figure 4-5.

4-7.1 Automatic SIF Code Validation. When Automatic SIF Code Validation is active, the operator is freed from manual validation (which consists of consulting the time-of-day key-coded SIF listing). At the time an air track is hooked and at each 1-second ARO update thereafter while the track remains hooked, comparisons will be attempted between pre-stored SIF codes for the current time and date and SIF codes stored for the hooked track. The results of the validation are displayed in the hooked track ARO. Figure 14-4 (TM 9-1430-652-10-7) provides the classified procedures used to set up and activate Automatic SIF Code Validation.

4-8. Data Link Message Processing. Action/management and command messages are used to exchange information between the system and external units over the automatic data links. Figures 4-49 thru 4-54 provide the procedures for processing the different types of messages on receipt and for transmission.

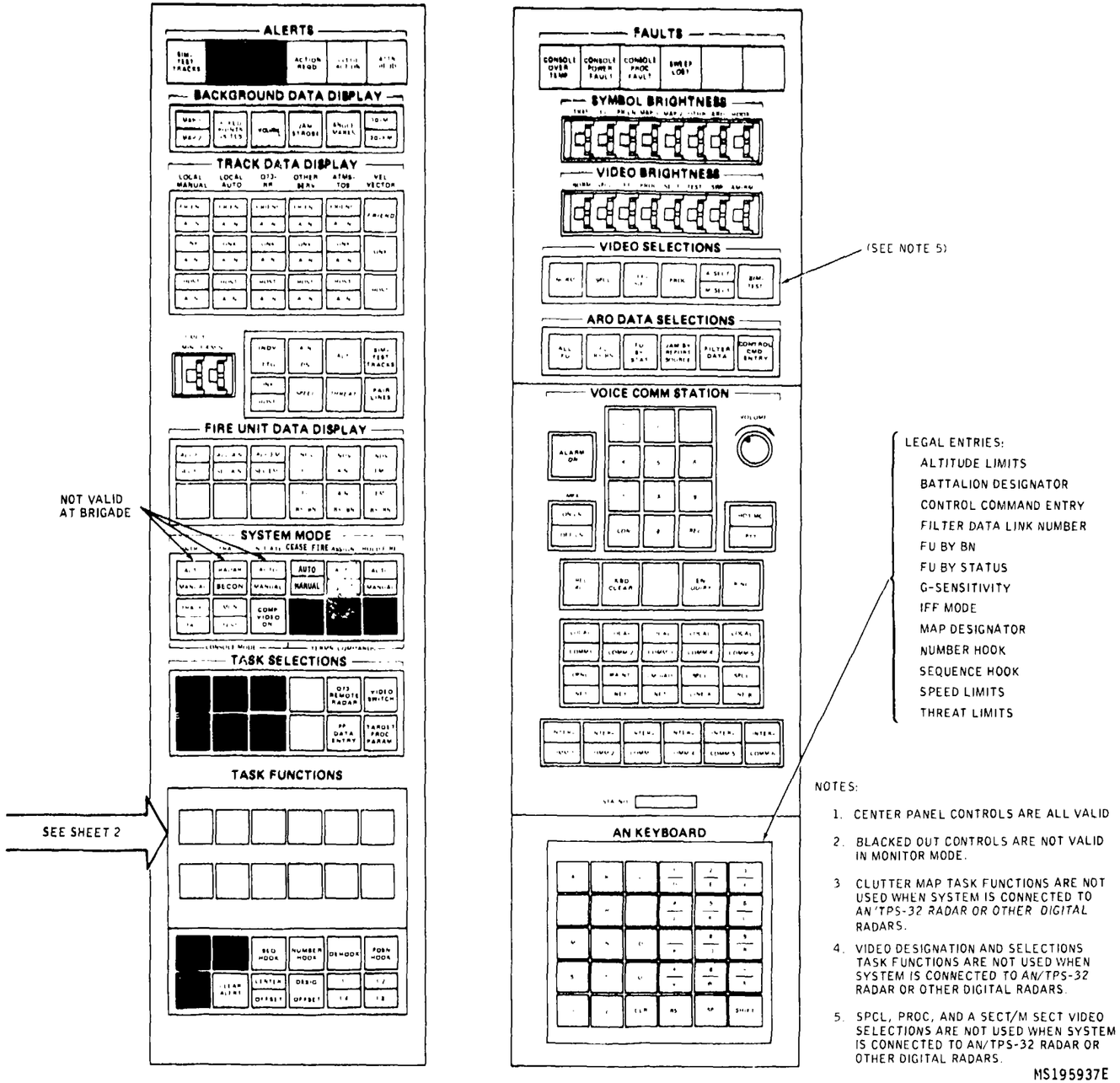


Figure 4-1. Valid Monitor Mode Controls (Sheet 1 of 2)

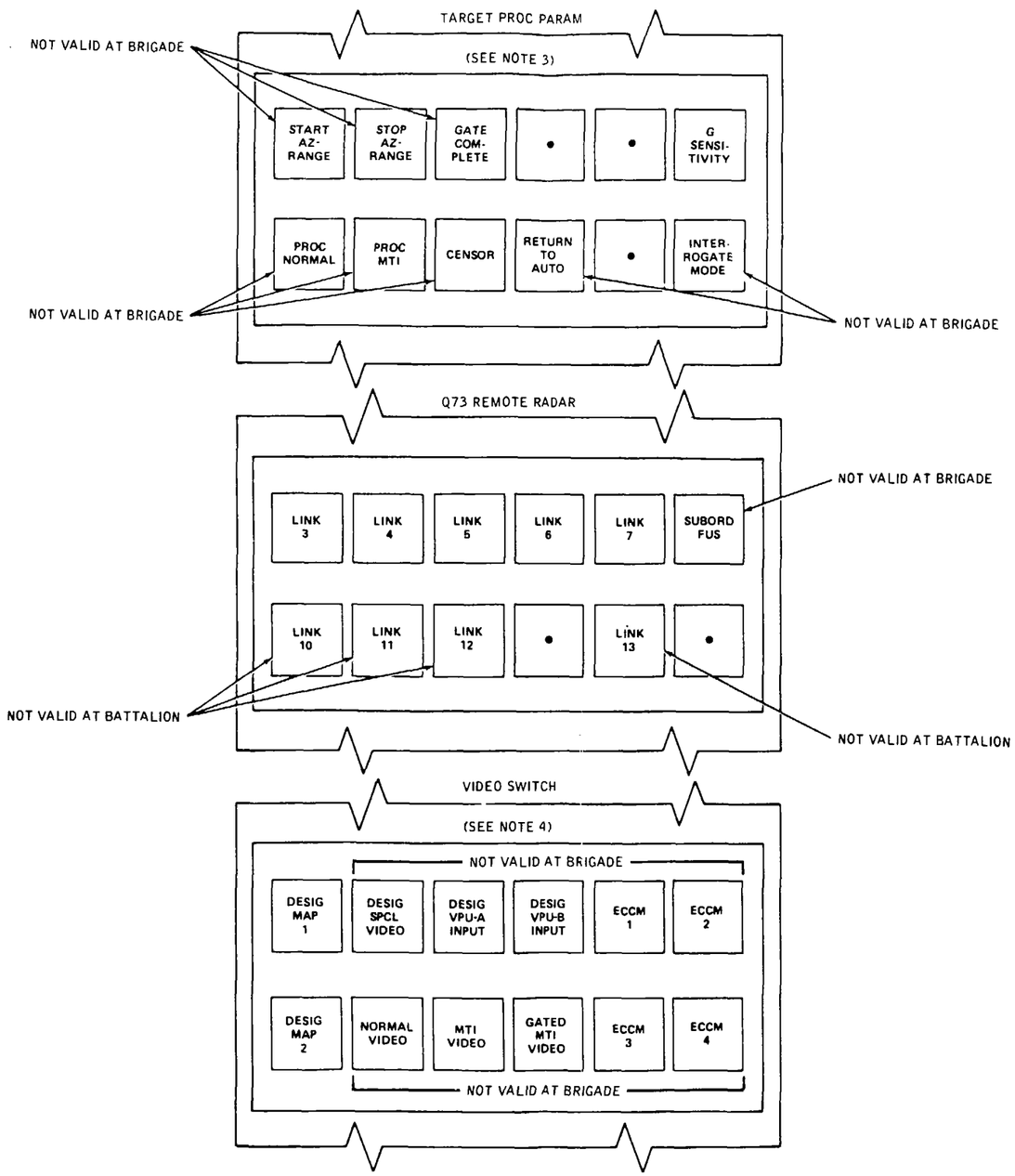
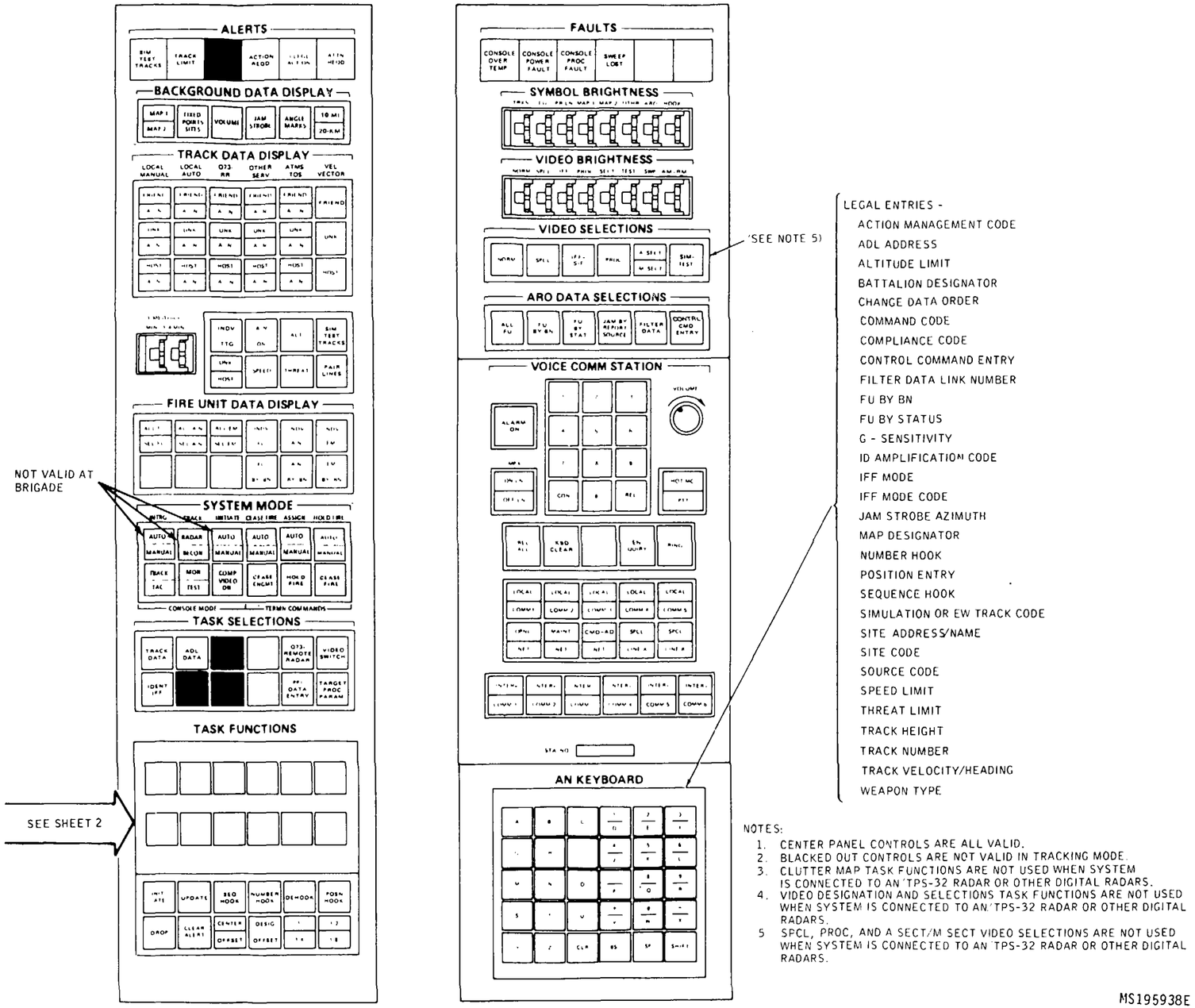


Figure 4-1. Valid Monitor Mode Controls (Sheet 2 of 2)



NOTES:

1. CENTER PANEL CONTROLS ARE ALL VALID.
2. BLACKED OUT CONTROLS ARE NOT VALID IN TRACKING MODE.
3. CLUTTER MAP TASK FUNCTIONS ARE NOT USED WHEN SYSTEM IS CONNECTED TO AN/TPS-32 RADAR OR OTHER DIGITAL RADARS.
4. VIDEO DESIGNATION AND SELECTIONS TASK FUNCTIONS ARE NOT USED WHEN SYSTEM IS CONNECTED TO AN/TPS-32 RADAR OR OTHER DIGITAL RADARS.
5. SPCL, PROC, AND A SECT/M SECT VIDEO SELECTIONS ARE NOT USED WHEN SYSTEM IS CONNECTED TO AN TPS-32 RADAR OR OTHER DIGITAL RADARS.

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Figure 4-2. Valid Tracking Mode Controls (Sheet 1 of 2)

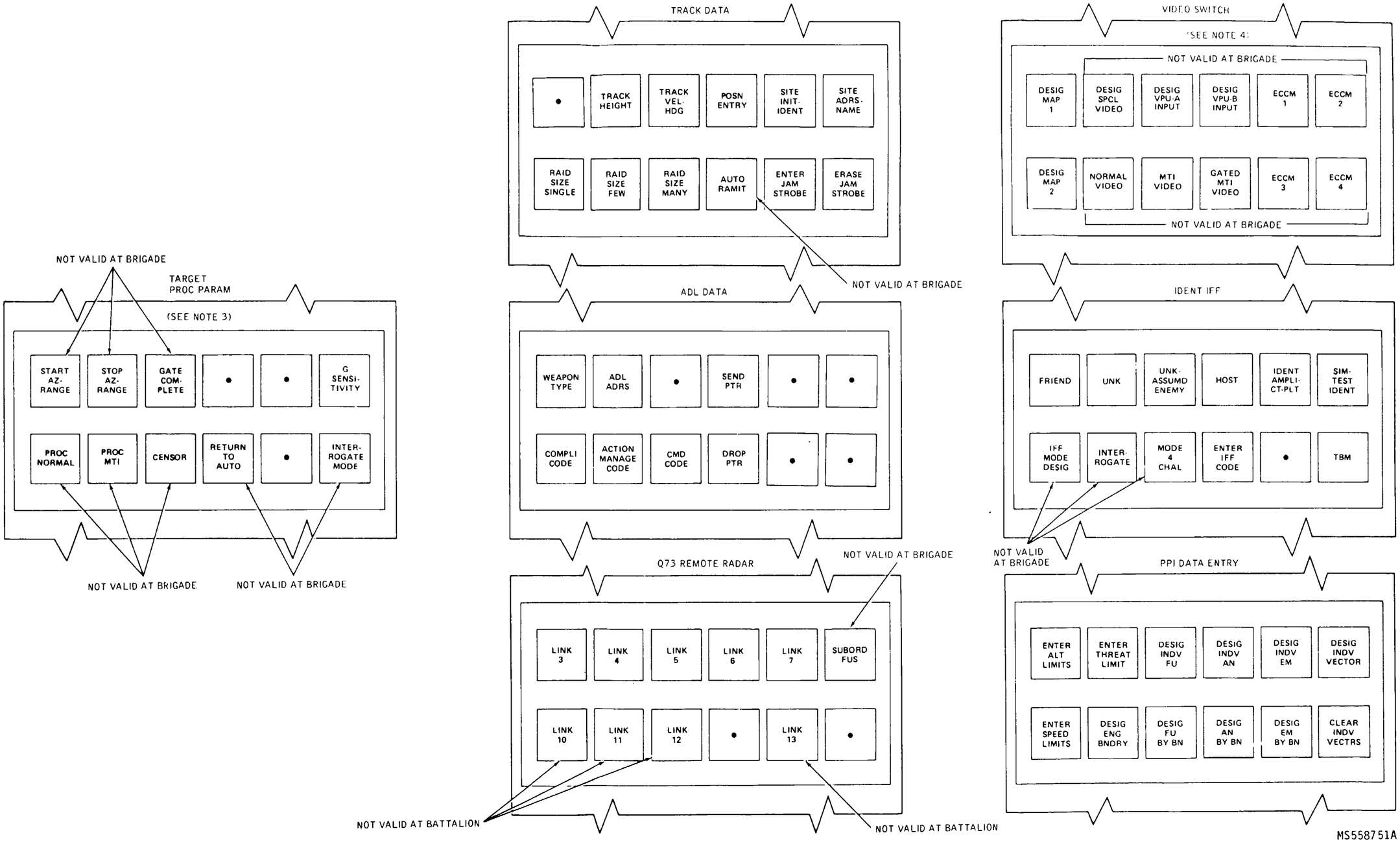

Figure 4-2. Valid Tracking Mode Controls (Sheet 2 of 2)

Change 14 4-6.1/4-6.2 blank)

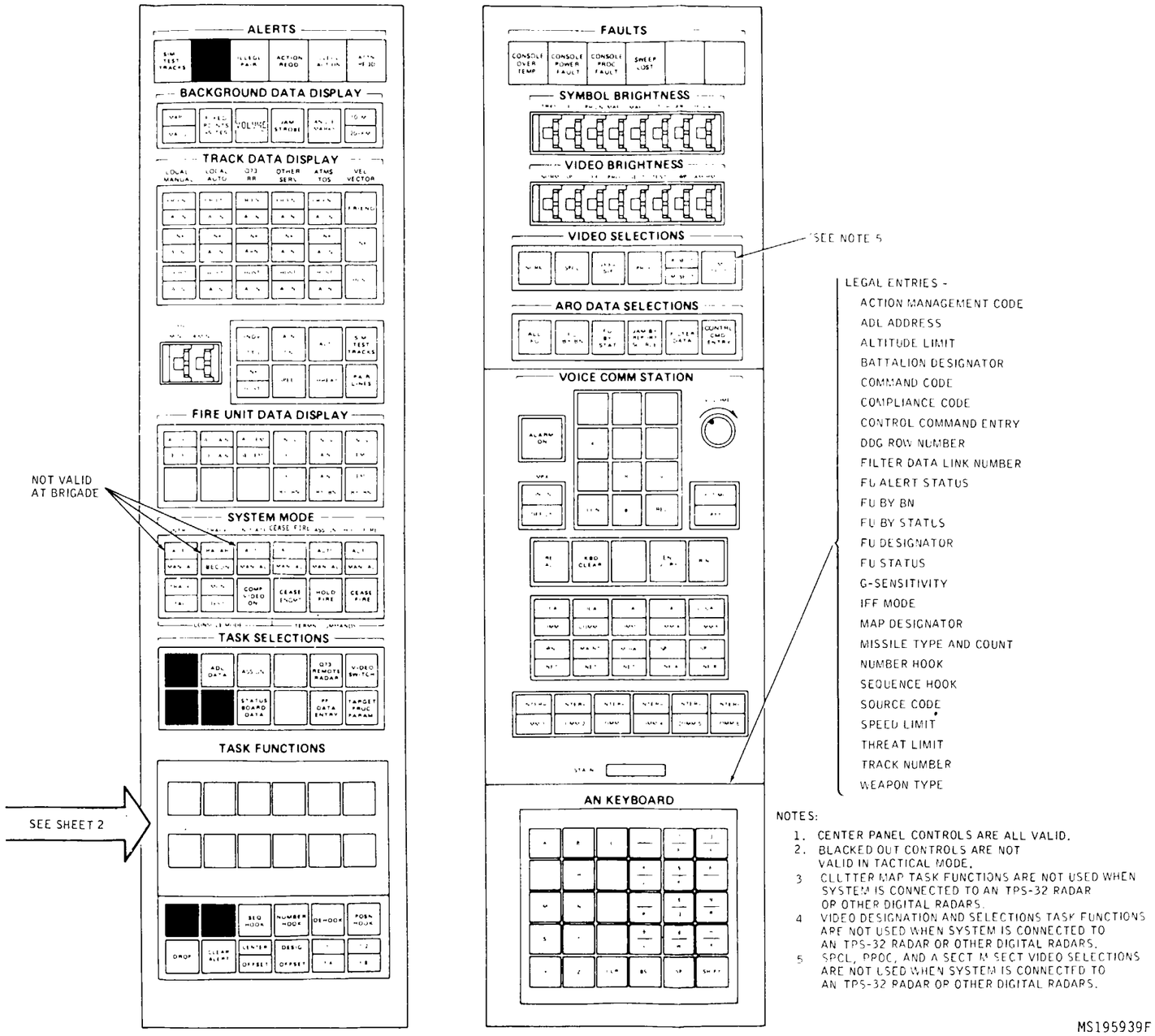

Figure 4-3. Valid Tactical Mode Controls (Sheet 1 of 2)

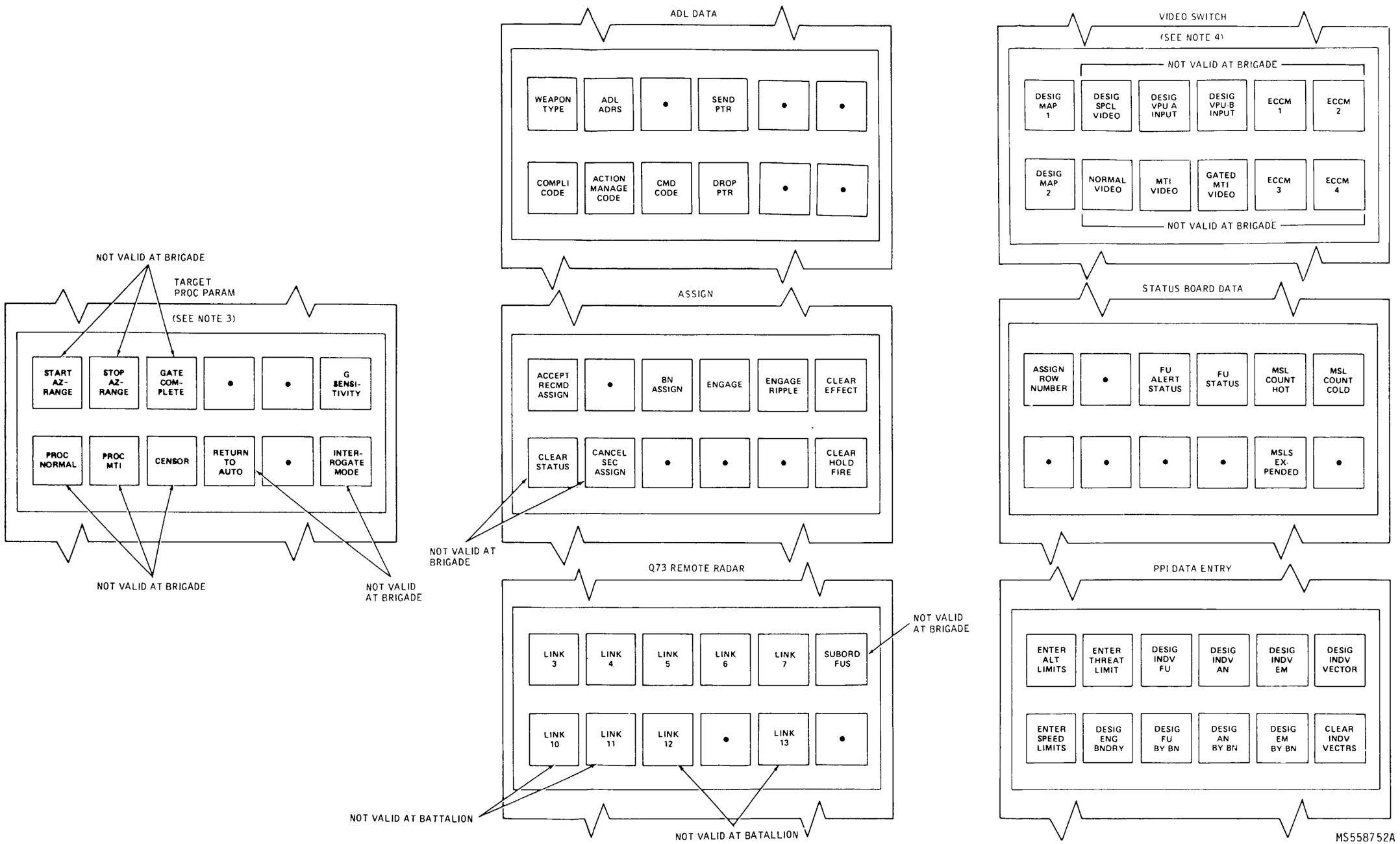

Figure 4-3. Valid Tactical Mode Controls (Sheet 2 of 2)

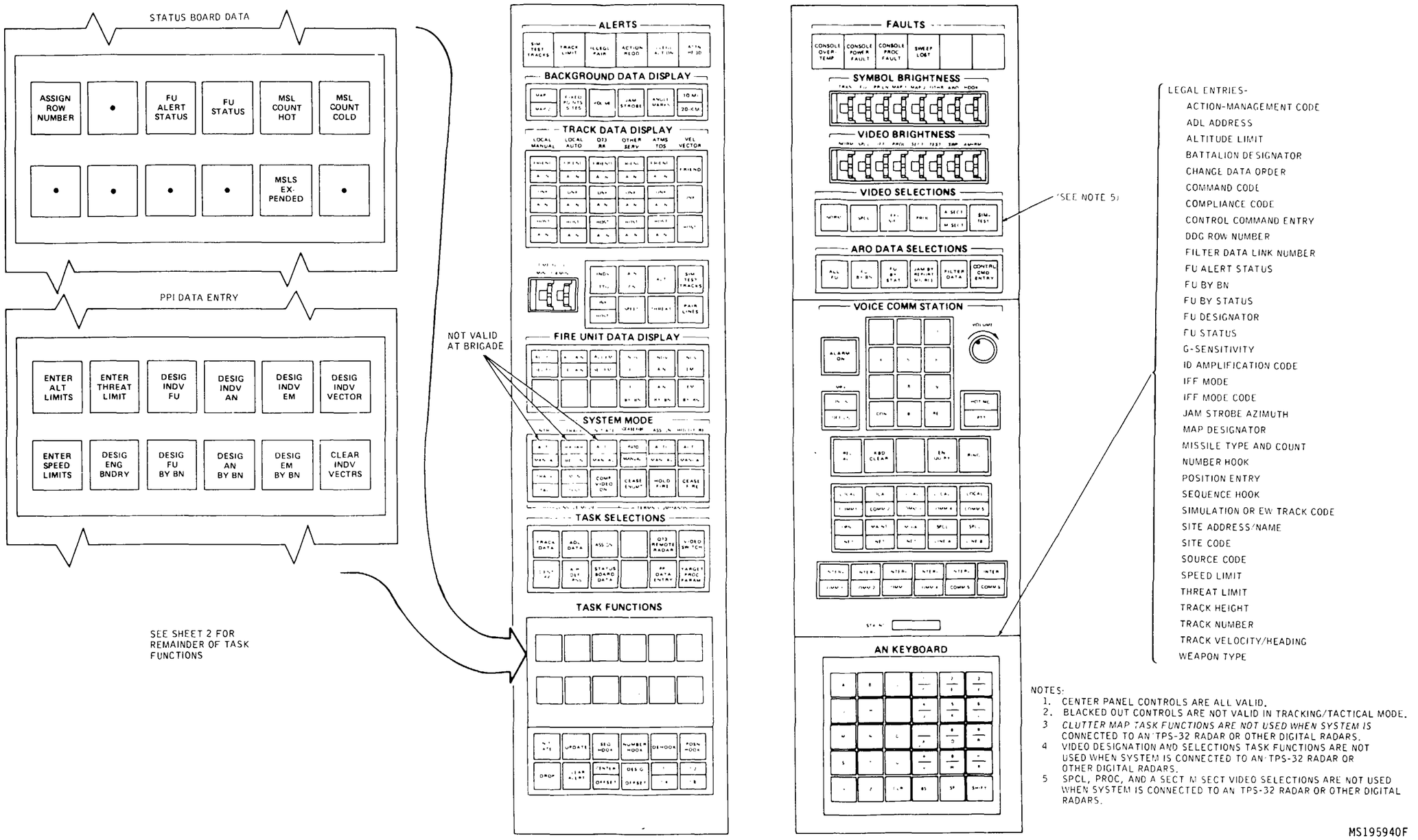

Figure 4-4. Valid Tracking/Tactical Mode Controls (Sheet 1 of 2)

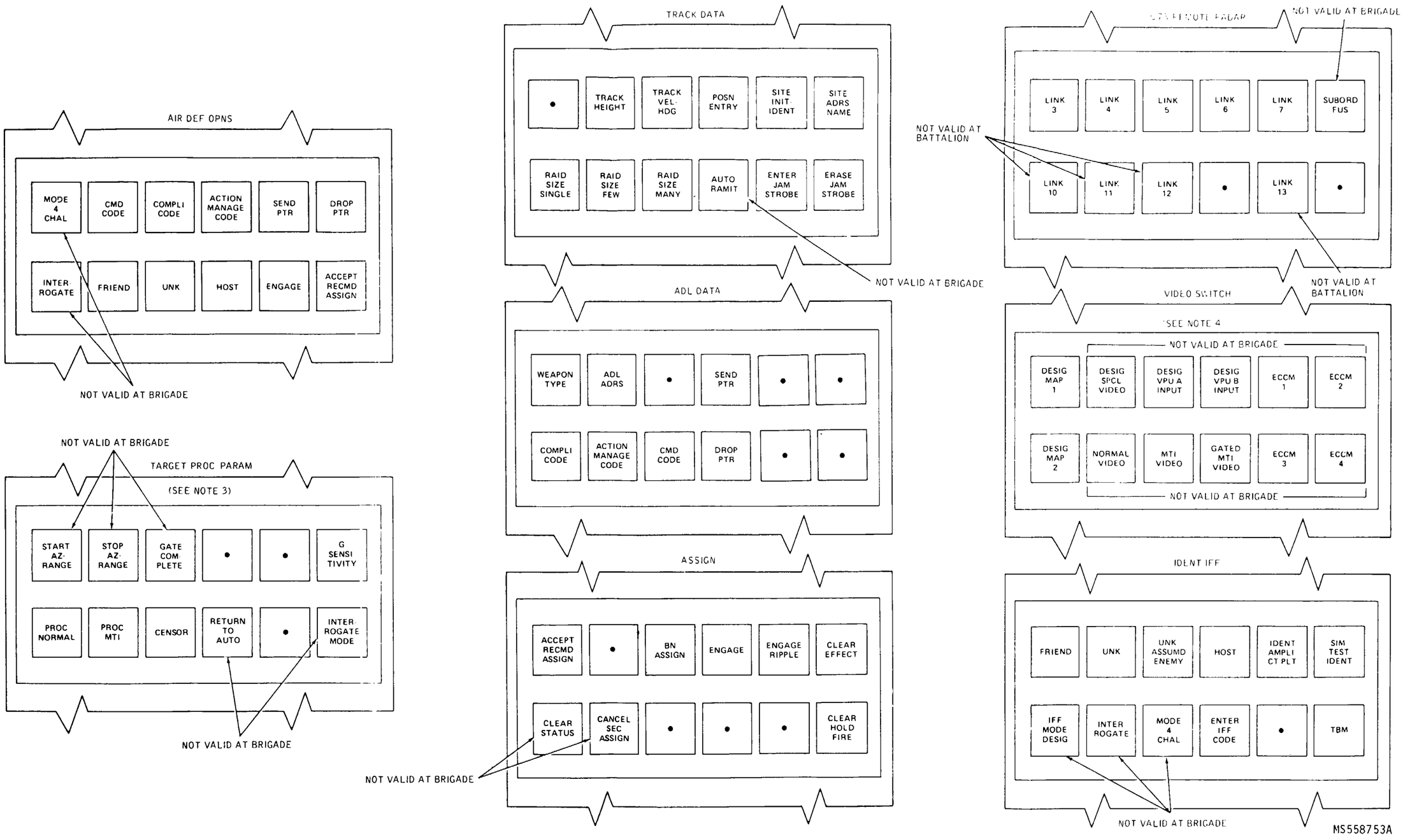

Figure 4-4. Valid Tracking/Tactical Mode Controls (Sheet 2 of 2)

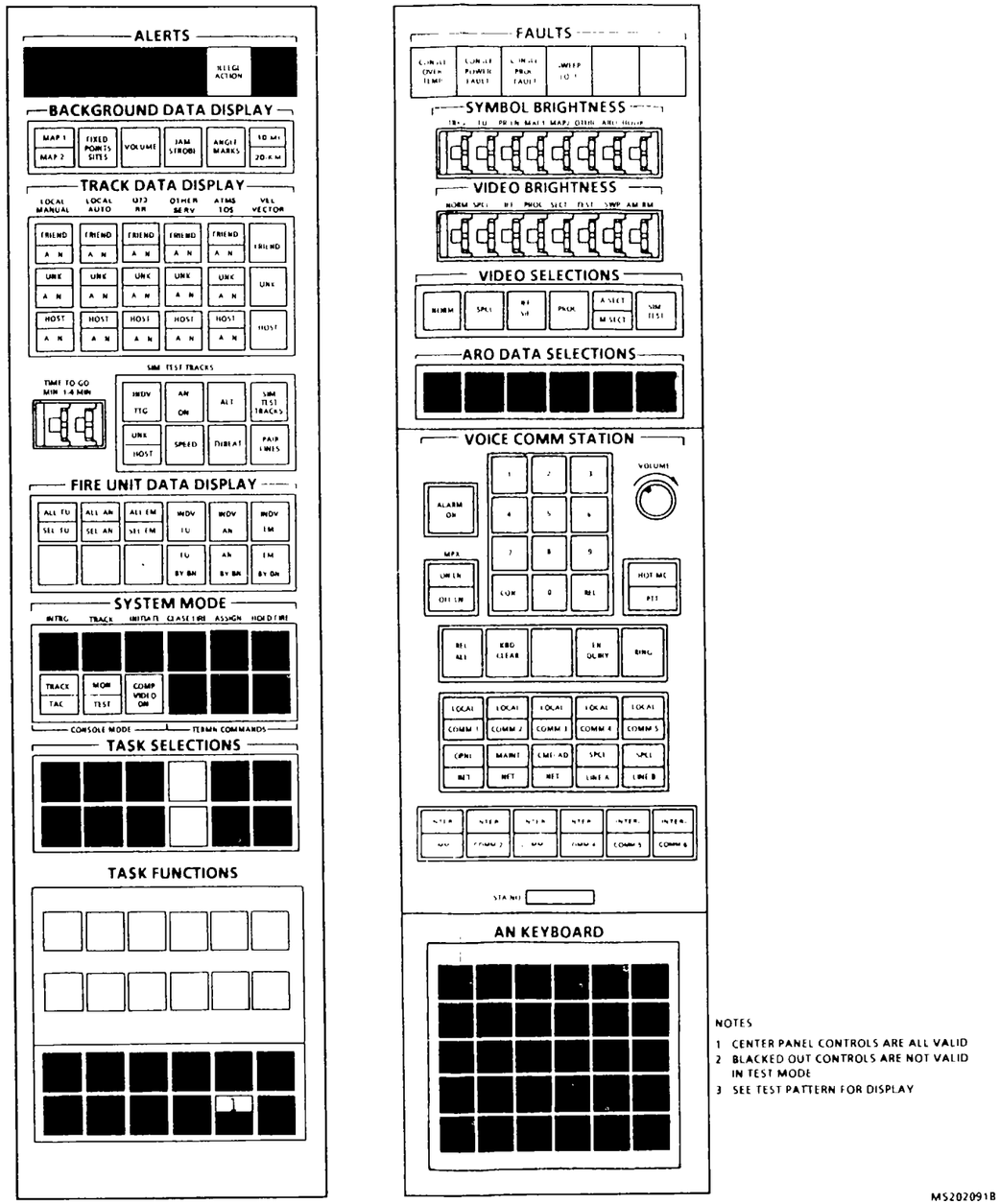

Figure 4-5. Valid Test Mode Controls

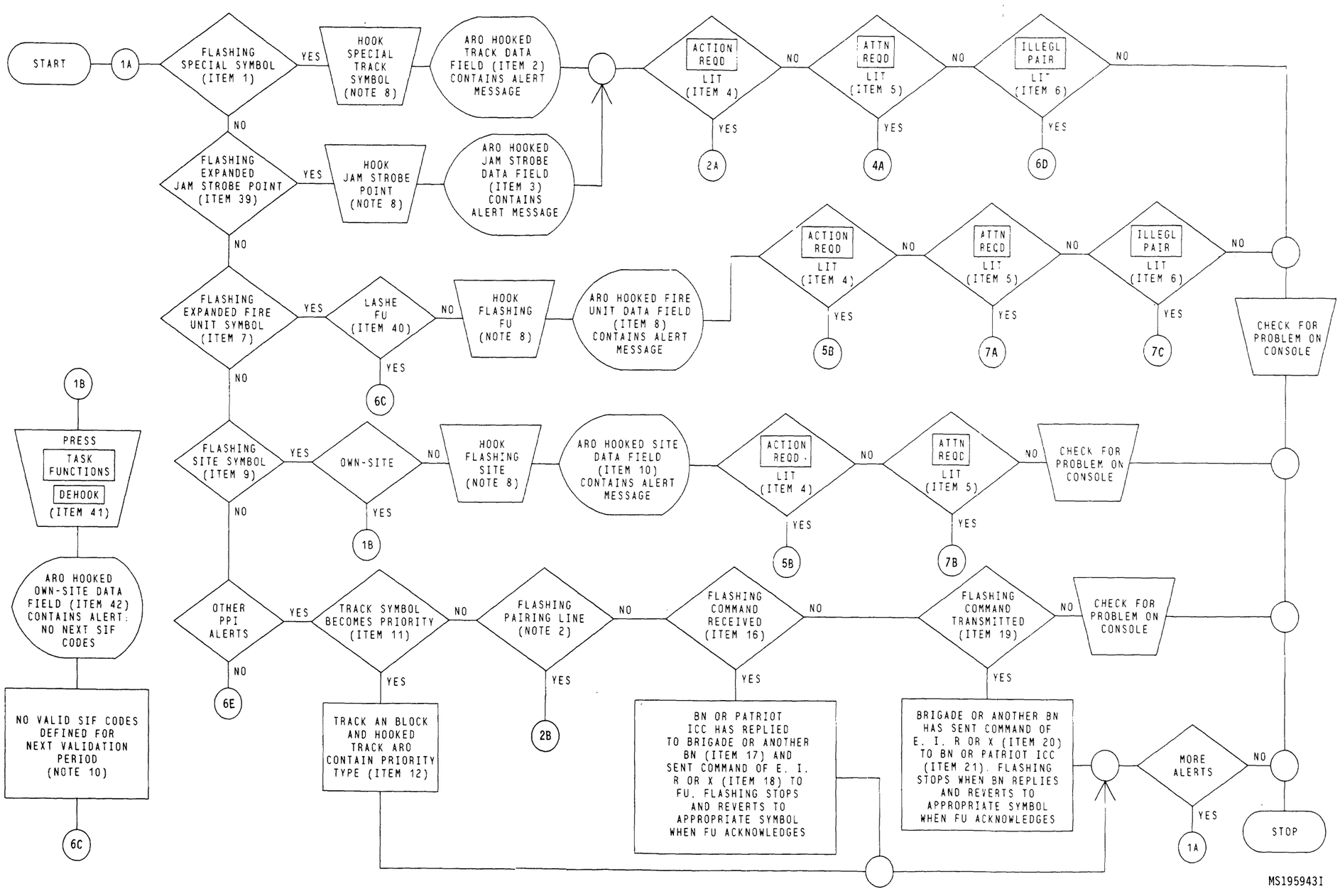

Figure 4-7. Console Alerts (Sheet 1 of 11)

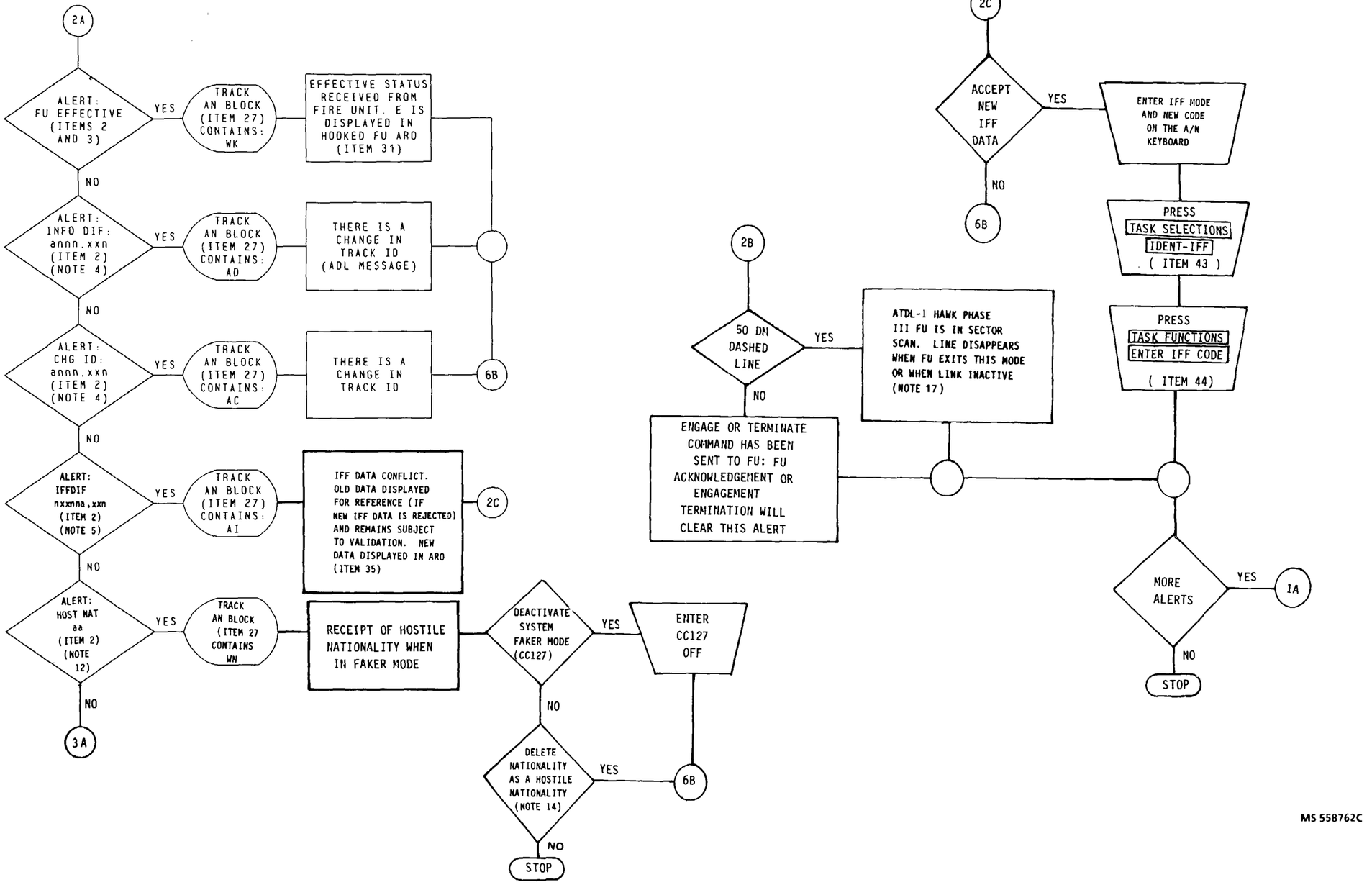

Figure 4-7. Console Alerts (Sheet 2 of 11)

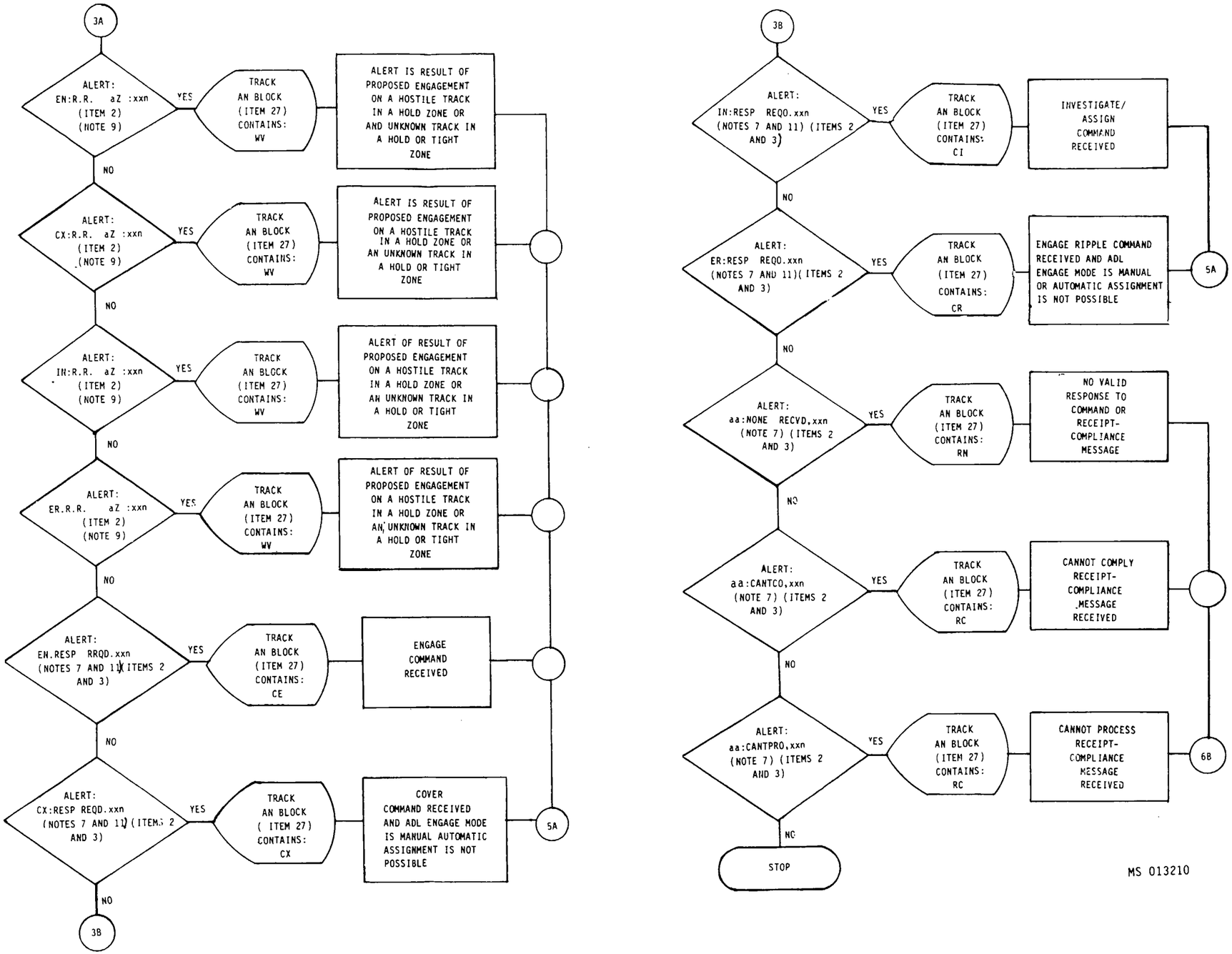

Figure 4-7. Console Alerts (Sheet 3 of 11)

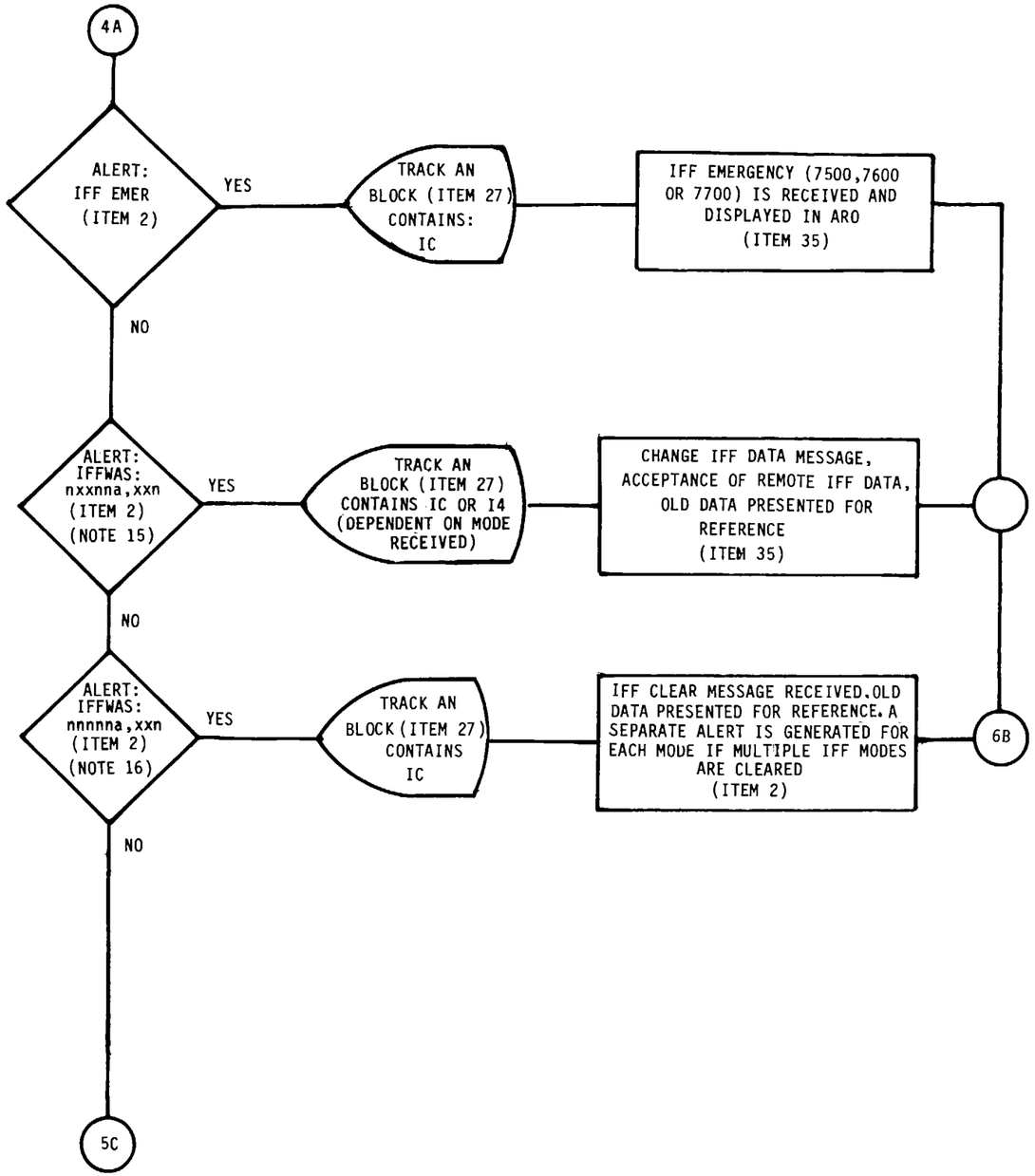

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Figure 4-7. Console Alerts (Sheet 4 of 11)

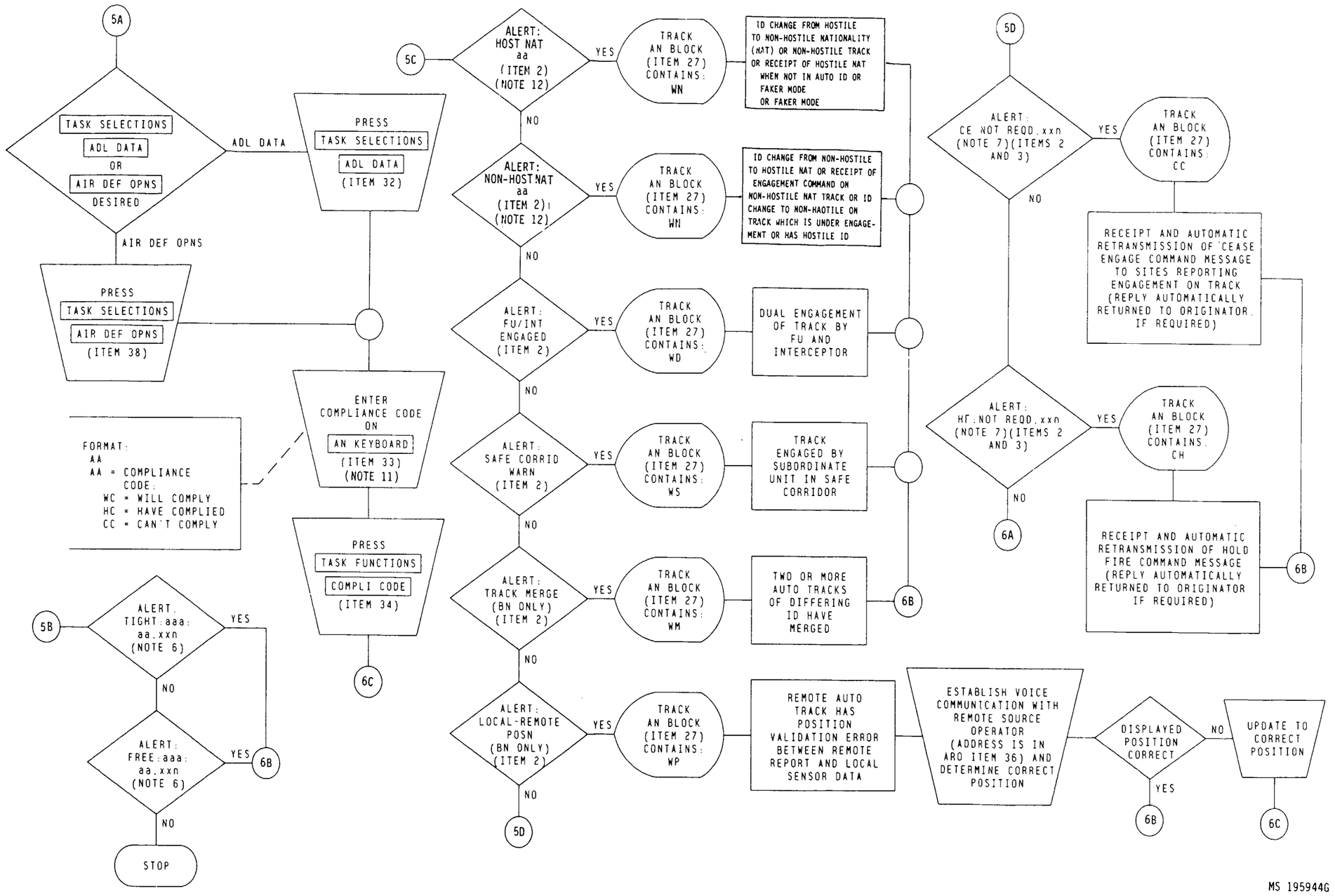


Figure 4-7. Console Alerts (Sheet 5 of 11)

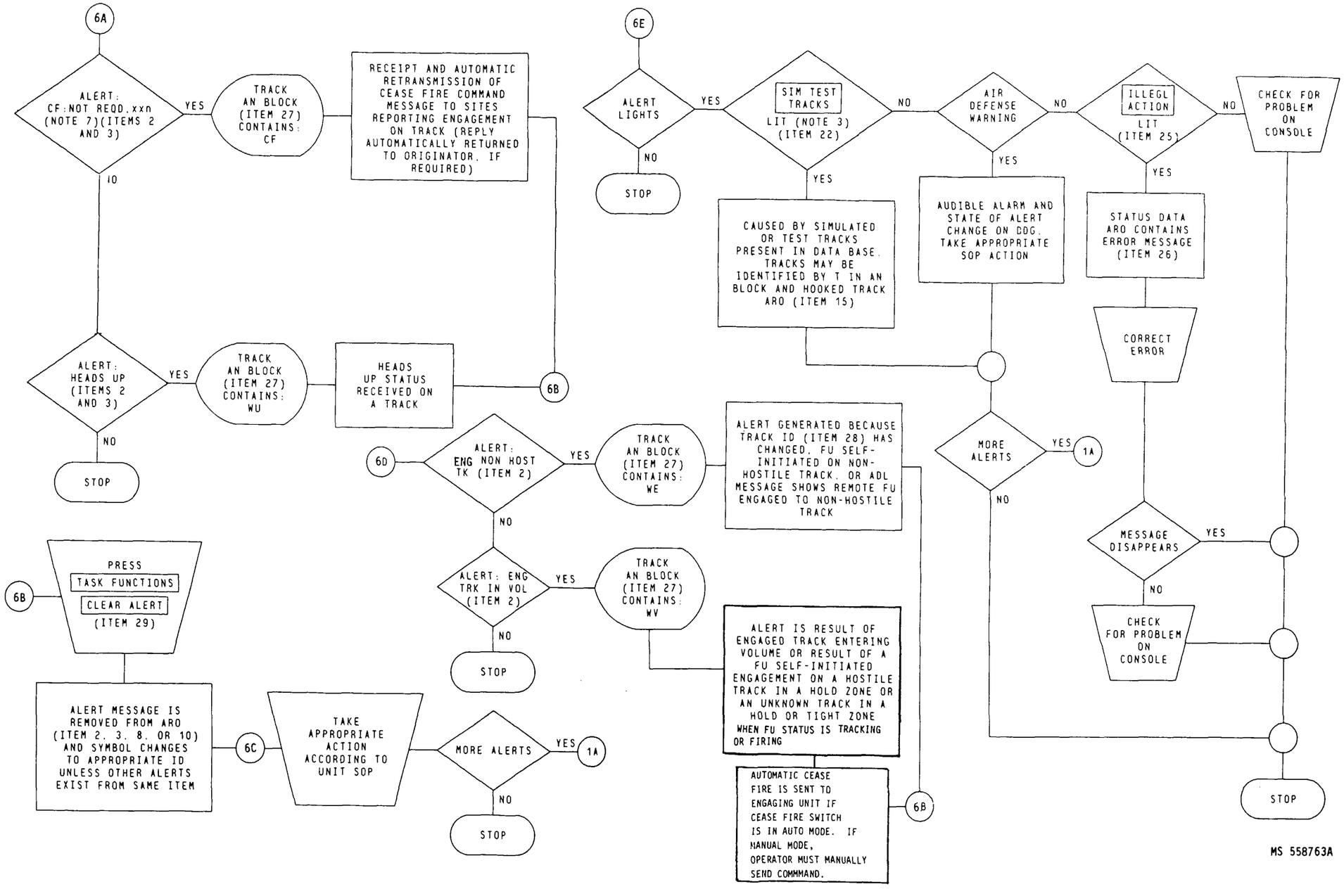


Figure 4-7. Console Alerts (Sheet 6 of 11)

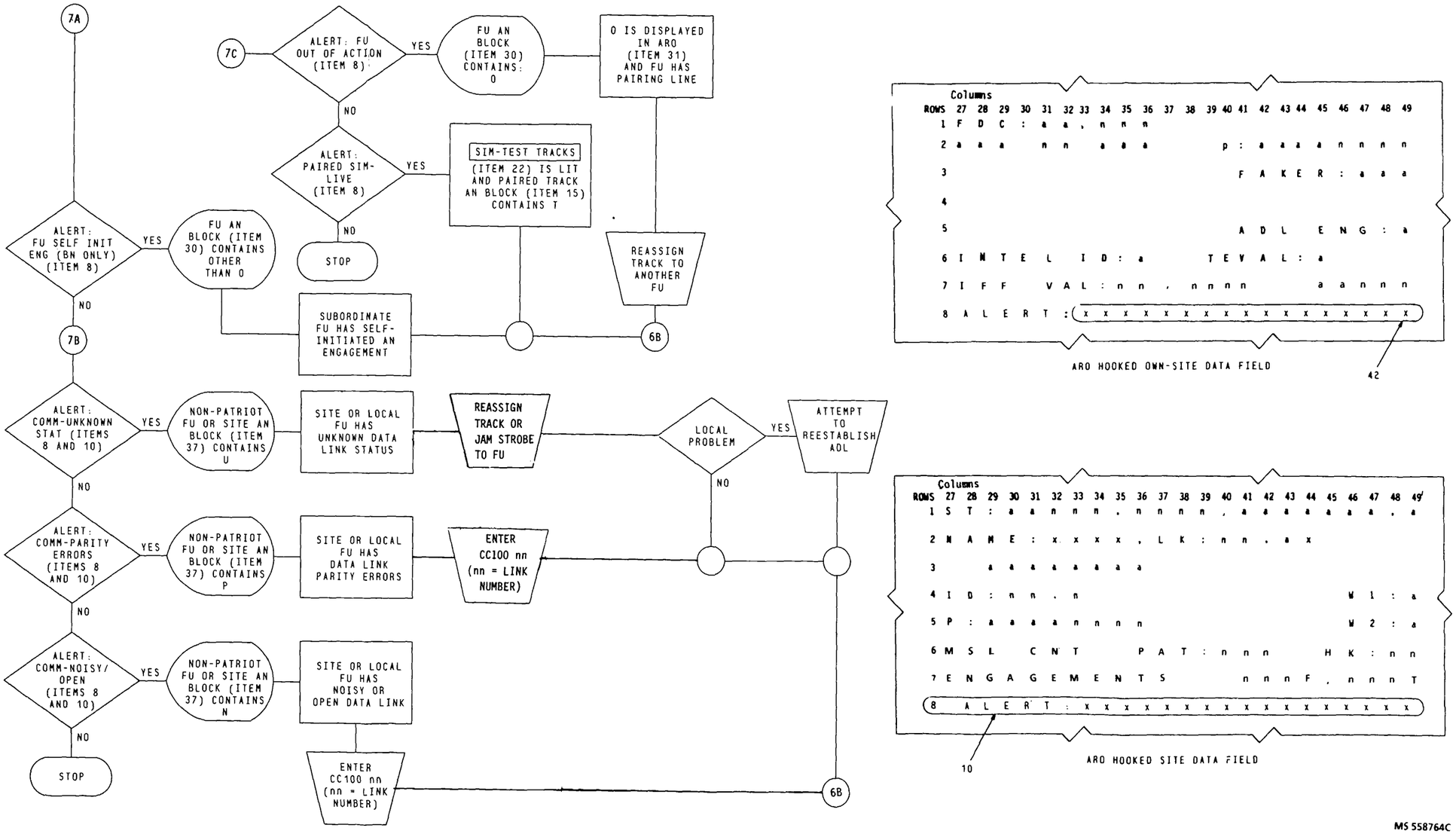
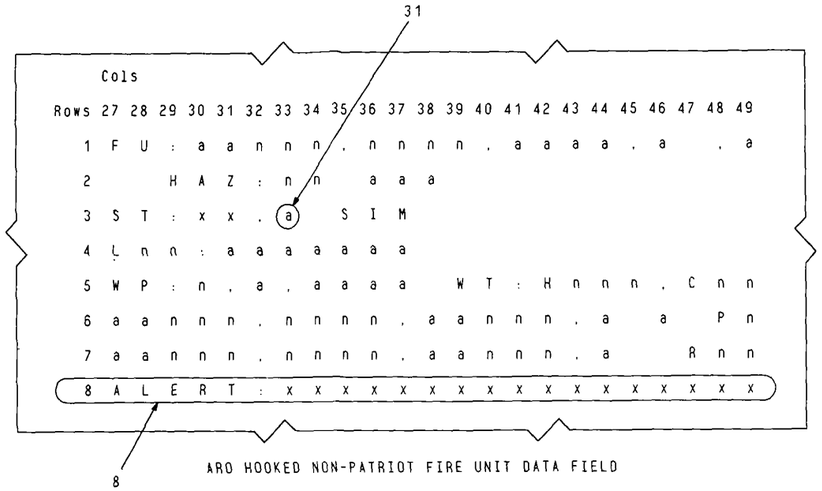
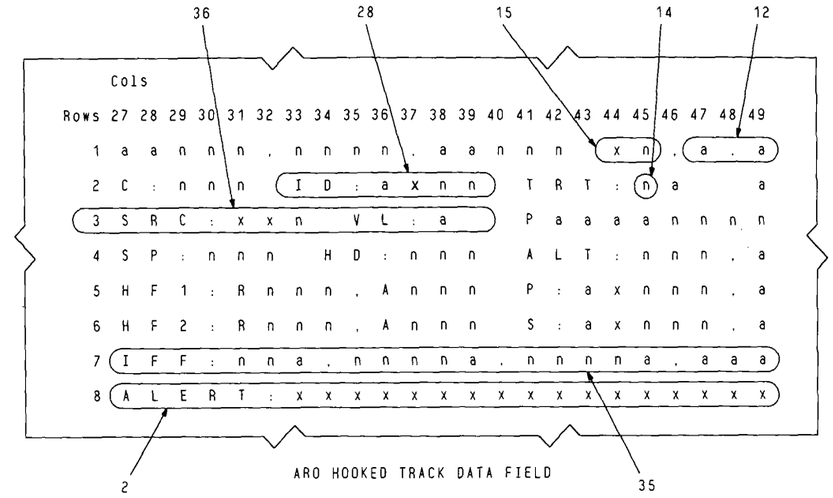
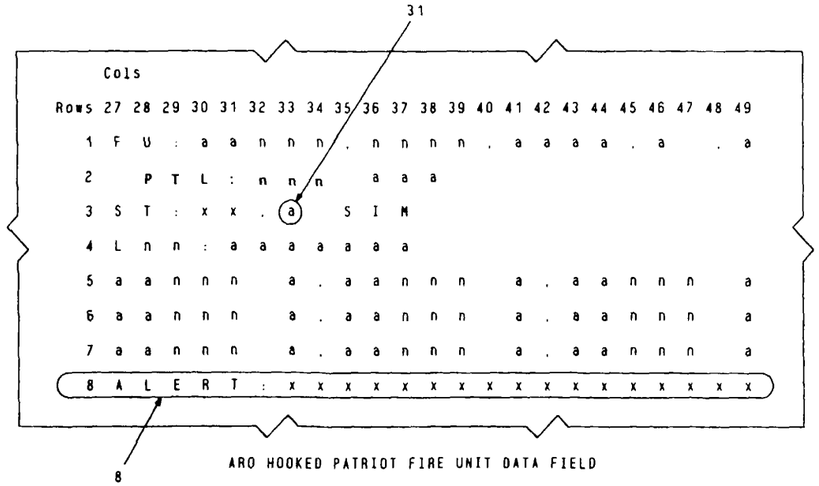


Figure 4-7. Console Alerts (Sheet 7 of 11)







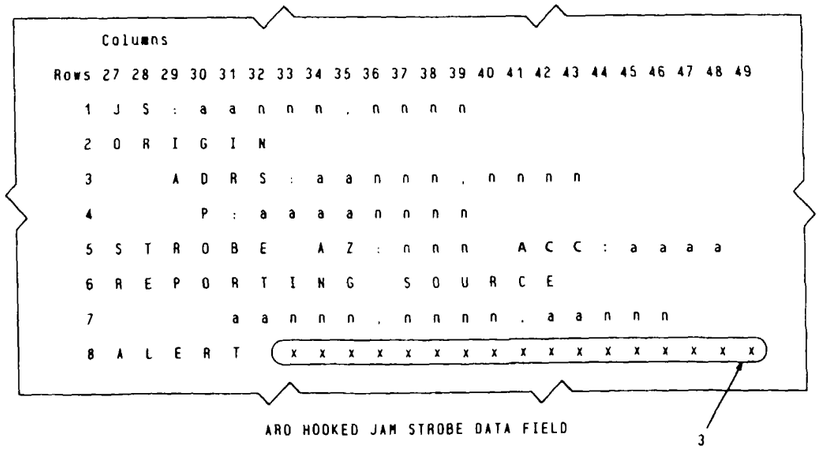


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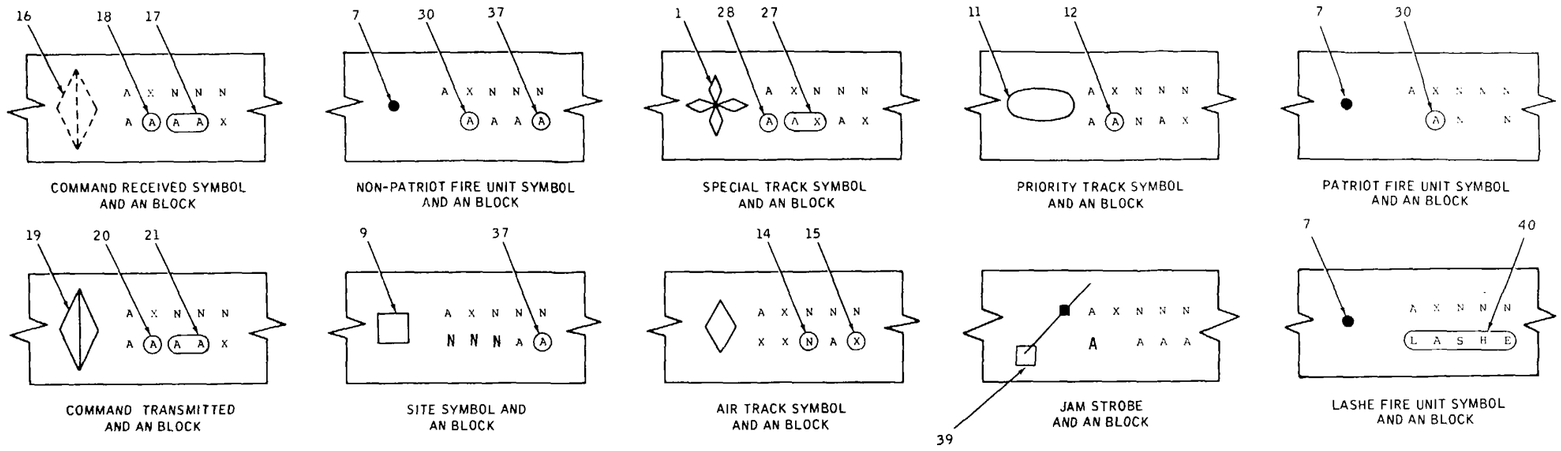
Figure 4-7. Console Alerts (Sheet 8 of 11)



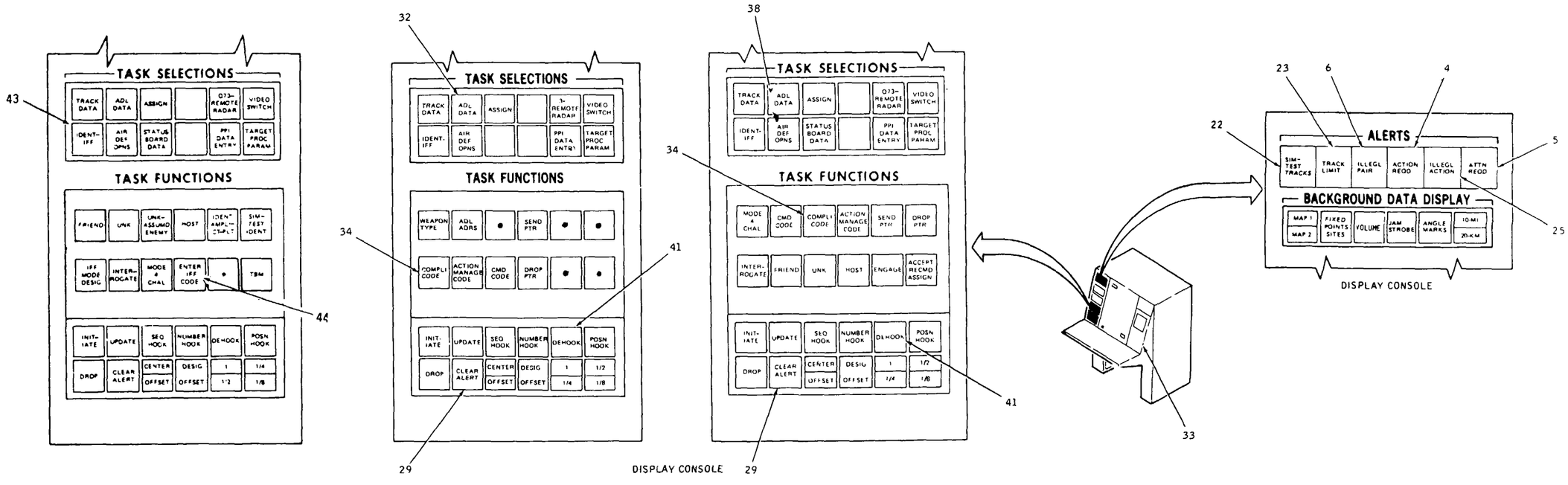


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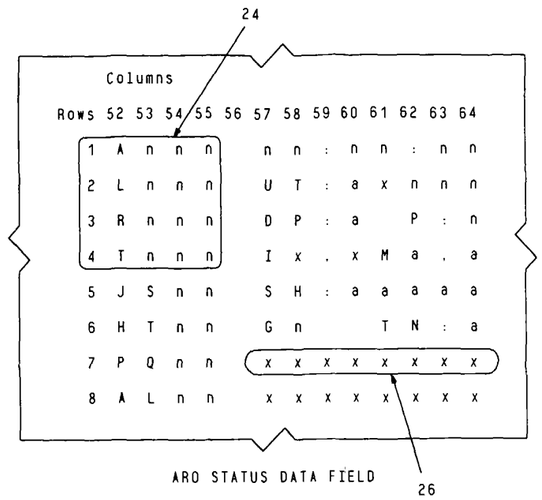
Figure 4-7. Console Alerts (Sheet 9 of 11)



NOTES:

1. VALID IN ALL MODES EXCEPT TEST, UNLESS OTHERWISE SPECIFIED.
2. VALID AT BATTALION ONLY.
3. THIS CONDITION DOES NOT APPLY TO THE TEST TARGET ALWAYS PRESENT IN THE SYSTEM.
4. FORMAT:

   CHG ID:annn,xxn
   INFO DIF:annn,xxn

   CHG ID: OR INFO DIF: - CHANGE DATA OR INFORMATION DIFFERENCE ACTION-MANAGEMENT MESSAGE - DATA LABEL AND:

   a - PRIMARY IDENTIFICATION - SINGLE ALPHA CHARACTER:

   F - FRIEND
   U - UNKNOWN
   H - HOSTILE OR FAKER HOSTILE

   nn - PRIMARY ID, PRIMARY ID AMPLIFICATION CODE - TWO NUMERIC CHARACTERS 0-9.

   n, - AMPLIFICATION ID CODE - SINGLE NUMERIC CHARACTER, 0-7.

   xxn - TADIL B (PU/RU) OR ATDL-1 STATION ADDRESS OF SENDING UNIT - TWO ALPHA OR THREE NUMERIC CHARACTERS, A-N, P OR Q FOR FIRST ALPHA AND A-H FOR SECOND ALPHA, OR 0-7 NUMERICS.

5. FORMAT:
   IFFDIF:nxxnna,xxn

   IFFDIF- IFF DIFFERENCE DATA MESSAGE, OLD DATA RETAINED, NEW DATA PRESENTED FOR REFERENCE.
   n- CONFLICTED IFF MODE- SINGLE NUMERIC CHARACTER:

   2- MODE 2
   4- MODE 4

   xxnn - IFF CODE - UP TO FOUR ALPHANUMERIC CHARACTERS
   nnnn- MODE 2 CODE

   aa - MODE 4 RESPONSE
   a, VALIDITY INDICATOR -
   SINGLE ALPHA CHARACTER:
   I - INVALID
   V - VALID
   BLANK-MODE 2, VALIDATION NOT ACTIVE, OR MODE 4

   xxn-TADIL B (PU/RU) OR ATDL-1 STATION ADDRESS OF SENDING UNIT - TWO ALPHA OR THREE NUMERIC CHARACTERS, A-N, P OR Q FOR FIRST ALPHA AND A-H FOR SECOND ALPHA, OR 0-7 NUMERICS.

6. FORMAT:
   aaaaa:aaa:aa:xxn:

   aaaaa - COMMAND
   CODE - UP TO 5 ALPHA CHARACTERS:
   TIGHT: WEAPONS TIGHT
   FREE: WEAPONS FREE

   aaa - STATE OF ALERT CODE - 3 ALPHA CHARACTERS:
   WHI: STATE OF ALERT - WHITE
   YEL: STATE OF ALERT - YELLOW
   RED: STATE OF ALERT - RED

   aa, - RECEIPT/COMPLIANCE CODE - TWO ALPHANUMERIC CHARACTERS:

   NO = ORIGINAL ORDER. NO RESPONSE REQUIRED
   NR = NO RESPONSE RECEIVED
   CC = CANTCO (CAN'T COMPLY)
   CP = CANTPRO (CAN'T PROCESS)
   WC = WILCO (WILL COMPLY)
   HC = HAVCO (HAVE COMPLETED)

   xxn - TADIL B (PU/RU) OR ATDL -1 STATION ADDRESS - TWO ALPHA OR THREE NUMERIC CHARACTERS, A-N, P OR Q FOR FIRST ALPHA AND A-H FOR SECOND ALPHA, OR 0-7 NUMERICS. (IF A COMMAND IS BEING RECEIVED, THE ORIGINATOR'S ADDRESS IS SHOWN. IF A RECEIPT/ COMPLIANCE CODE IS BEING RECEIVED. THE COMMAND RECIPIENT'S ADDRESS IS SHOWN)

7. FORMAT:
   aa:aaaaaaaaaa:xxn

   aa: - COMMAND MESSAGE CODE - TWO ALPHA CHARACTERS:

   EN - ENGAGE
   ER - ENGAGE RIPPLE
   IN - INVESTIGATE/ASSIGN
   CX - COVER
   HF - HOLD FIRE
   CF - CEASE FIRE
   CE - CEASE ENGAGE

   aaaaaaaaaa - RECEIPT/COMPLIANCE CODE - UP TO TEN ALPHA CHARACTERS:

RESP REQD	= ORIGINAL ORDER. RESPONSE REQUIRED
NOT REQD	= ORIGINAL ORDER. NO RESPONSE REQUIRED
NONE RECVD	= NONE RECEIVED
CANTCO	= CAN'T COMPLY
CANTPRO	= CAN'T PROCESS

   xxn - TADIL B (PU/RU) OR ATDL-1 STATION ADDRESS - TWO ALPHA OR THREE NUMERIC CHARACTERS, A-N, P OR Q FOR FIRST ALPHA AND A-H FOR SECOND ALPHA, OR 0-7 NUMERICS. (IF A COMMAND IS BEING RECEIVED, THE SENDER'S ADDRESS IS SHOWN. IF A RECEIPT/COMPLIANCE CODE IS BEING RECEIVED, THE COMMAND RECIPIENT'S ADDRESS IS SHOWN.)

8. HOOKING ANY ITEM BY THE INITIATING CONSOLE WILL REMOVE THE DATA LINK TRANSMISSION ZONE ORIGIN POINT FIELD FROM THE ARO. ALERTS CAN BE HOOKED AND CLEARED WITHOUT CHANGING THE PPI DISPLAY.
9. FORMAT:
   aa:R.R. "aZ":xxn

   aa: - COMMAND MESSAGE CODE - TWO ALPHA CHARACTERS:

   EN - ENGAGE
   ER - ENGAGE RIPPLE
   IN - INVESTIGATE/ASSIGN
   CX - COVER

   R.R. - ORIGINAL ORDER - RESPONSE REQUIRED
   "aZ": - ONE ALPHA CHARACTER AND Z. COMMAND IS ON A TRACK IN A ZONE:

   HZ - HOLD ZONE
   TZ - TIGHT ZONE

   xxn - TADIL B (PU/RU) OR ATDL-1 STATION ADDRESS OF SENDING UNIT - TWO ALPHA OR THREE NUMERIC CHARACTERS, A-N, P OR Q FOR FIRST ALPHA AND A-H FOR SECOND ALPHA, OR 0-7 NUMERICS.
10. REFER TO TM 9-1430-652-10-7 FOR SIF CODE PERIOD TIMING.

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Figure 4-7. Console Alerts (Sheet 10 of 11)

11. IF ENGAGE, COVER, INVESTIGATE/ASSIGN OR ENGAGE RIPPLE COMMAND IS RETRANSMITTED TO AN ELEGIBLE UNIT, AN AUTO-WILCO IS SENT TO THE ORIGINATOR AND CLEARS THE ALERT.

12. FORMAT:
HOST NAT aa

HOST NAT - Hostile nationality ID change to non-hostile nationality or when a hostile nationality is received while they system FAKER mode is on - Data Label.

aa - Nationality abbreviation - Two alpha characters:
Refer to (C) TM 9-1430-652-10-7.

13. FORMAT:
NON HOST NAT aa

NON HOST NAT - Non-Hostile Nationality ID change to hostile nationality - Data Label.

aa - Nationality abbreviation - Two alpha characters:
Refer to (C) TM 9-1430-652-10-7.

14. REFER TO (C) TM 9-1430-652-10-7 for CC154 format.

15. FORMAT:
IFFWAS:
nxxnna.xxn

IFFWAS: Change IFF Data message, remote IFF data accepted, old data presented for reference - Data Label and:

n - Changed IFF mode - Single numeric character:

1 - Mode 1
2 - Mode 2
3 - Mode 3A
4 - Mode 4
Blank - SIF validation active and invalid response received.

xxnn - Old IFF code - Up to four alphanumeric characters:

nn - Mode 1 Code
nnnn - Mode 2 or 3/A Code
aa - Mode 4 Response

a - Validity indicator - Single alpha character:

I - Invalid
V - Valid
Blank - Mode 2, validation not active, or Mode 4

xxn - TADIL B (PU/RU) or ATDL-1 Station Address of Sending Unit - Two alpha or three numeric characters, A-N, P or Q for first alpha and A-H for second alpha or 0-7 numerics.

(Note: Alert generation is dependent on SIF validation mode. See Tables 1-6 and 1-7.)

16. FORMAT:
IFFWAS:
nnnnna.xxn

IFFWAS: Receipt of IFF Clear Message, old data presented for reference - Data Label and:

n - IFF mode cleared - Single numeric character:

1 - Mode 1
2 - Mode 2
3 - Mode 3A

nnnn - Old IFF code - Up to four alphanumeric characters:

nn - Mode 1 Code
nnnn - Mode 2 or 3/A code

a - Validity indicator - Single alpha character:

I - Invalid
V - Valid
Blank - Mode 2, validation not active, or Mode 4

xxn - TADIL B (PU/RU) or ATDL-1 Station Address of Sending Unit - Two alpha or three numeric characters, A-N, P or Q for first alpha and A-H for second alpha, or 0-7 numerics.

17. A FU in sector scan is eliminated from consideration for automatic or recommended assignment. Operator can send manual assignment command to FU.

18. ▭ INDICATES EQUIPMENT MARKING.

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Figure 4-7. Console Alerts (Sheet 11 of 11)

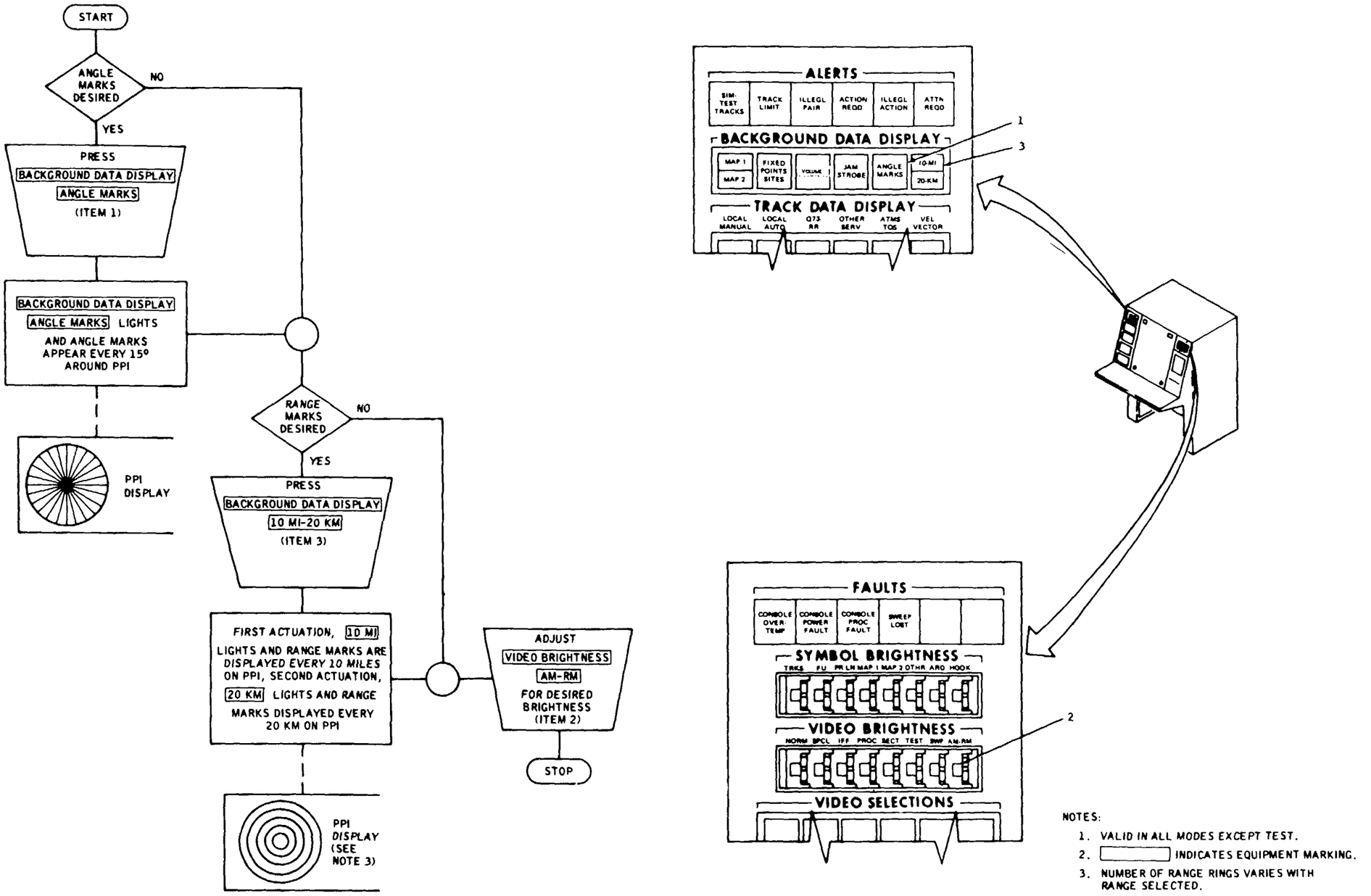
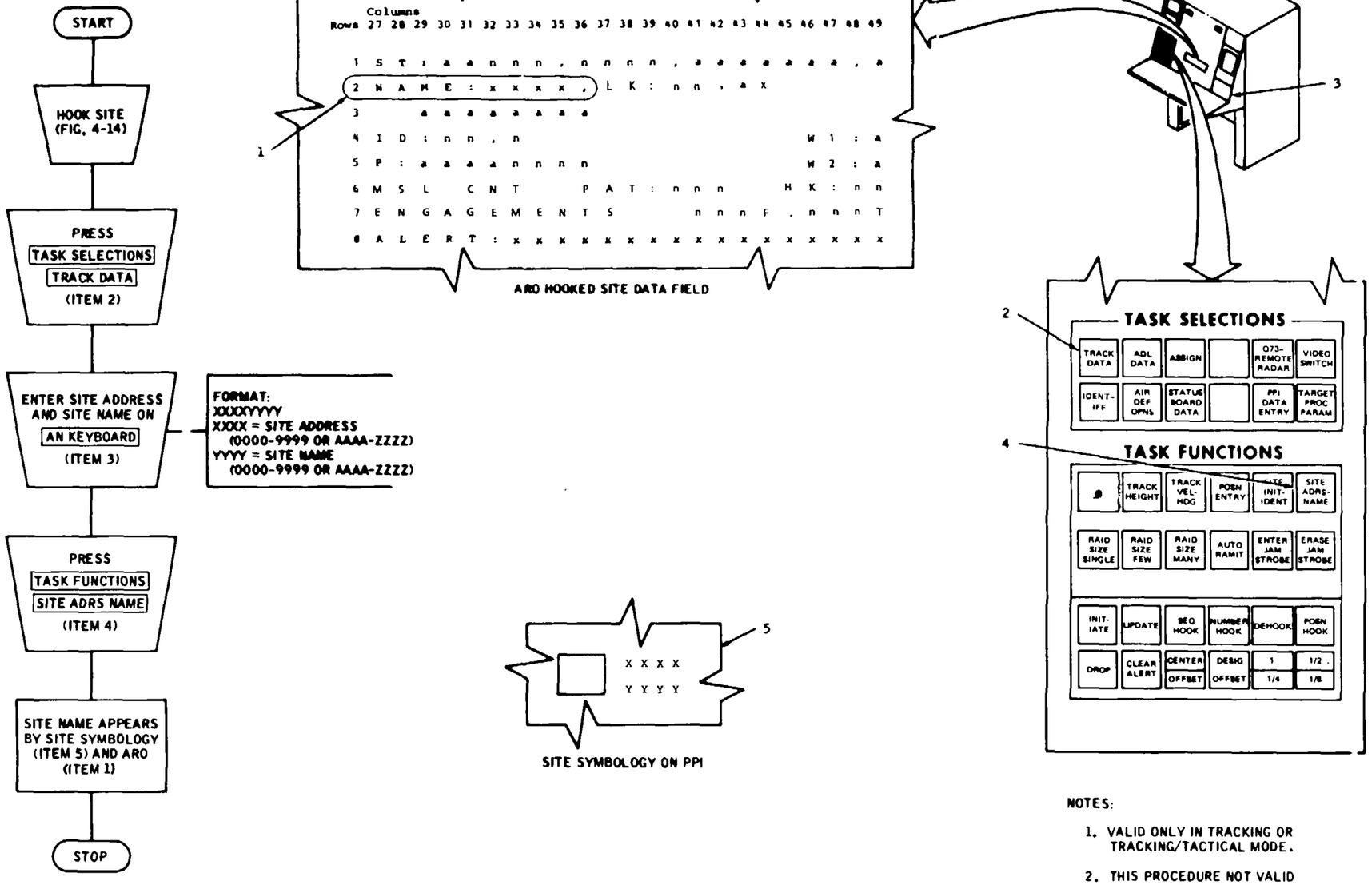


Figure 4-8. Angle Marks and Range Marks Display



NOTES:

1. VALID ONLY IN TRACKING OR TRACKING/TACTICAL MODE.
2. THIS PROCEDURE NOT VALID FOR TRANSMITTABLE SITES.
3. [ ] INDICATES EQUIPMENT MARKING.

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Figure 4-9. Assign Site Non-Transmittable Address and Name

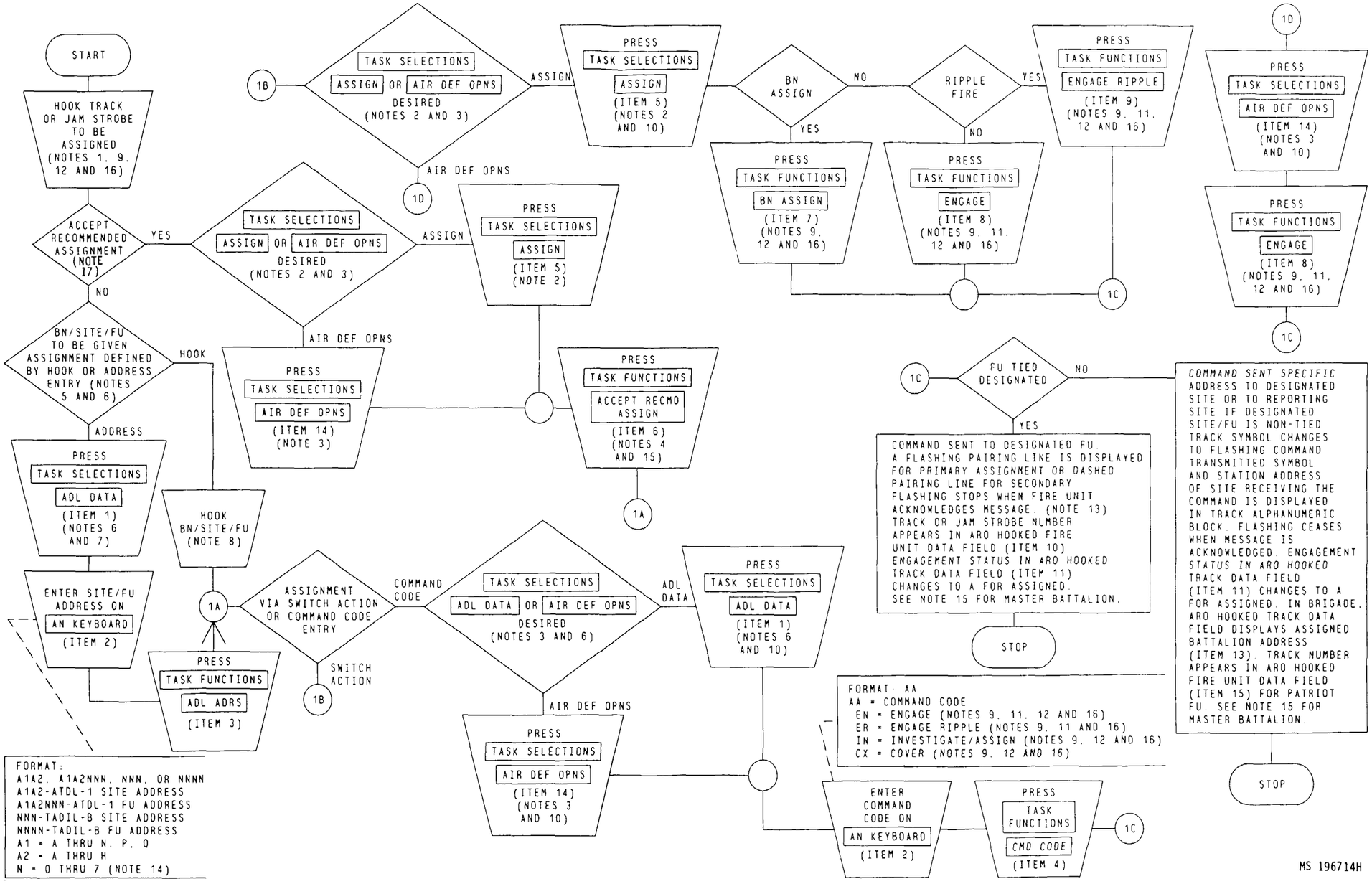

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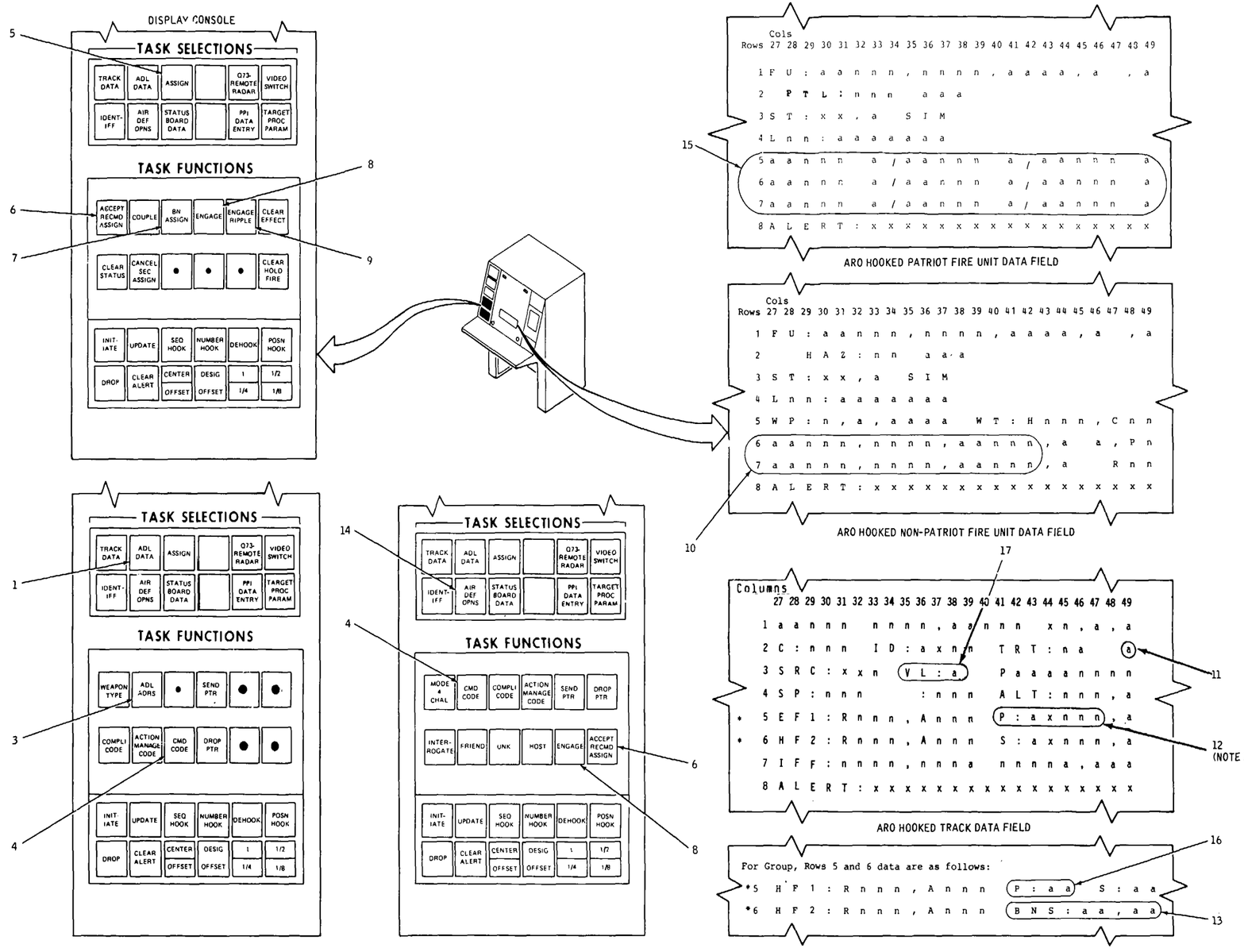
Figure 4-10. Assign Weapons/Bns (Sheet 1 of 2)

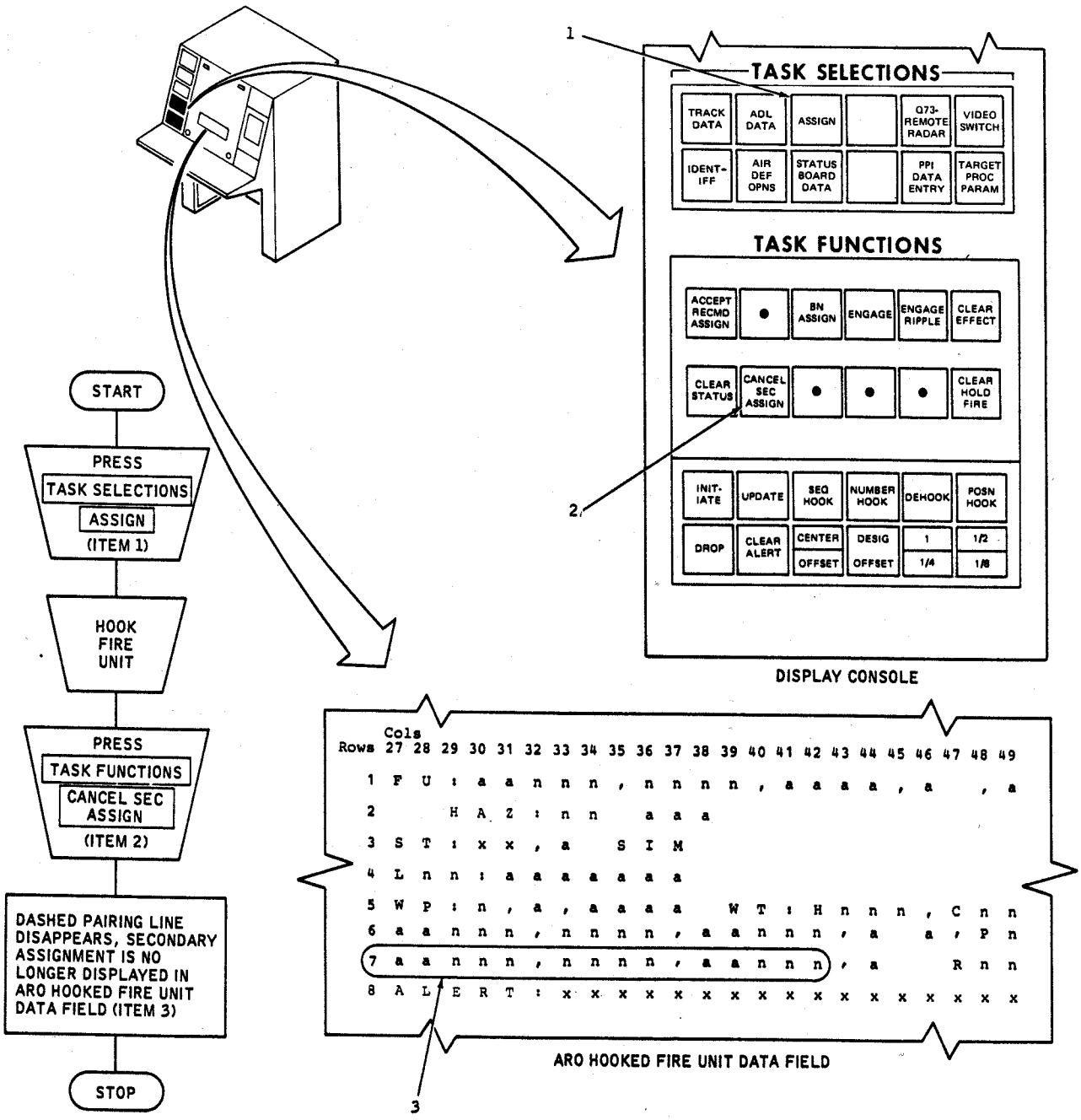


NOTES:

1. ACCEPTING RECOMMENDED ASSIGNMENT IS NOT VALID ON A JAM STROBE. JAM STROBE ENGAGEMENT IS ONLY POSSIBLE WITH ATDL-1 FUs.
2. ASSIGN IS VALID ONLY IN TACTICAL OR TRACKING/TACTICAL MODE.
3. AIR DEF OPNS IS VALID ONLY IN TRACKING/TACTICAL MODE.
4. ARO HOOKED TRACK MESSAGE MUST CONTAIN A PRIMARY RECOMMENDED FU (ITEM 12) OR BATTALION/PATRIOT ICC (ITEM 16).
5. USE OF SITE/FU ADDRESS REQUIRES THE USE OF ADL DATA
6. ADL DATA IS VALID ONLY IN TRACKING, TRACTICAL, OR TRACKING/TACTICAL MODE.
7. ILLEGAL IF SITE/FU IS CURRENTLY HOOKED.
8. ILLEGAL IF ADL ADRS PREVIOUSLY ENTERED.
9. ATTEMPTING TO SEND ENGAGE, ENGAGE RIPPLE, INVESTIGATE/ASSIGN OR CONVER COMMANDS TO A LASHE FU WILL RESULT IN FU LASHE ILLEGAL ACTION.
10. OMIT THIS STEP IF DESIRED TASK SELECTION IS ALREADY SELECTED.
11. ENGAGE COMMAND WILL DESIGNATE SHOOT-LOOK-SHOOT METHOD OF FIRE. ENGAGE RIPPLE WILL DESIGNATE RIPPLE FIRE METHOD.
12. ATTEMPTING TO SEND ENGAGE OR ENGAGE RIPPLE COMMANDS ON A HOSTILE OR UNKNOWN TRACK IN A HOLD ZONE WILL RESULT IN TK IN HZ ILLEGAL ACTION (ITEM 17). IF THE TRACK IS HOSTILE AND THE COMMAND WAS ORIGINALLY RECEIVED VIA ADL, A MANUAL ASSIGN WILL SEND THE COMMAND. IF THE TRACK IS UNKNOWN, THE COMMAND CANNOT BE SENT. IF THE TRACK IS HOSTILE, AND THE COMMAND DID NOT ORIGINATE FROM ADL, THE COMMAND CANNOT BE SENT. ATTEMPTING TO ASIGN AN UNKNOWN TRACK IN A TIGHT ZONE IF THE COMMAND WAS ORIGINALLY RECEIVED VIA ADL WILL RESULT IN TK N/HST ILLEGAL ACTION (ITEM 17).
13. A CANTCO OR CANTPRO REPLY WILL CANCEL THE PAIRING LINE.
14. ATDL-1 GENERAL ADDRESS ENTRY QH AND TADIL B GENERAL ADDRESS 177 ARE INVALID ENTRIES.
15. IN MASTER BATTALION, HOOKED TRACK DATA FIELD DISPLAYS FU ADDRESS AND RECOMMENDED FIRE MODE OR BATTALION/PATRIOT ICC SITE ADDRESS (ITEM 12).
16. FOR TRACK IN HOLD OR TIGHT ZONE, RETRANSMISSION OF COMMAND MAY BE NECESSARY. REFER TO LOCAL SOP.
17. A FU IN SECTOR SCAN IS ELIMINATED FROM CONSIDERATION FOR AUTOMATIC OR RECOMMENDED ASSIGNMENT. OPERATOR CAN SEND MANUAL ASSIGNMENT COMMAND TO FU.
18. [ ] INDICATES EQUIPMENT MARKING.

MS 558754C

Figure 4-10. Assign Weapons/Bns (Sheet 2 of 2)

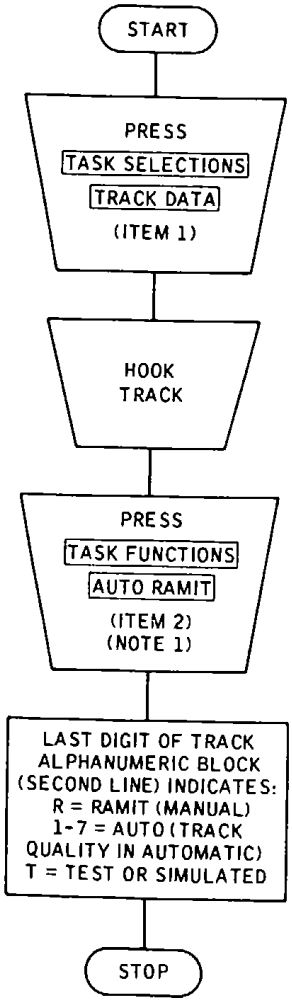


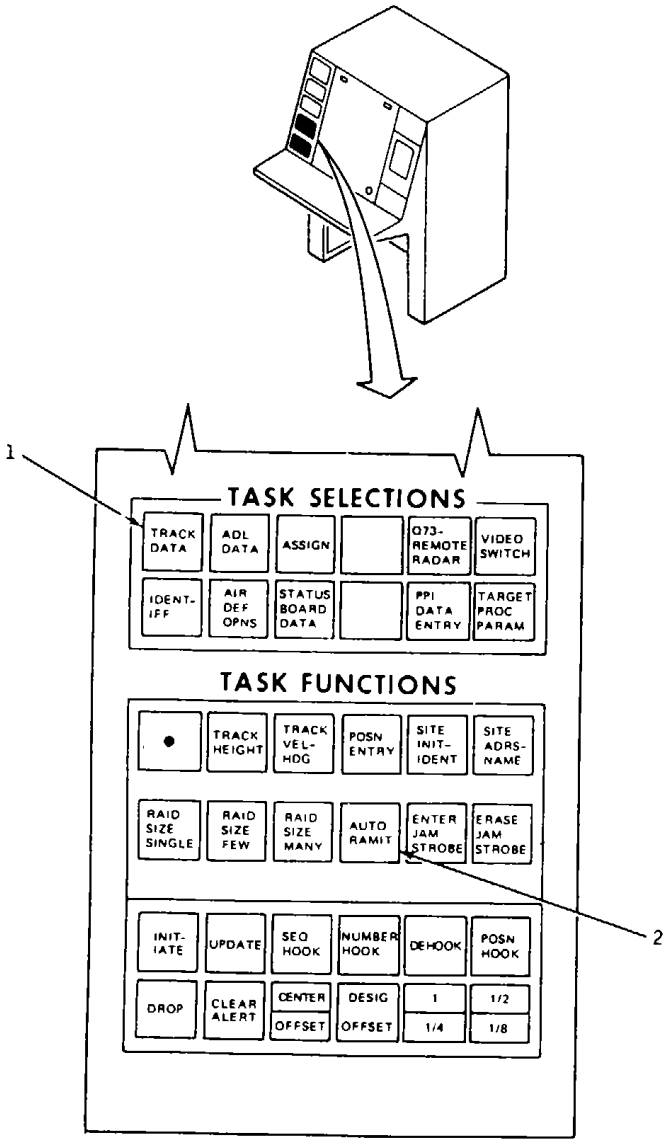
NOTES:

1. VALID IN TACTICAL AND TRACKING/TACTICAL MODE ONLY.
2. VALID IN BATTALION SYSTEM ONLY.
3. [ ] INDICATES EQUIPMENT MARKING.

MS 196715C

Figure 4-10.1. Cancel Secondary Assignment



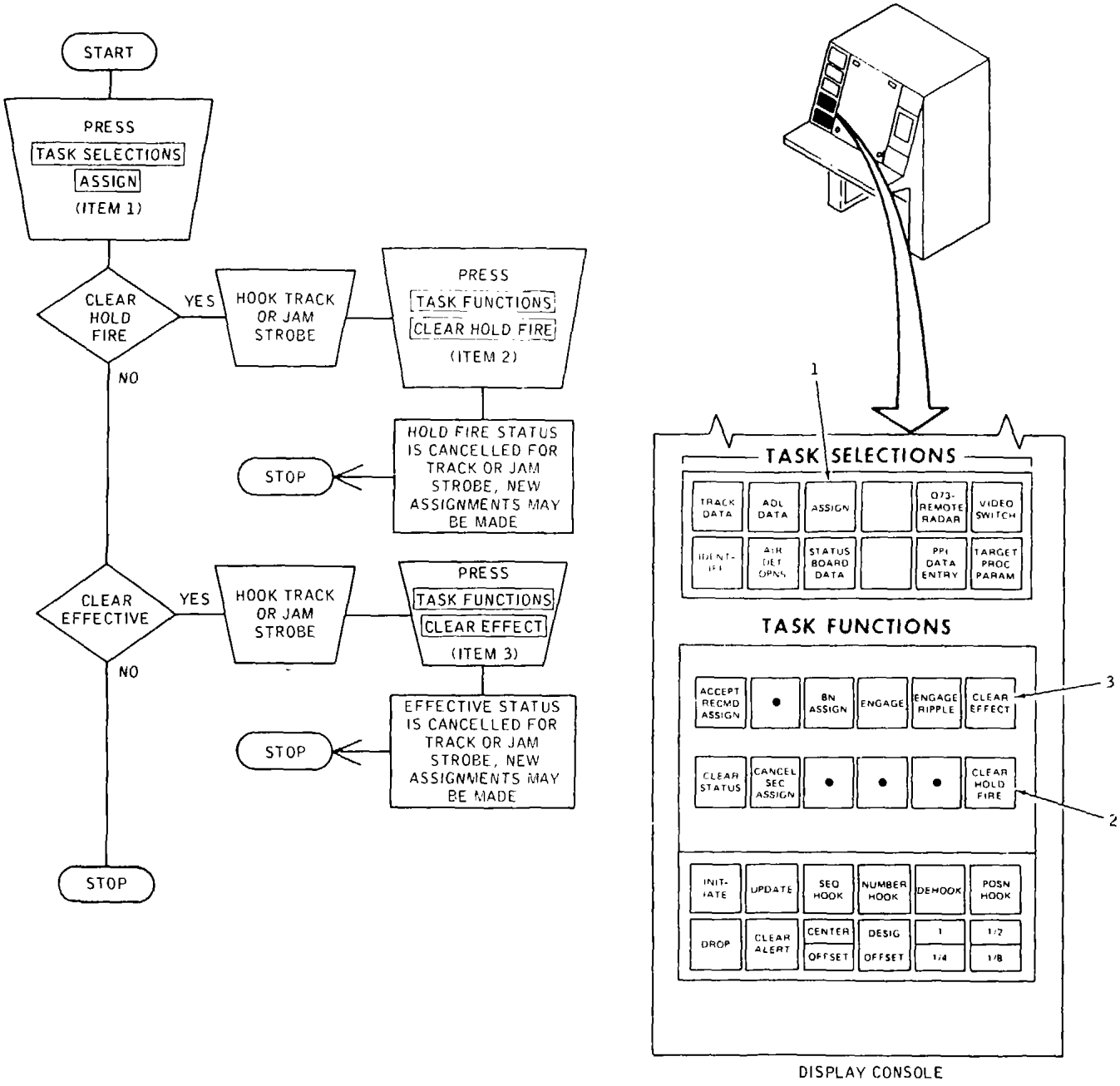


NOTES:

1. TRACKS ARE NORMALLY TRACKED IN THE AUTO MODE. TRACK SHOULD BE CHANGED TO THE RAMIT MODE (MANUAL) WHENEVER TRACK QUALITY IS SIGNIFICANTLY REDUCED.
2. VALID ONLY IN TRACKING OR TRACKING/TACTICAL MODE.
3. [ ] INDICATES EQUIPMENT MARKING.

MS 013182

Figure 4-11. Change Tracking Modes

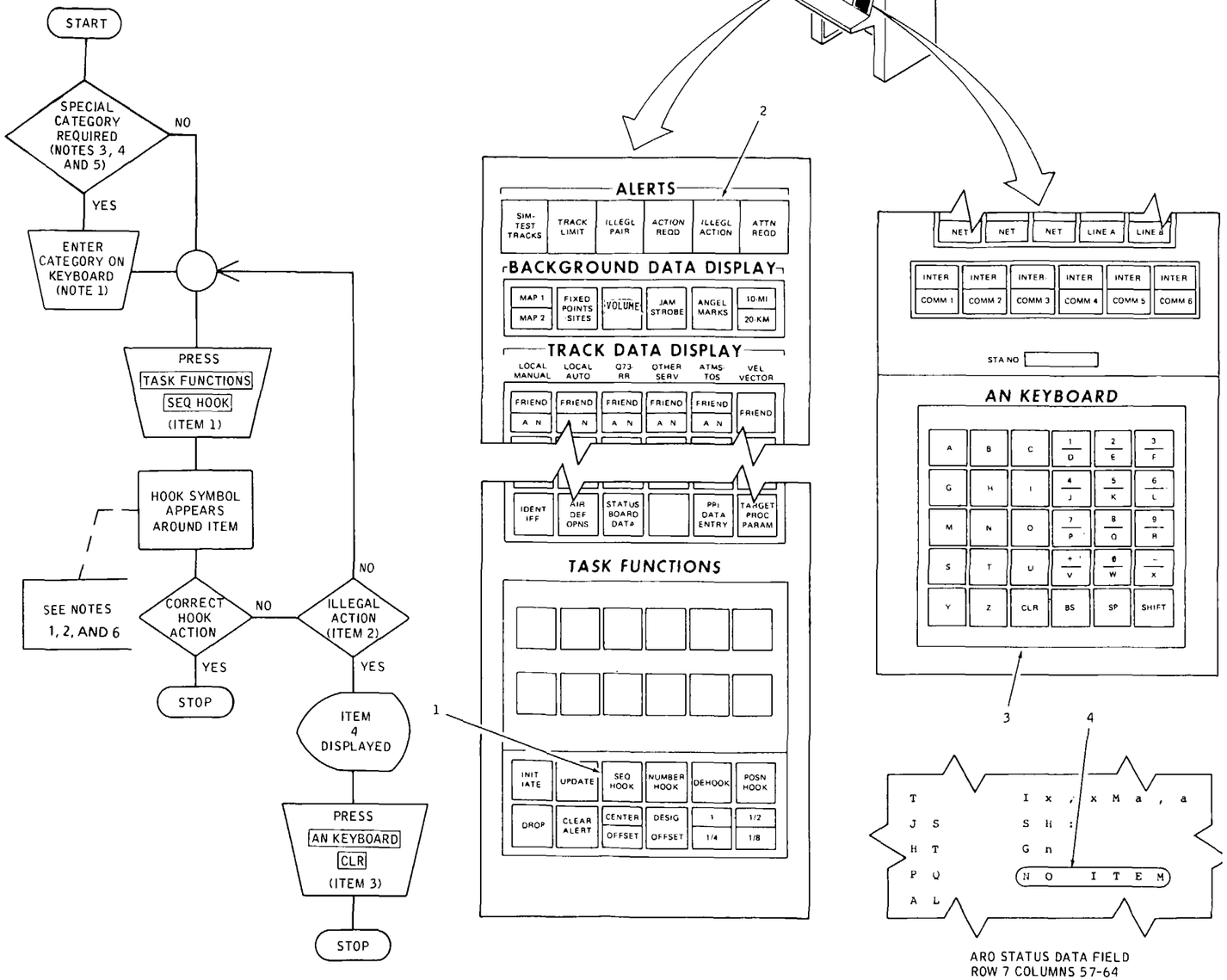


NOTES:

1. VALID ONLY IN TACTICAL OR TRACKING TACTICAL MODE.
2. [ ] INDICATES EQUIPMENT MARKING.

MS 195949E

Figure 4-12. Clear: Hold Fire and Effective

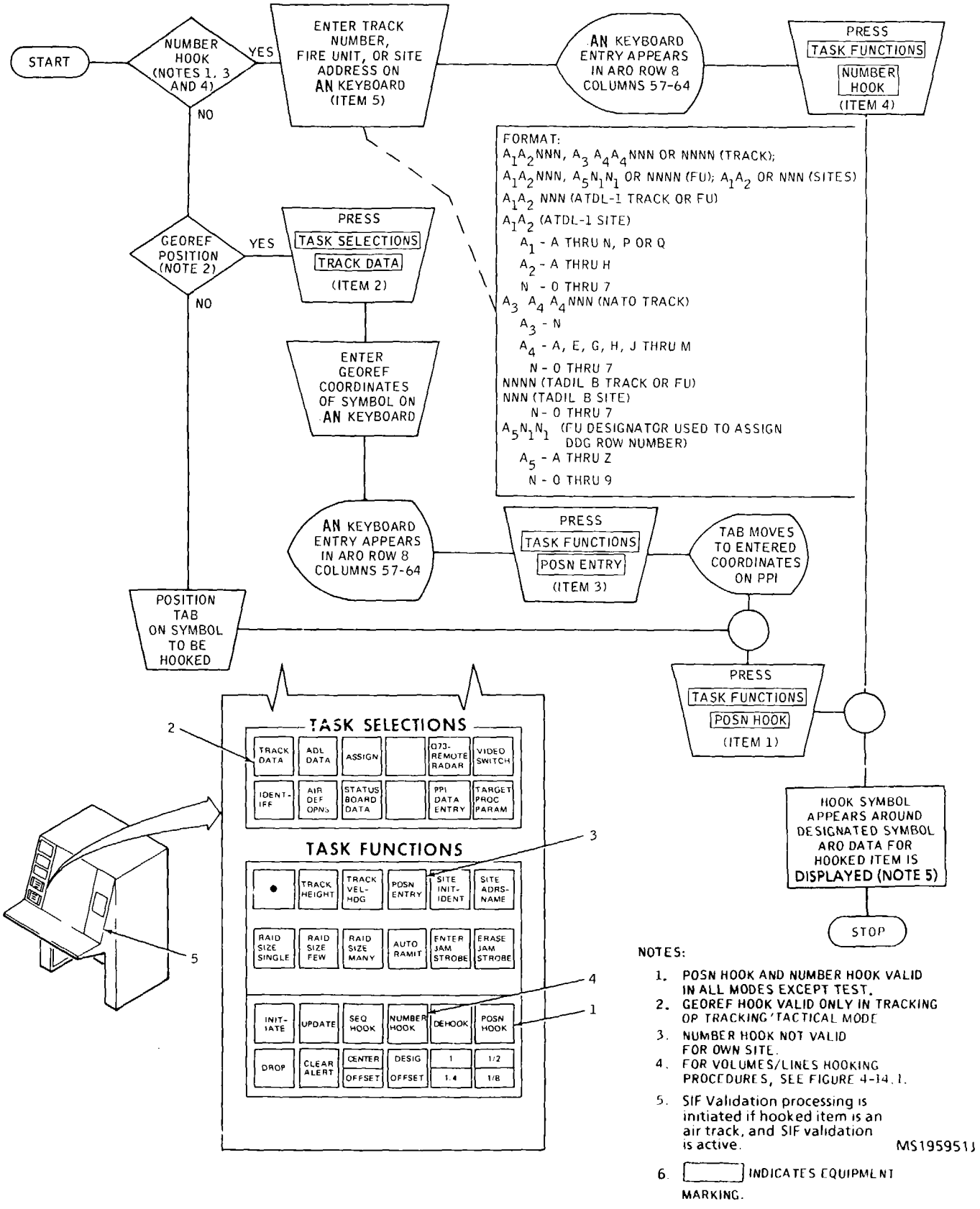


NOTES

1. SEQUENCE HOOK IS PERFORMED ACCORDING TO CRITERIA ENTERED IN KEYBOARD AS FOLLOWS: 5 CRITERIA OR T MAY BE ENTERED. DEFAULT IS T
   - L = LOCAL TRACKS
   - T = ALL CENTRAL FILE ITEMS
   - E = JAM STROBES/EW TRACTS/ECM FIXES/ ESM FIXES INTEL DATA TRACKS
   - H = HIGH THREAT TRACKS
   - P = POOR QUALITY TRACKS (BATTALION ONLY)
   - A = ALERTS-(NO PP1 OR SIM-TEST TRACKS ALERTS ARE INCLUDED)
   - F = FIRE UNITS
2. ADPE PRIORITIZES SEQUENCE HOOK CRITERIA IN THE FOLLOWING ORDER: A, E, F, H, L, P
3. VALID IN ALL MODES EXCEPT TEST.
4. *NOT VALID FOR VOLUMES/LINES.*
5. NOT VALID FOR OWN SITE.
6. SIF VALIDATION PROCESSING IS INITATED IF HOOKED ITEM IS AN AIR TRACK, AND SIF VALIDATION IS ACTIVE
7. ▭ INDICATES EQUIPMENT MARKING

MS 427997C

Figure 4-13. Console Hooking Procedures - Sequence Hook



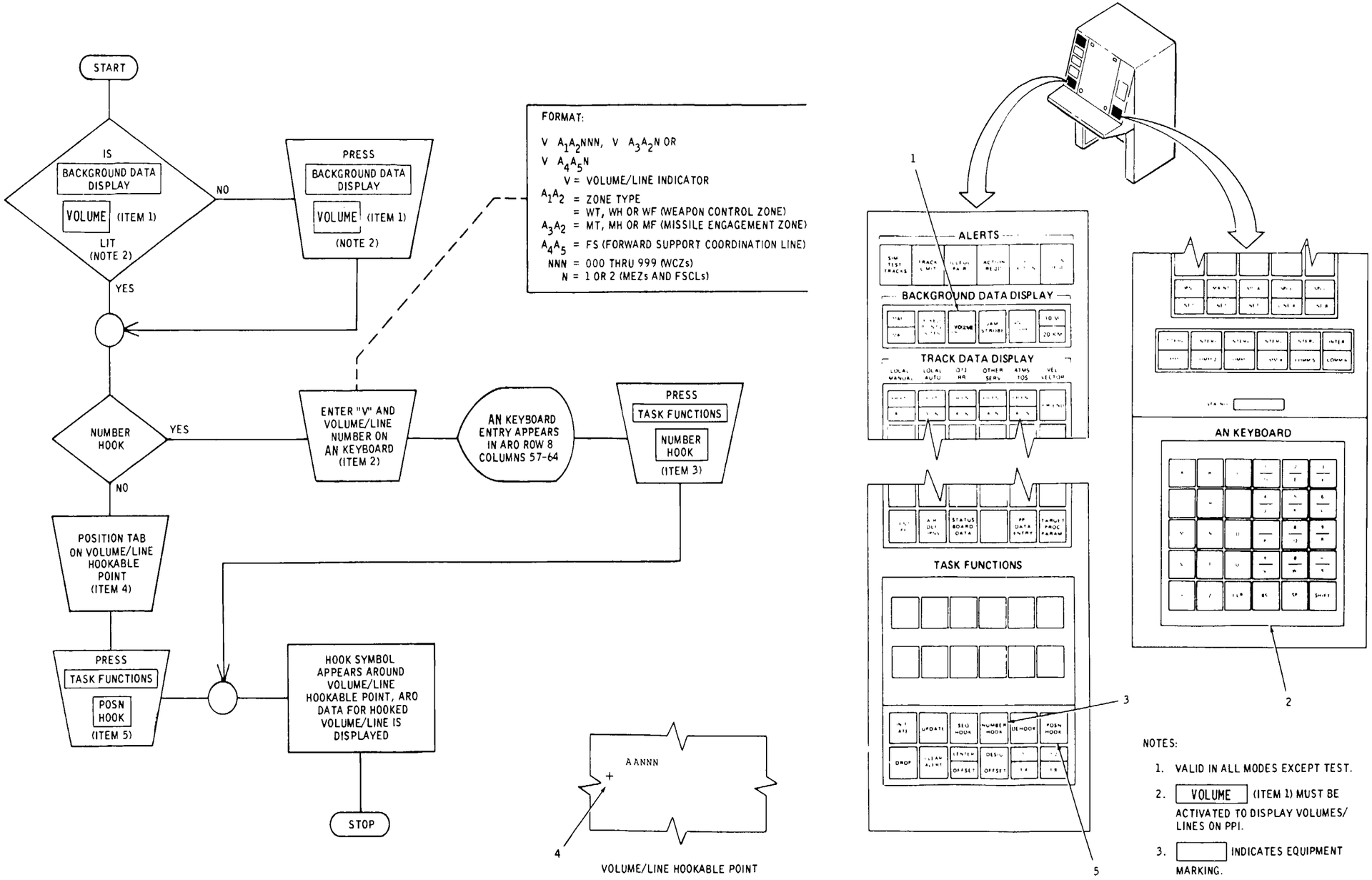
NOTES:

1. POSN HOOK AND NUMBER HOOK VALID IN ALL MODES EXCEPT TEST.
2. GEOREF HOOK VALID ONLY IN TRACKING OP TRACKING TACTICAL MODE
3. NUMBER HOOK NOT VALID FOR OWN SITE.
4. FOR VOLUMES/LINES HOOKING PROCEDURES, SEE FIGURE 4-14.1.
5. SIF Validation processing is initiated if hooked item is an air track, and SIF validation is active.
6. [ ] INDICATES EQUIPMENT MARKING.

MS1959511

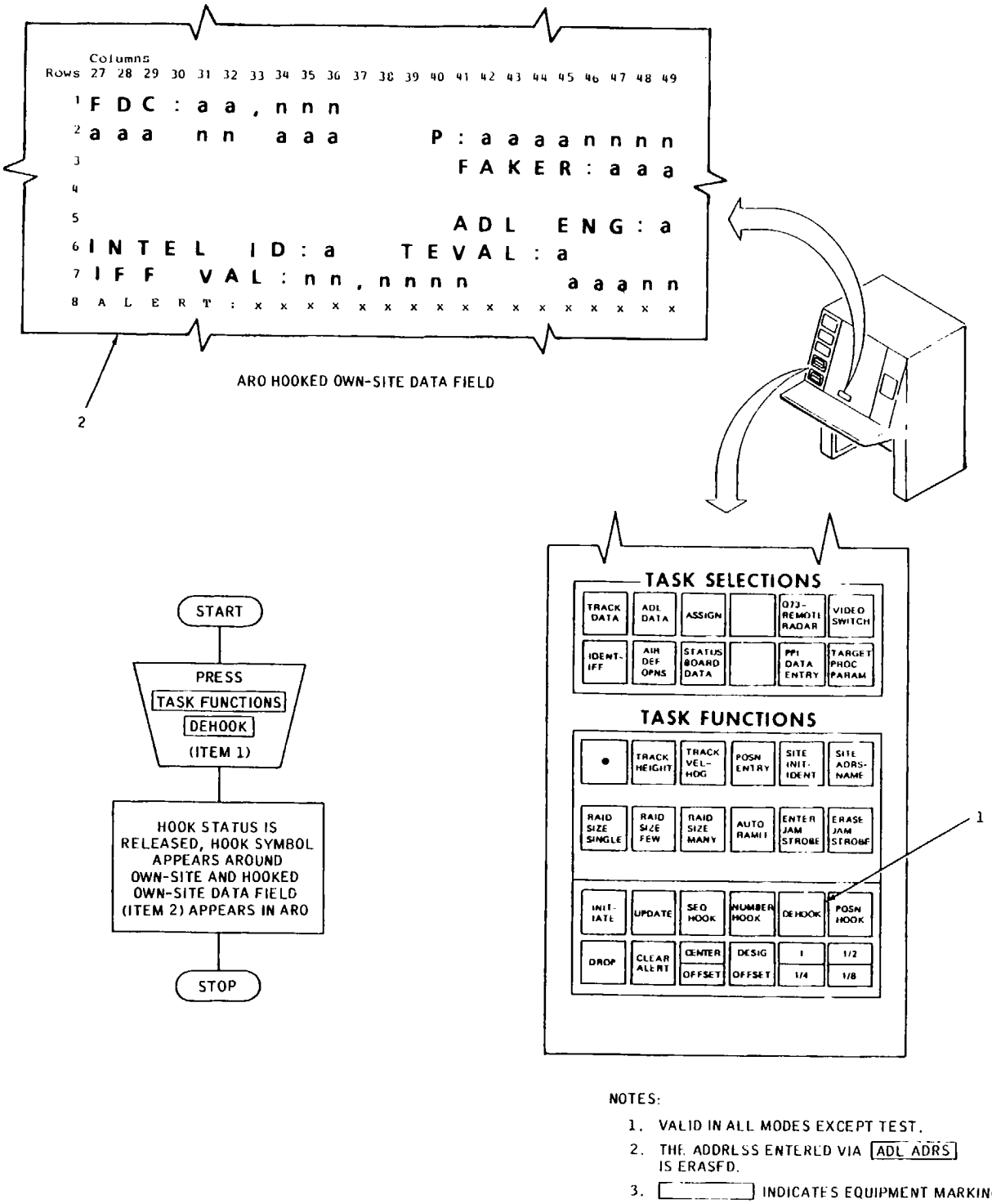
MS 195951J

Figure 4-14. Console Hooking Procedures - Number, GEOREF, and Position Hook



MS558755A

Figure 4-14.1. Console Hooking Procedures - Volume/Lines



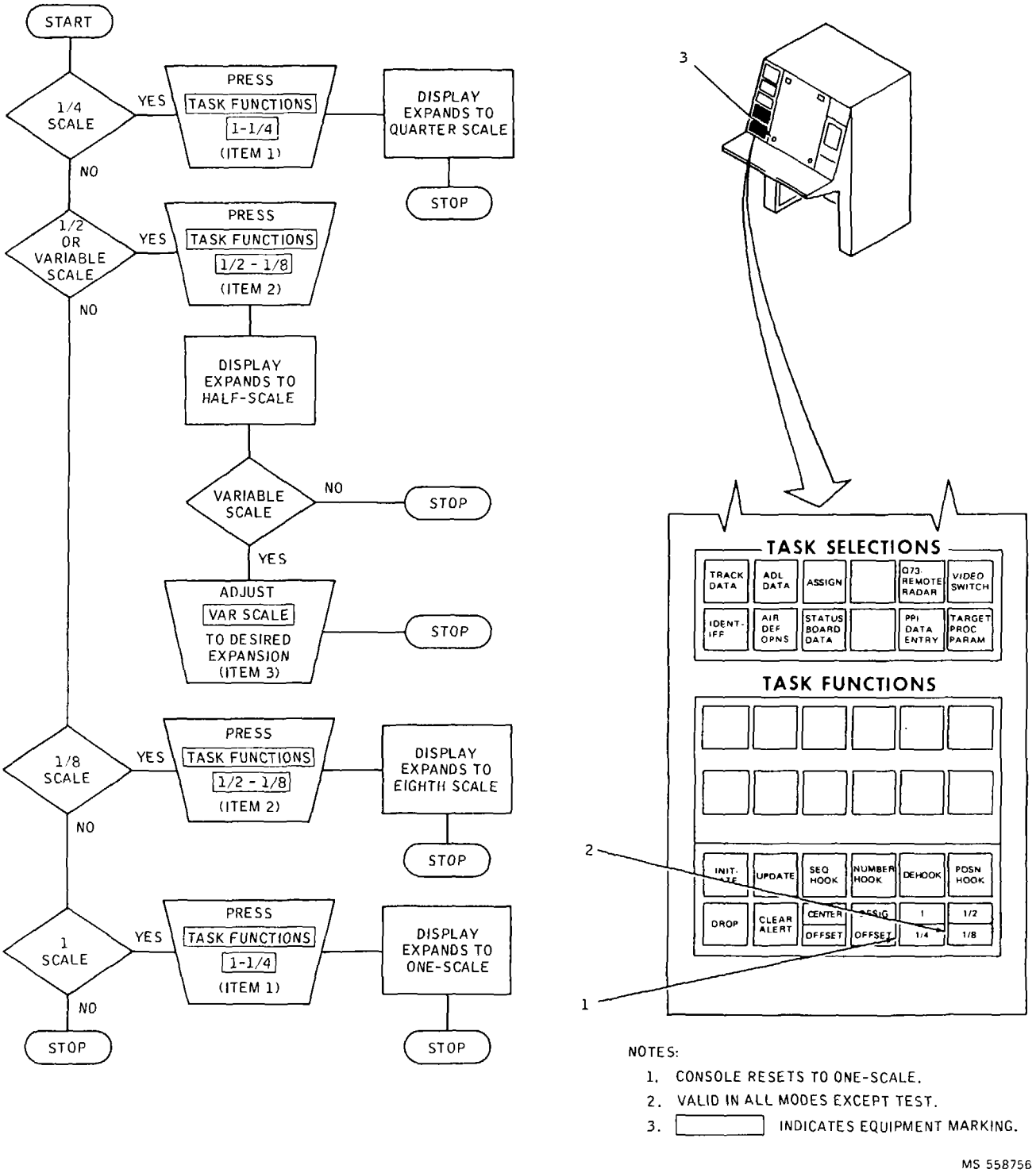
NOTES:

1. VALID IN ALL MODES EXCEPT TEST.
2. THE ADDRESS ENTERED VIA [ADL ADRS] IS ERASED.
3. [ ] INDICATES EQUIPMENT MARKING.

MS 427999C

Figure 4-15. Console Hooking Procedures - Dehook

Figure 4-16 deleted



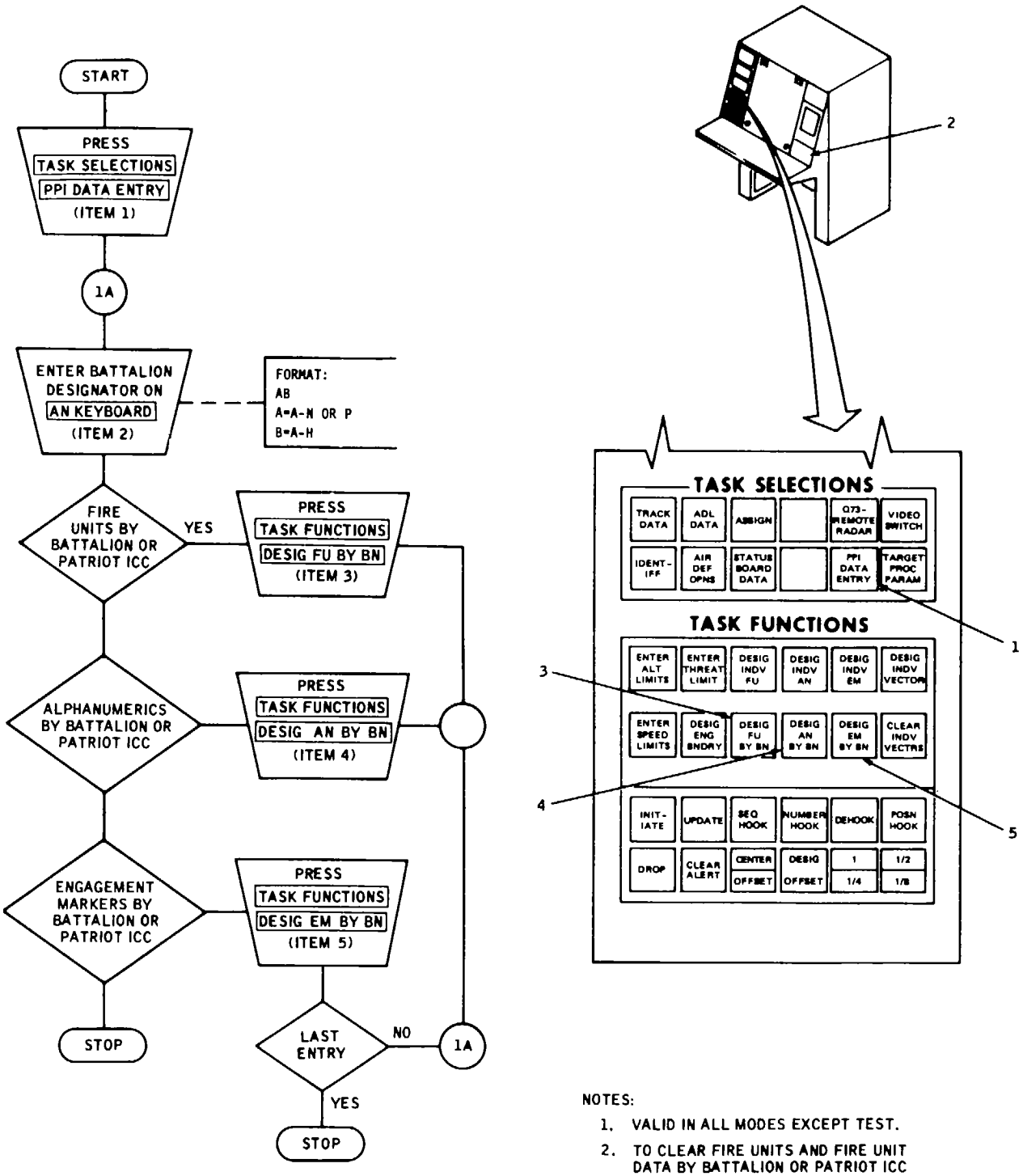
NOTES:

1. CONSOLE RESETS TO ONE-SCALE.
2. VALID IN ALL MODES EXCEPT TEST.
3. ☐ INDICATES EQUIPMENT MARKING.

MS 558756

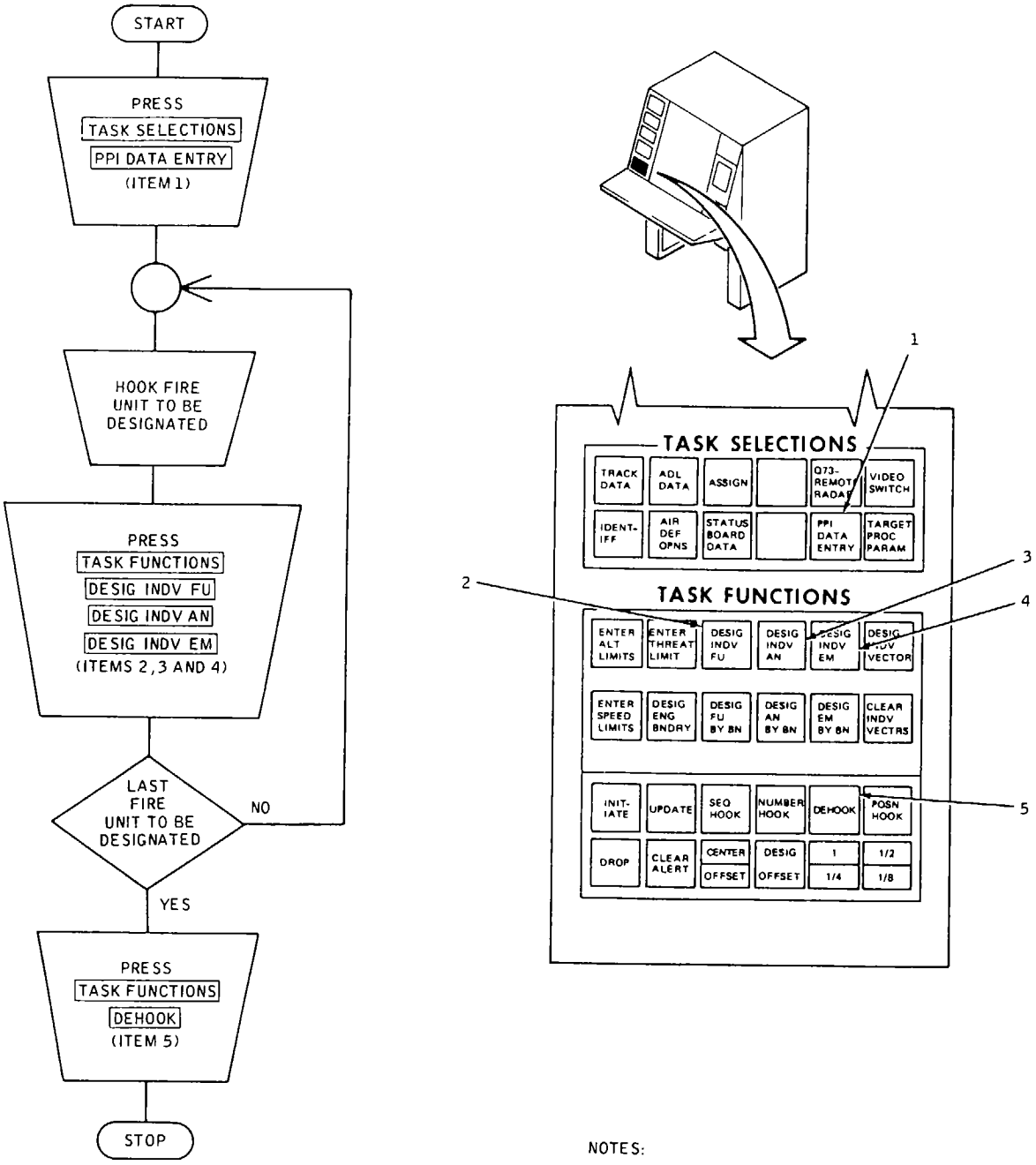
MS 558756

Figure 4-17. Designate Expansion Scale



MS 428000B

Figure 4-18. Designate Fire Units and Fire Unit Data by Battalion

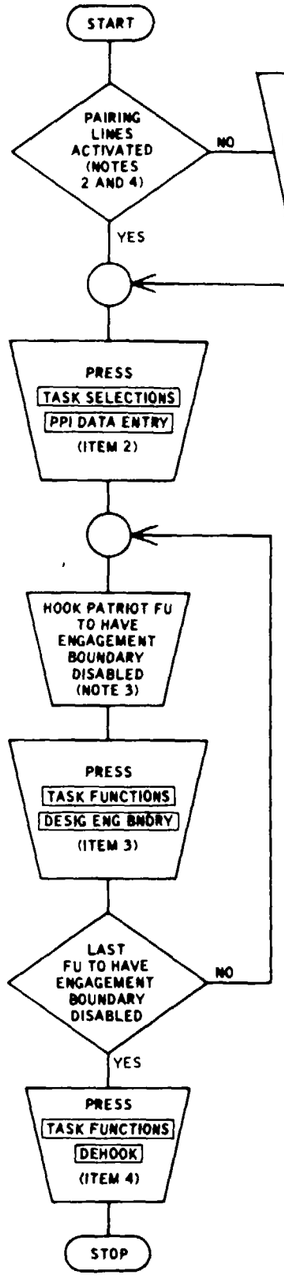


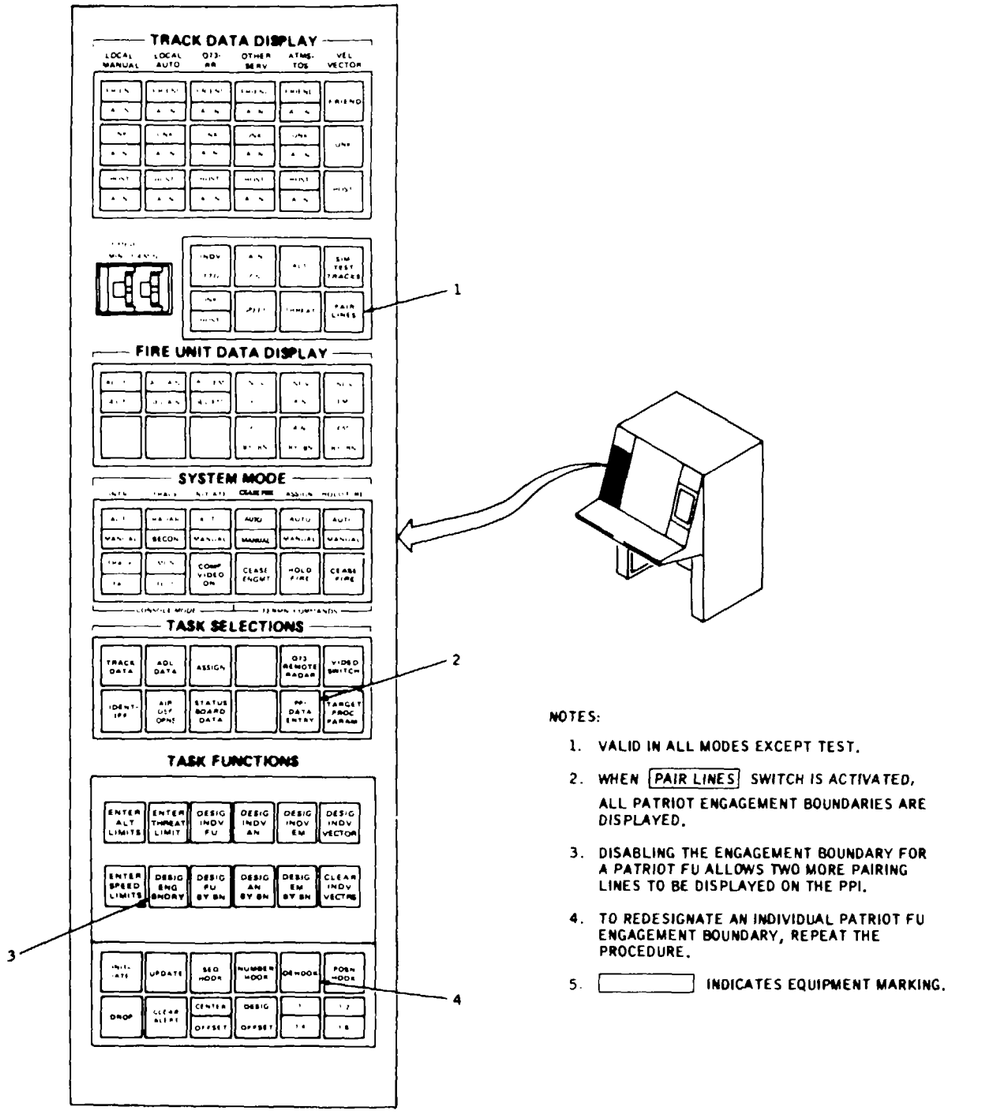
NOTES:

1. VALID IN ALL MODES EXCEPT TEST.
2. TO CLEAR INDIVIDUAL FIRE UNIT, REPEAT ENTIRE PROCEDURE.
3. [ ] INDICATES EQUIPMENT MARKING.

MS 428001

Figure 4-19. Designate Individual Fire Unit and Associated Data for Display





NOTES:

1. VALID IN ALL MODES EXCEPT TEST.
2. WHEN [PAIR LINES] SWITCH IS ACTIVATED, ALL PATRIOT ENGAGEMENT BOUNDARIES ARE DISPLAYED.
3. DISABLING THE ENGAGEMENT BOUNDARY FOR A PATRIOT FU ALLOWS TWO MORE PAIRING LINES TO BE DISPLAYED ON THE PPI.
4. TO REDESIGNATE AN INDIVIDUAL PATRIOT FU ENGAGEMENT BOUNDARY, REPEAT THE PROCEDURE.
5. [ ] INDICATES EQUIPMENT MARKING.

MS 428002 A

Figure 4-19.1. Disable/Designate Individual PATRIOT FU Engagement Boundary

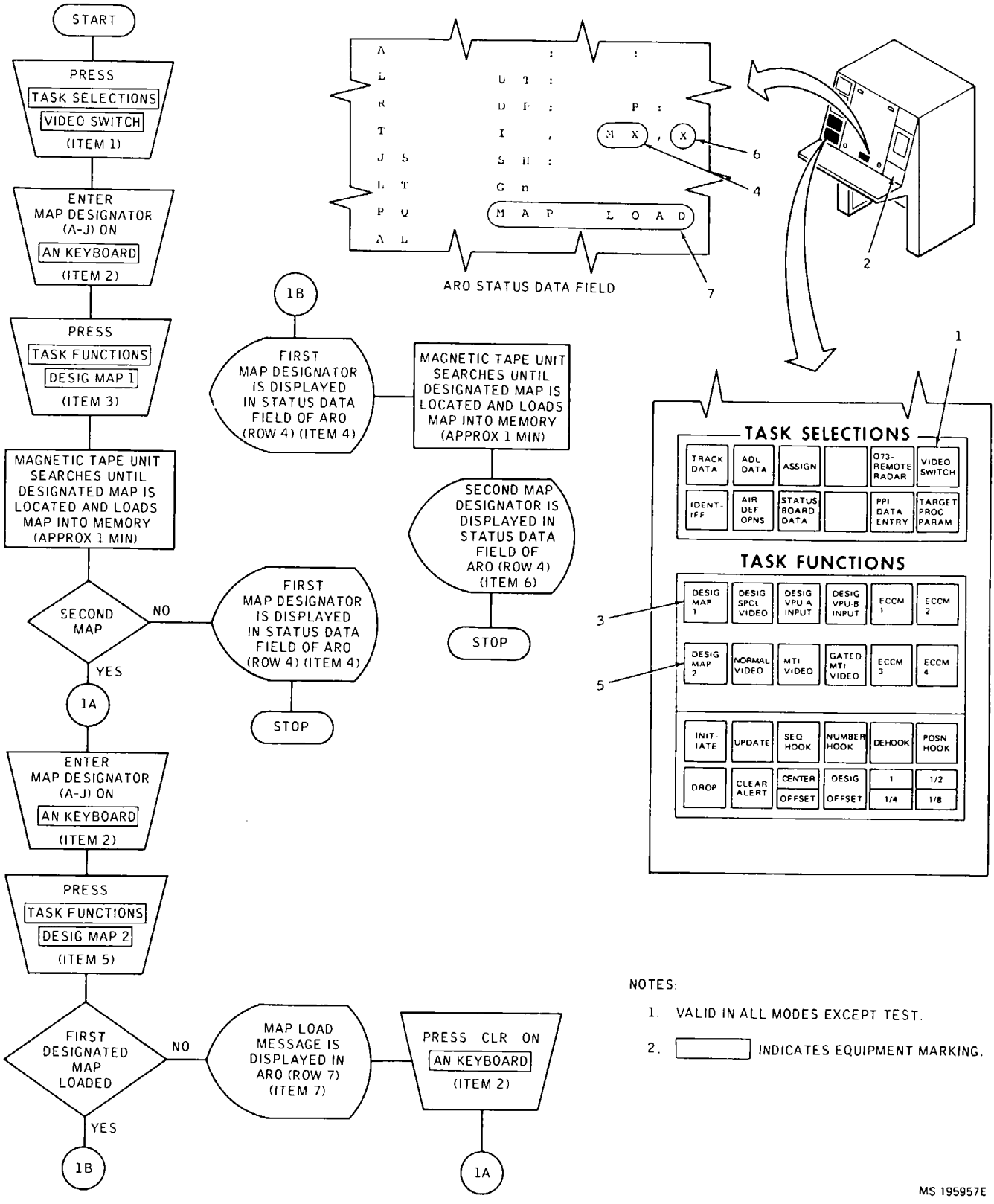
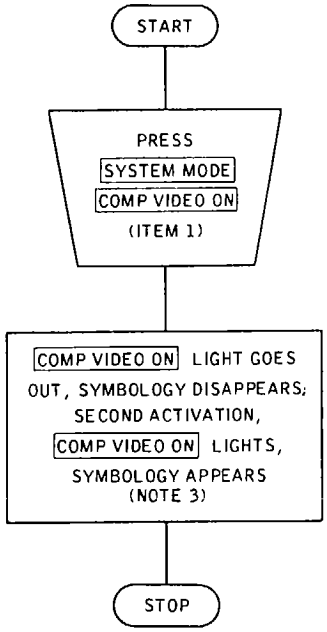
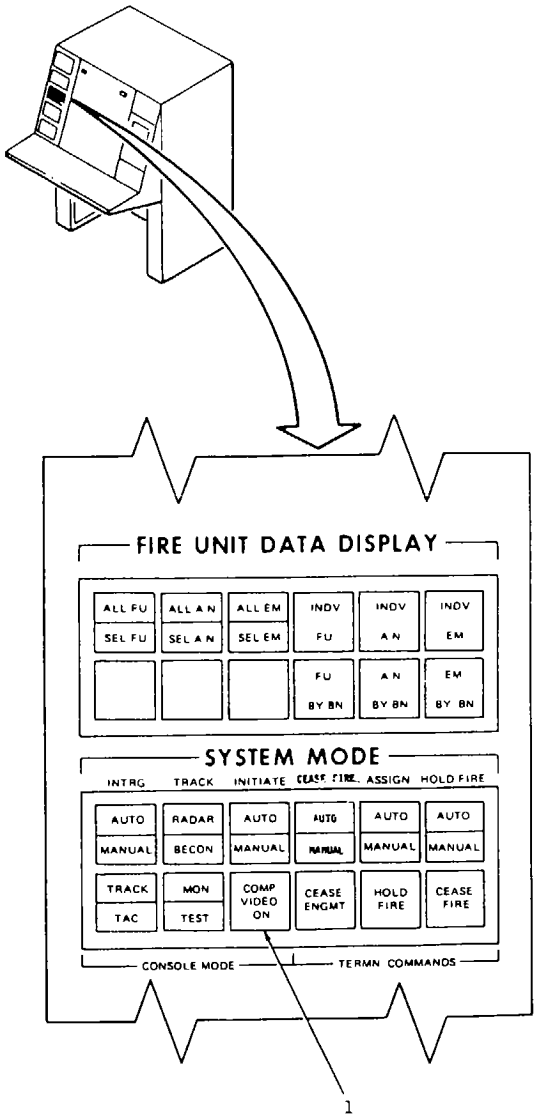


Figure 4-20. Designate Maps for Display



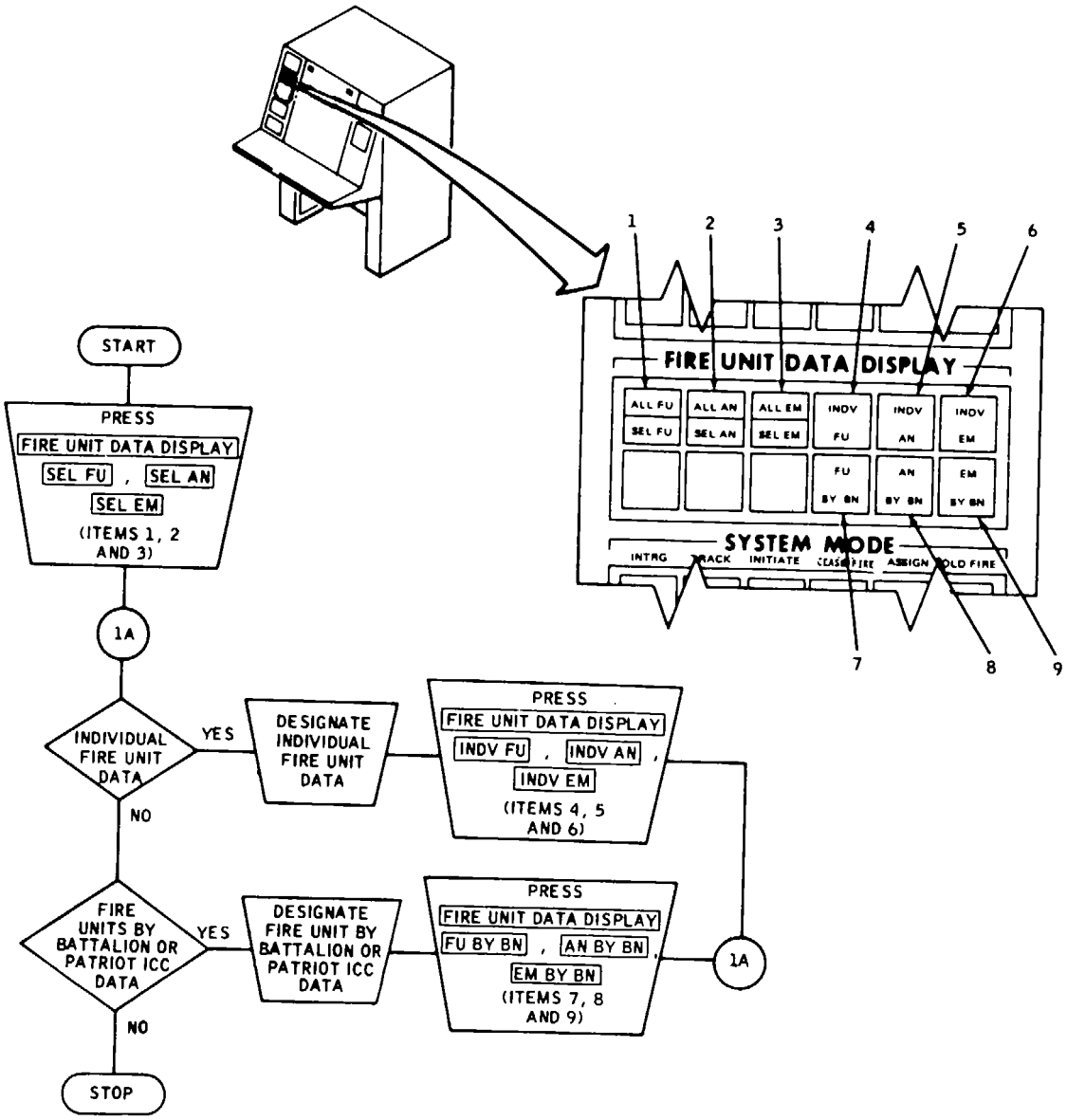


NOTES:

1. ACTIVATED DURING INITIALIZATION.
2. VALID IN ALL MODES.
3. DEACTIVATING COMPRESSED VIDEO CAN EXTEND PPI RADAR DISPLAY RANGE, WHEN SYSTEM IS ATTACHED TO SOME TYPES OF RADARS.
4. [ ] INDICATES EQUIPMENT MARKING.

MS 428003A

Figure 4-21. Display/Deactivate Compressed Video

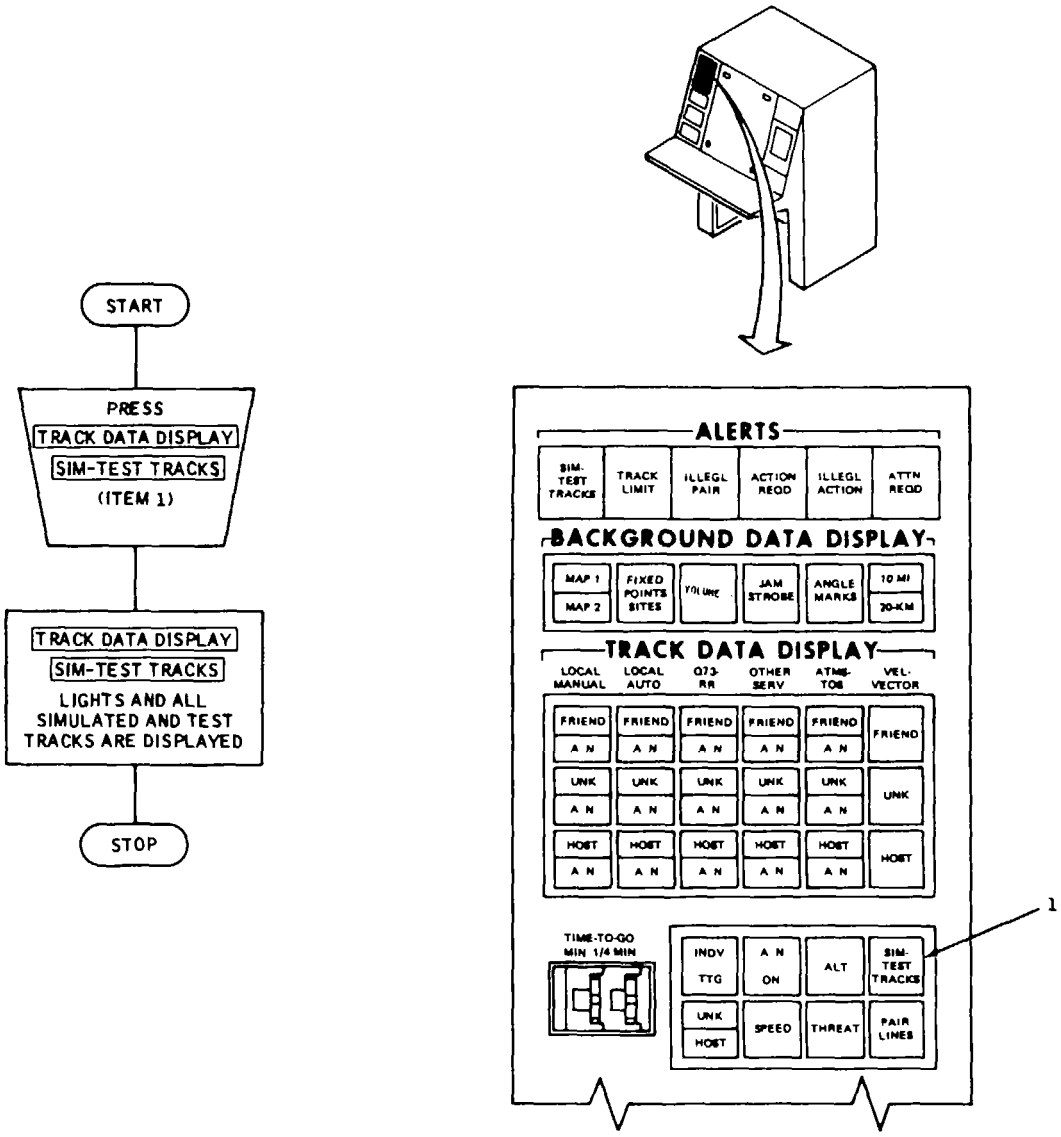


NOTES:

1. VALID IN ALL MODES
2. [ ] INDICATES EQUIPMENT MARKINGS.

MS202494B

Figure 4-22. Display Selected Fire Units and Fire Unit Data

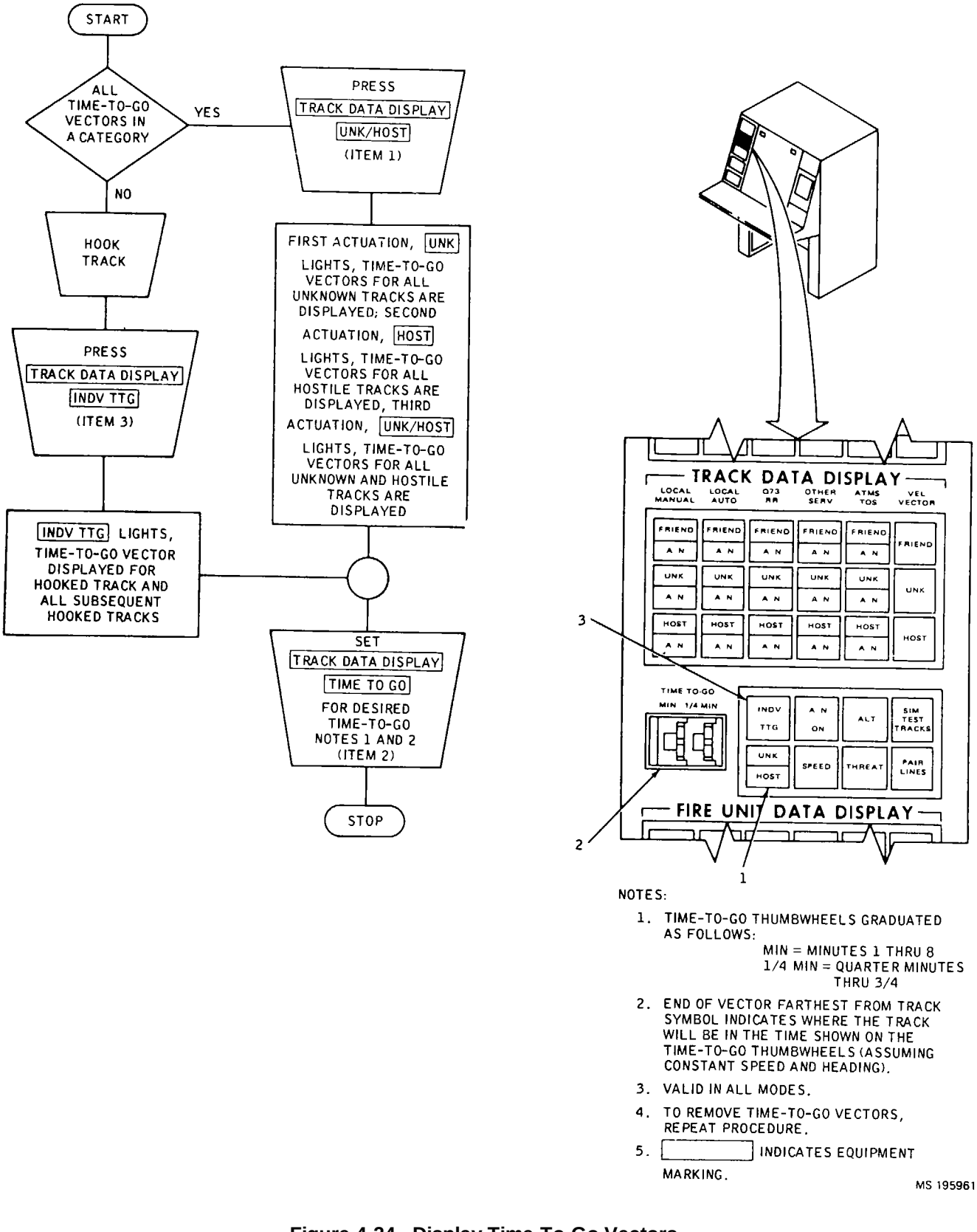


NOTES:

1. VALID IN ALL MODES.
2. TO INHIBIT DISPLAY OF SIMULATED AND TEST TRACKS, REPEAT PROCEDURE (DOES NOT INHIBIT DISPLAY OF THE ONE OR TWO TEST TRACKS IN THE SYSTEM USED FOR FAULT CHECKS).
3. [ ] INDICATES EQUIPMENT MARKINGS.

MS 013204

Figure 4-23. Display Simulated and Test Tracks

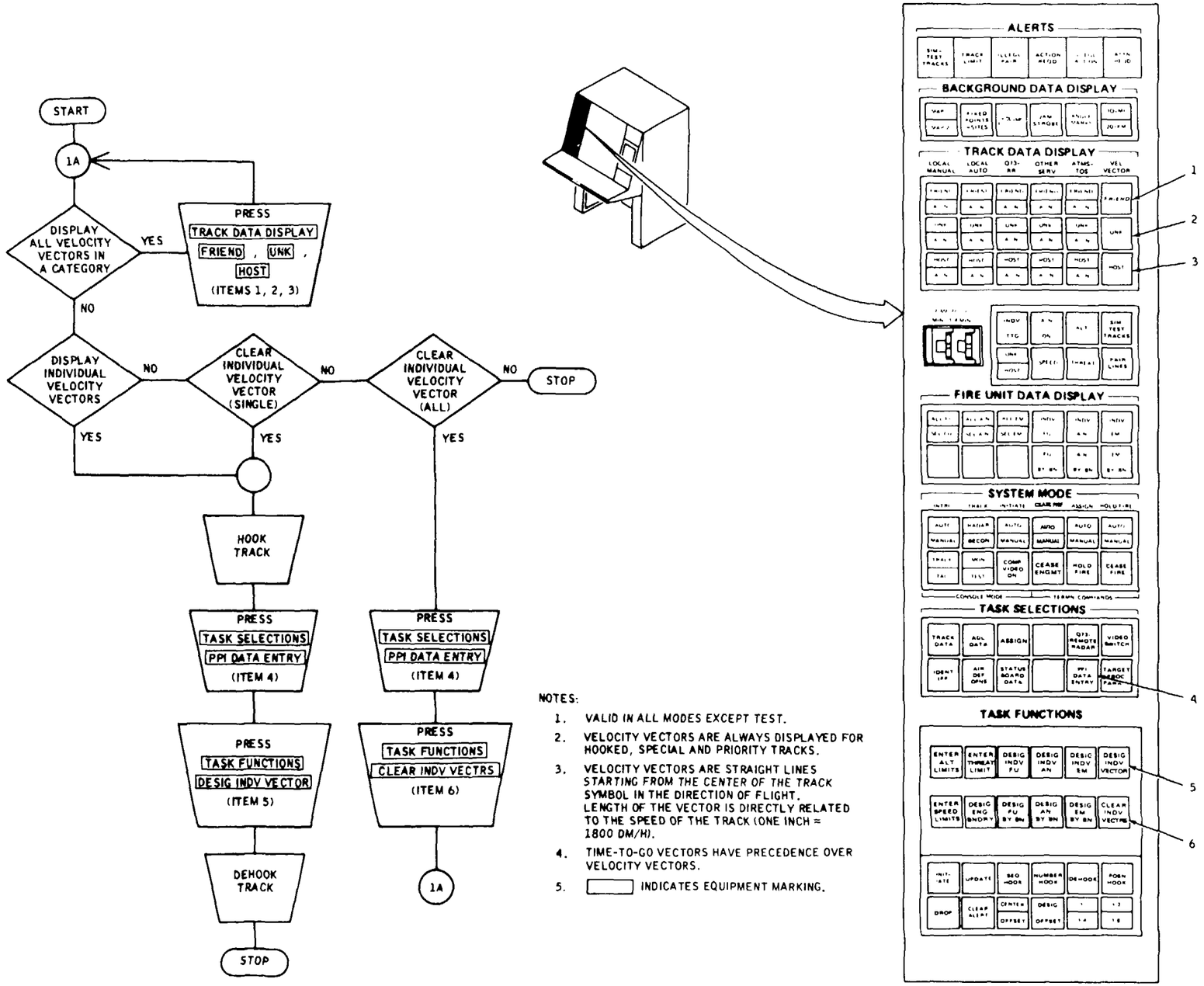


NOTES:

1. TIME-TO-GO THUMBWHEELS GRADUATED AS FOLLOWS:
   MIN = MINUTES 1 THRU 8
   1/4 MIN = QUARTER MINUTES THRU 3/4
2. END OF VECTOR FARTHEST FROM TRACK SYMBOL INDICATES WHERE THE TRACK WILL BE IN THE TIME SHOWN ON THE TIME-TO-GO THUMBWHEELS (ASSUMING CONSTANT SPEED AND HEADING).
3. VALID IN ALL MODES.
4. TO REMOVE TIME-TO-GO VECTORS, REPEAT PROCEDURE.
5. [ ] INDICATES EQUIPMENT MARKING.

MS 195961

Figure 4-24. Display Time-To-Go Vectors

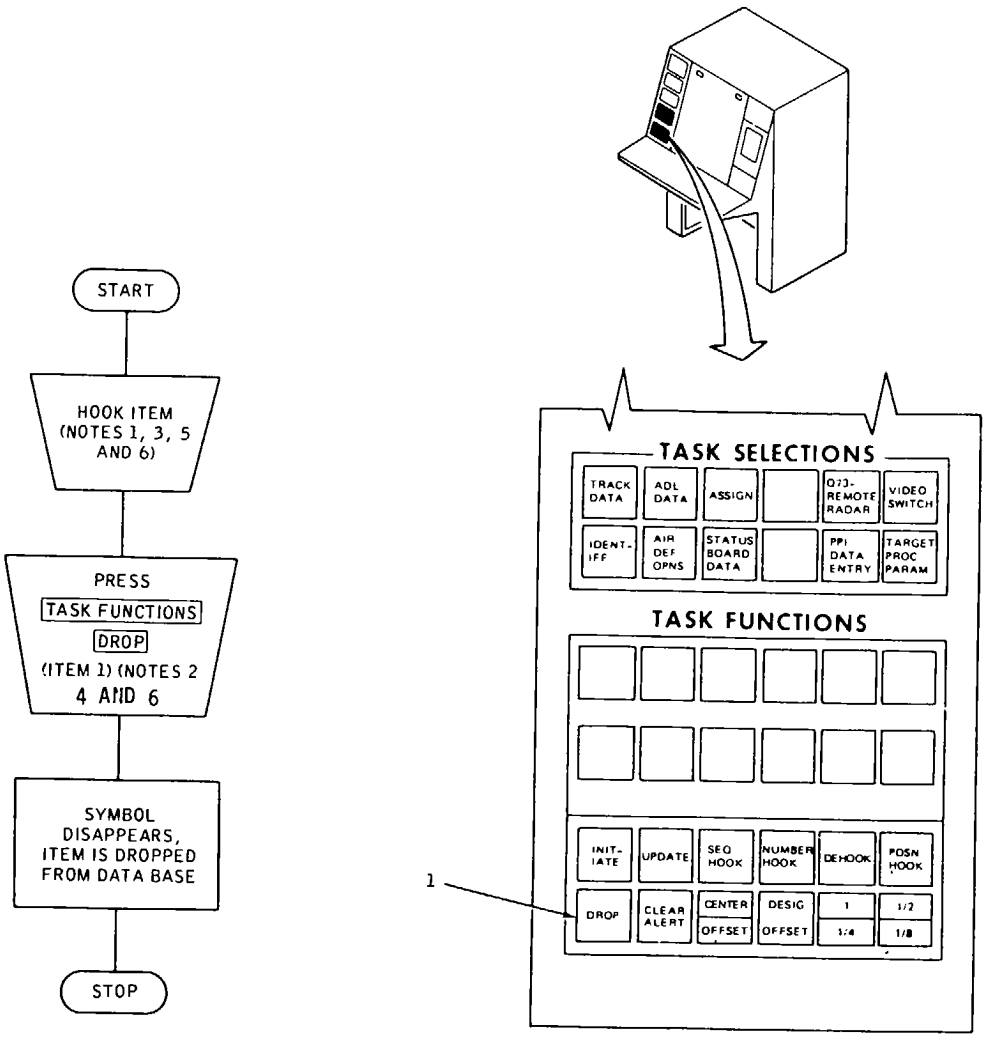


NOTES:

1. VALID IN ALL MODES EXCEPT TEST.
2. VELOCITY VECTORS ARE ALWAYS DISPLAYED FOR HOOKED, SPECIAL AND PRIORITY TRACKS.
3. VELOCITY VECTORS ARE STRAIGHT LINES STARTING FROM THE CENTER OF THE TRACK SYMBOL IN THE DIRECTION OF FLIGHT. LENGTH OF THE VECTOR IS DIRECTLY RELATED TO THE SPEED OF THE TRACK (ONE INCH = 1800 DM/H).
4. TIME-TO-GO VECTORS HAVE PRECEDENCE OVER VELOCITY VECTORS.
5. [ ] INDICATES EQUIPMENT MARKING.

MS 428035A

Figure 4-25. Display Velocity Vectors

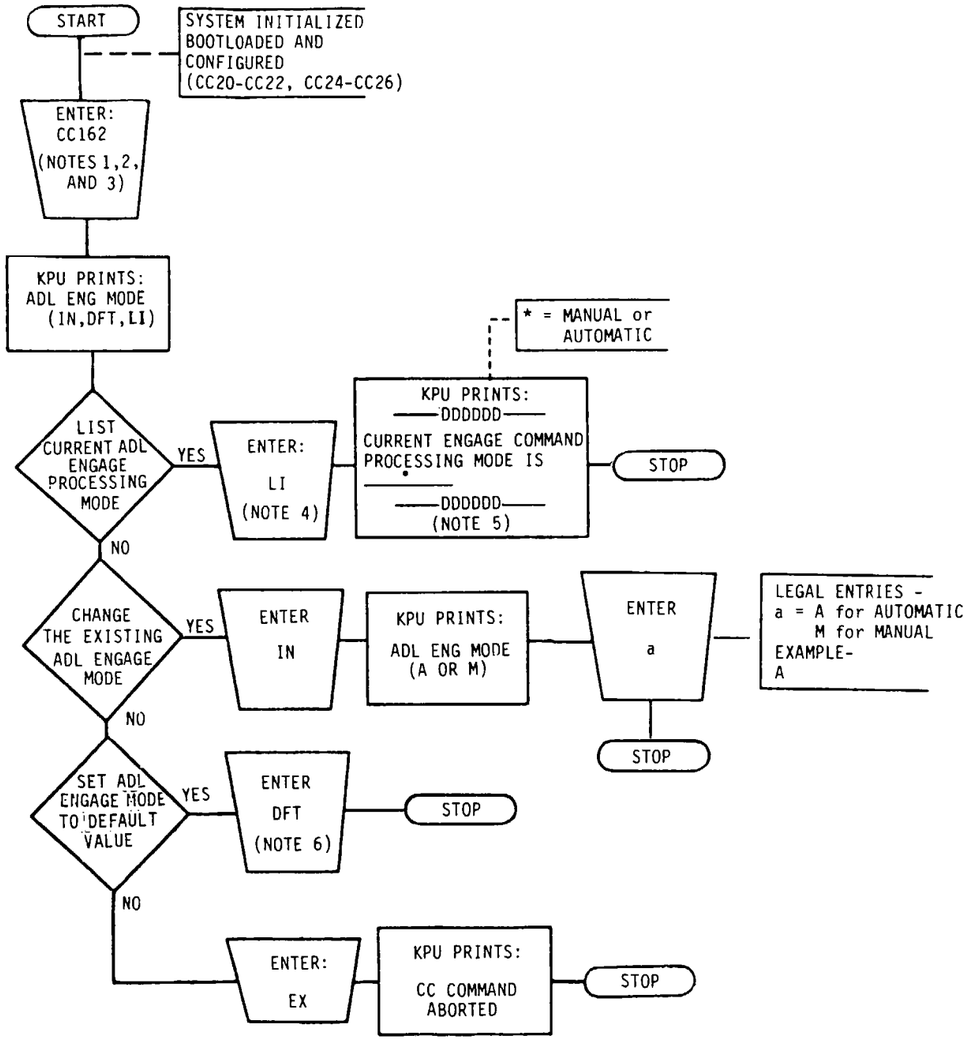


NOTES:

1. ON SIM HAWK 2 FIRE UNIT, UPPER SYMBOL MUST BE HOOKED.
2. TWO DROP ACTIONS, IN SUCCESSION, ARE REQUIRED TO DROP:
   (a) AN ATDL-1 FIRE UNIT. LINKS CAN BE ESTABLISHED AND EITHER SECTION CAN BE DROPPED.
   (b) A HIGH-THREAT (OR ENGAGED) TRACK. FOR TRACKS ENGAGED BY LOCAL FIRE UNIT, TERMINATE ENGAGEMENT BEFORE DROP ACTION.
   (c) AN ENGAGED JAM STROBE.
   (d) TRACK UNDERGOING AUTOMATIC CORRELATION.
   (e) BATTALION, LINK MUST BE DEACTIVATED BEFORE THE BATTALION CAN BE DROPPED.
3. VALID IN ALL MODES EXCEPT TEST AND MONITOR.
4. IF HOOKED ITEM IS A SITE OR FU REPORTING A JAM STROBE, BOTH THE SITE OR FU AND JAM STROBE ARE DROPPED; IF JAM STROBE IS ENGAGED JAM STROBE MUST BE DROPPED FIRST.
5. ATTEMPT TO DROP VOLUME/LINE WILL RESULT IN LIM ERR ILLEGAL ACTION.
6. IF SITE HAS AN ACTIVE LINK, THE LINK MUST BE DEACTIVATED FIRST BY CC101.
7. [ ] INDICATES EQUIPMENT MARKING.

MS 202106D

Figure 4-26. Drop Item (Tracks, Fire Units, sites, Jam Strobes)



NOTES:
1. COMMAND IS PLACED IN THE PROMPT-DRIVEN MODE BY ENTERING ONLY THE CC162.
2. OPERATOR HAS THE OPTION TO ENTER THE COMMAND IN A STRING FORMAT. EXAMPLE: CC162 IN A
3. TO ABORT CC162 DATA ENTRY (EXIT COMMAND WITHOUT SAVING DATA ENTERED), ENTER: EX. KPU PRINTS: CC COMMAND ABORTED.
4. IF A PREVIOUS CC162 HAS NOT BEEN ENTERED,ENTRY OF LI WILL LIST DEFAULT VALUES.
5. DDDDDD- SECRET PAGE HEADER.
6. DEFAULT VALUE FOR ADL ENGAGE MODE IS AUTOMATIC.

MS 013183

Figure 4-26.1. Enter ADL Engage Command Processing Mode

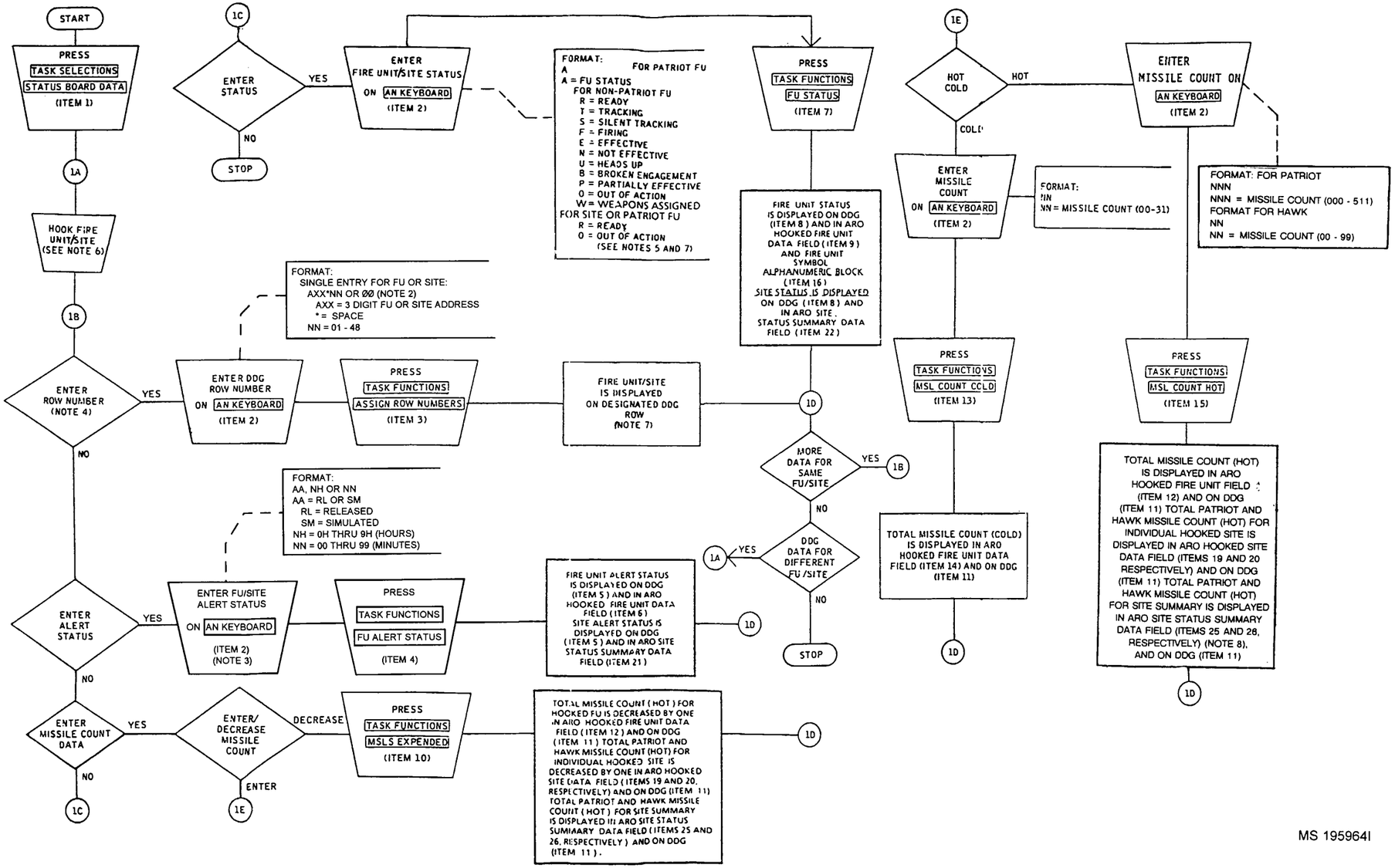


Figure 4-27. Enter DDG Fire Unit/Site Data (Sheet 1 of 3)

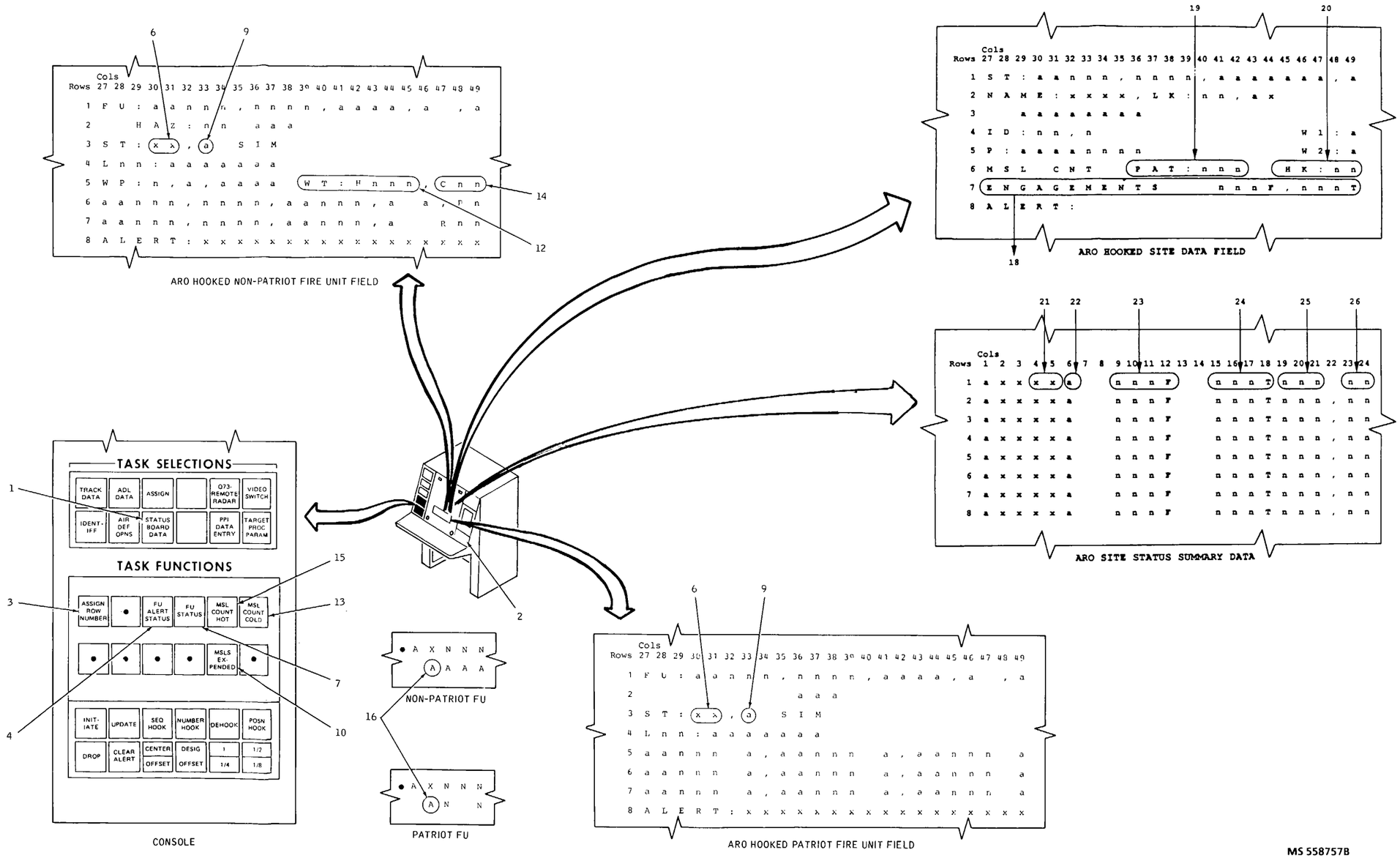
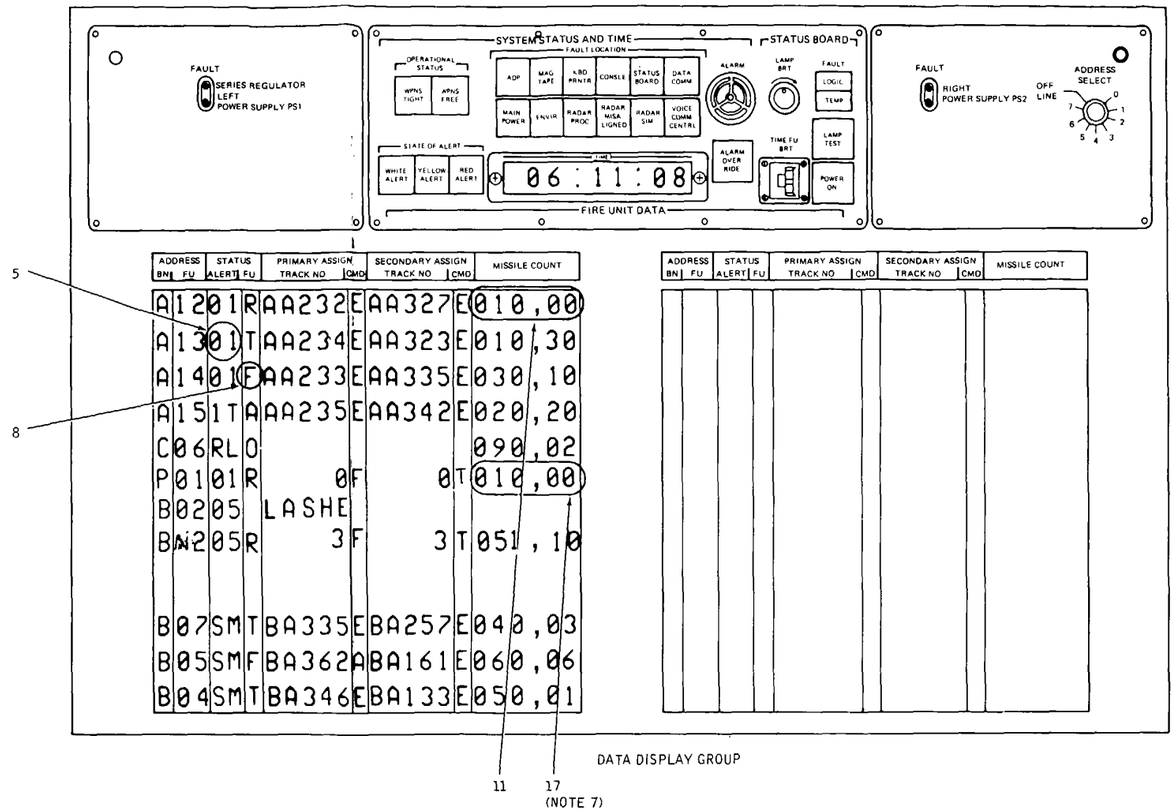


Figure 4-27. Enter DDG Fire Unit/Site Data (Sheet 2 of 3)



NOTES:

1. VALID ONLY IN TACTICAL OR TRACKING/TACTICAL MODE.
2. ENTRY OF 00 WILL ERASE FIRE UNIT/SITE DATA FROM DDG AXX NOT ENTERED; ONLY 00.
3. ALERT STATUS PROVIDED BY VOICE COMM OR UNIT SOP.
4. FIRE UNIT/SITE DATA WILL NOT BE DISPLAYED ON DDG OR IN ARO SUMMARY DATA FIELD UNLESS A DDG ROW NUMBER IS ENTERED VIA THE CONSOLE.
5. ENTRY OF STATUS OTHER THAN U, B, N, OR P IS INVALID WHEN LINK IS OPERATIONAL.
6. FOR ATDL-1 FU, IF LINK IS NOT ESTABLISHED, NUMBER HOOK FU. FU WILL APPEAR AT EXTREME EDGE OF PPI. DDG ROW NUMBER MAY BE ENTERED. AFTER LINK IS ESTABLISHED AND FU DISPLAYED THE OPERATOR MAY ASSIGN MISSILE COUNT AND STATUS. NOT VALID FOR PATRIOT FUs.
7. SITE AND PATRIOT FU DATA ON DDG INCLUDES A COUNT OF MISSILE FIRED (F) AND A COUNT OF TRACKS IN TRACKING/WEAPON ASSIGNED (T) STATUS (ITEM 17). TRACKS ENGAGED BY A PATRIOT FU WILL NOT BE SHOWN ON DDG. REFER TO TM 9-1430-652-10-7 FOR PATRIOT F AND T PARAMETERS.
8. PATRIOT COUNT SHALL CONSIST OF ALL HOT MISSILES REPORTED BY LONG-RANGE UNITS KNOWN TO BE SUBORDINATE TO THE SITE (ITEM 25) HAWK COUNT SHALL CONSIST OF ALL HOT MISSILES REPORTED BY UNKNOWN SHORT-, AND MEDIUM-RANGE UNITS KNOWN TO BE SUBORDINATE TO THE SITE (ITEM 26).
9. [ ] INDICATES EQUIPMENT MARKING.

MSO16186

Figure 4-27. Enter DDG Fire Unit/Site Data (Sheet 3 of 3)

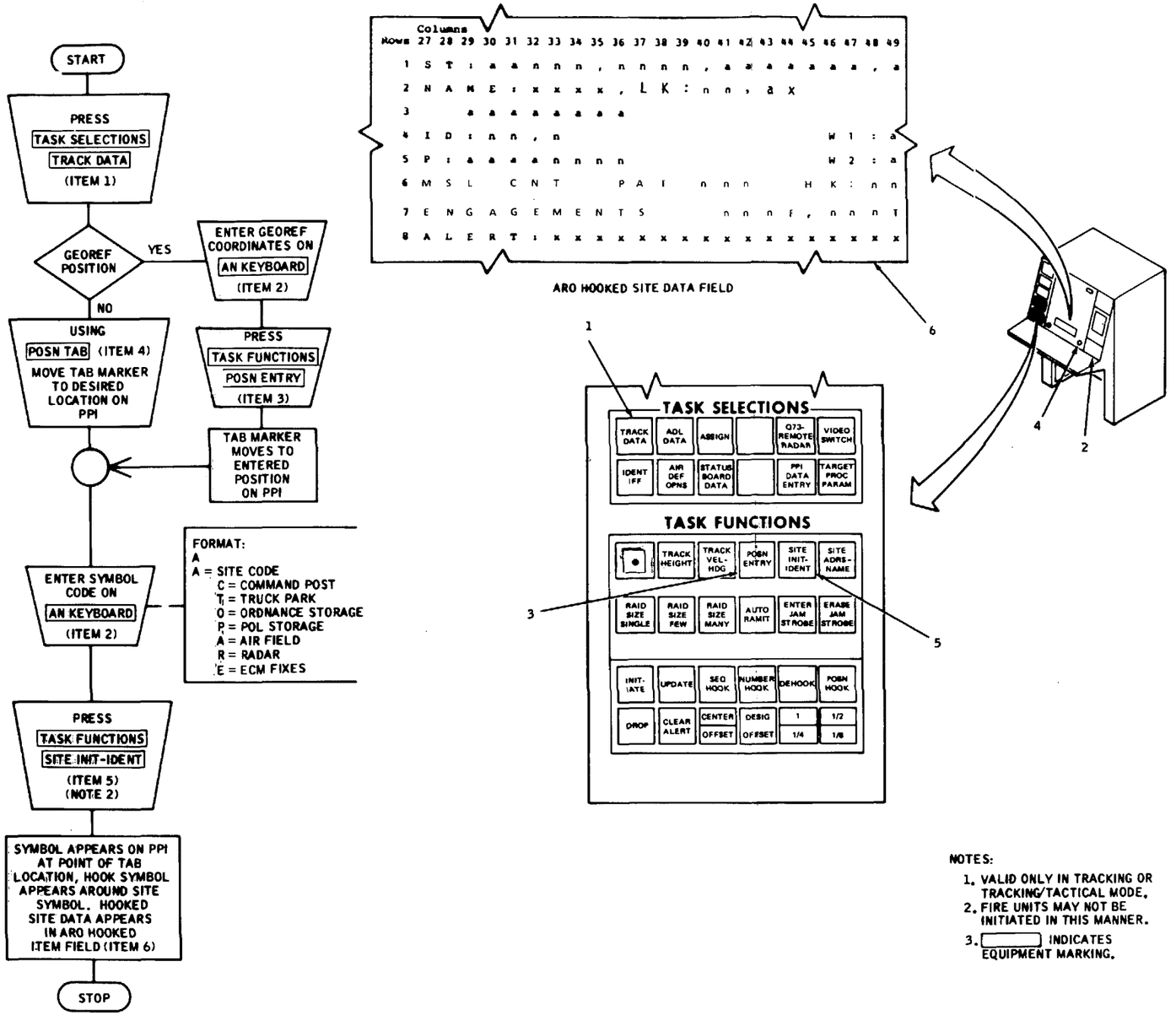


Figure 4-28. Enter Fixed Point Site

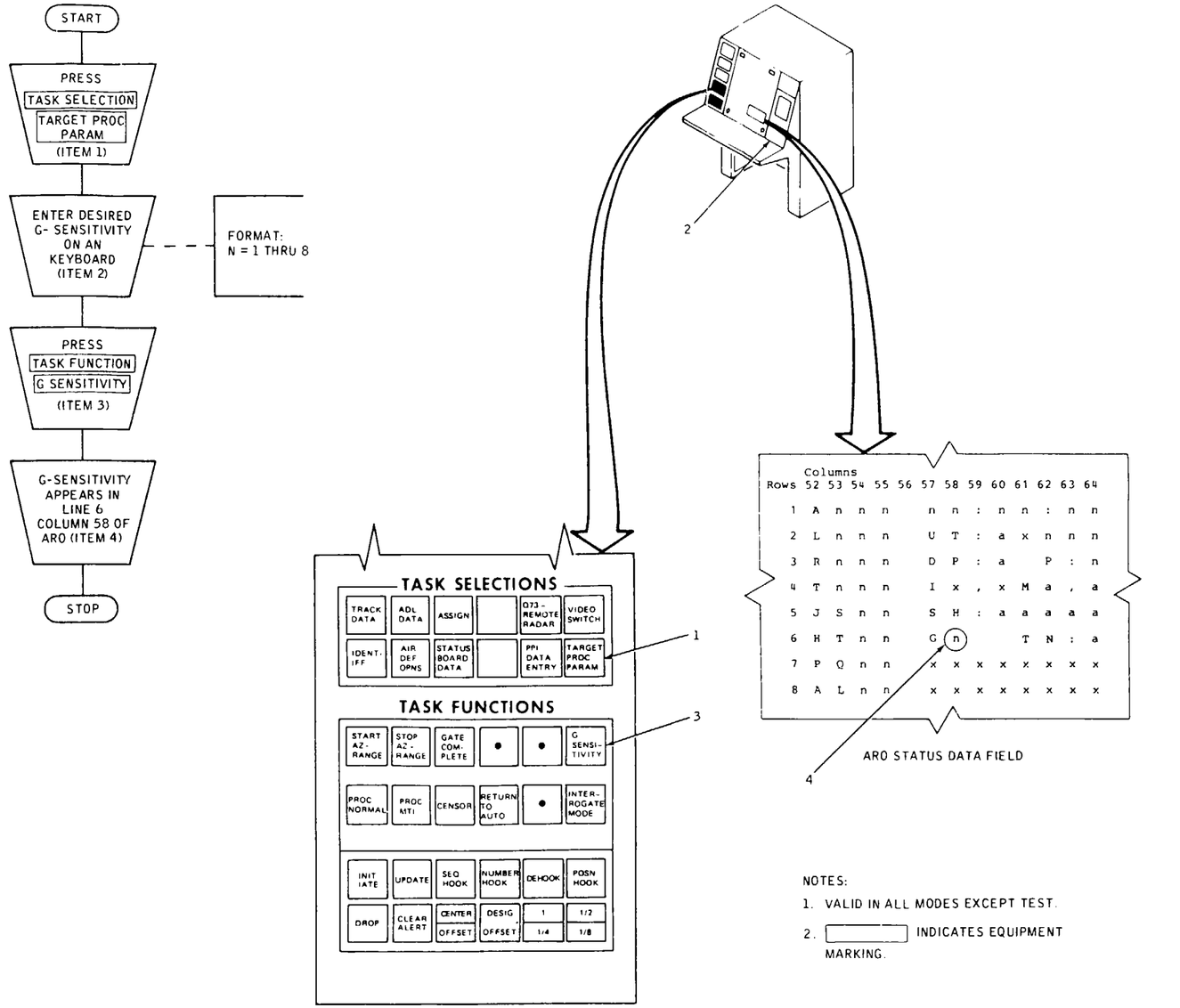


Figure 4-28.1. Enter G-Sensitivity

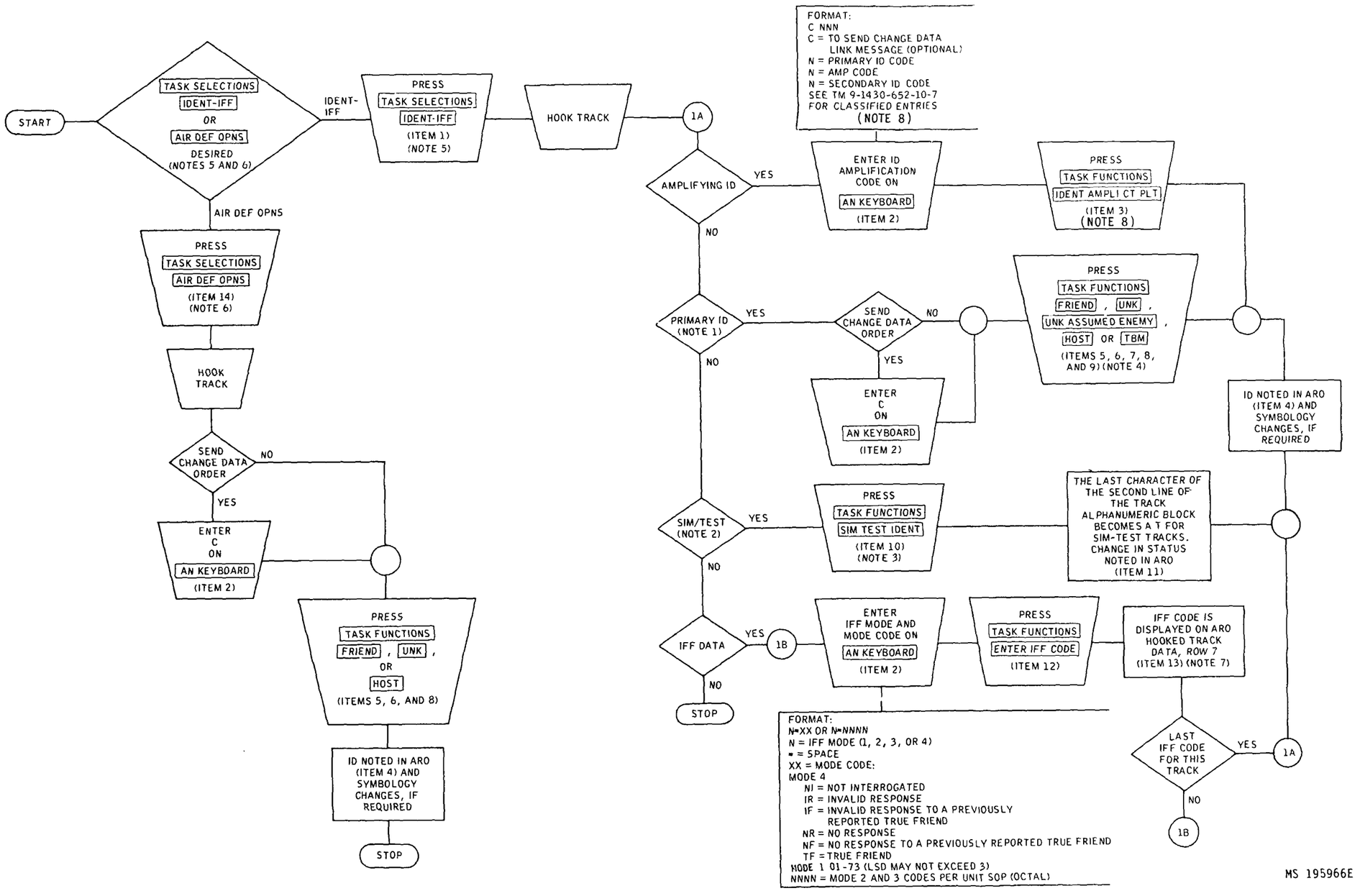
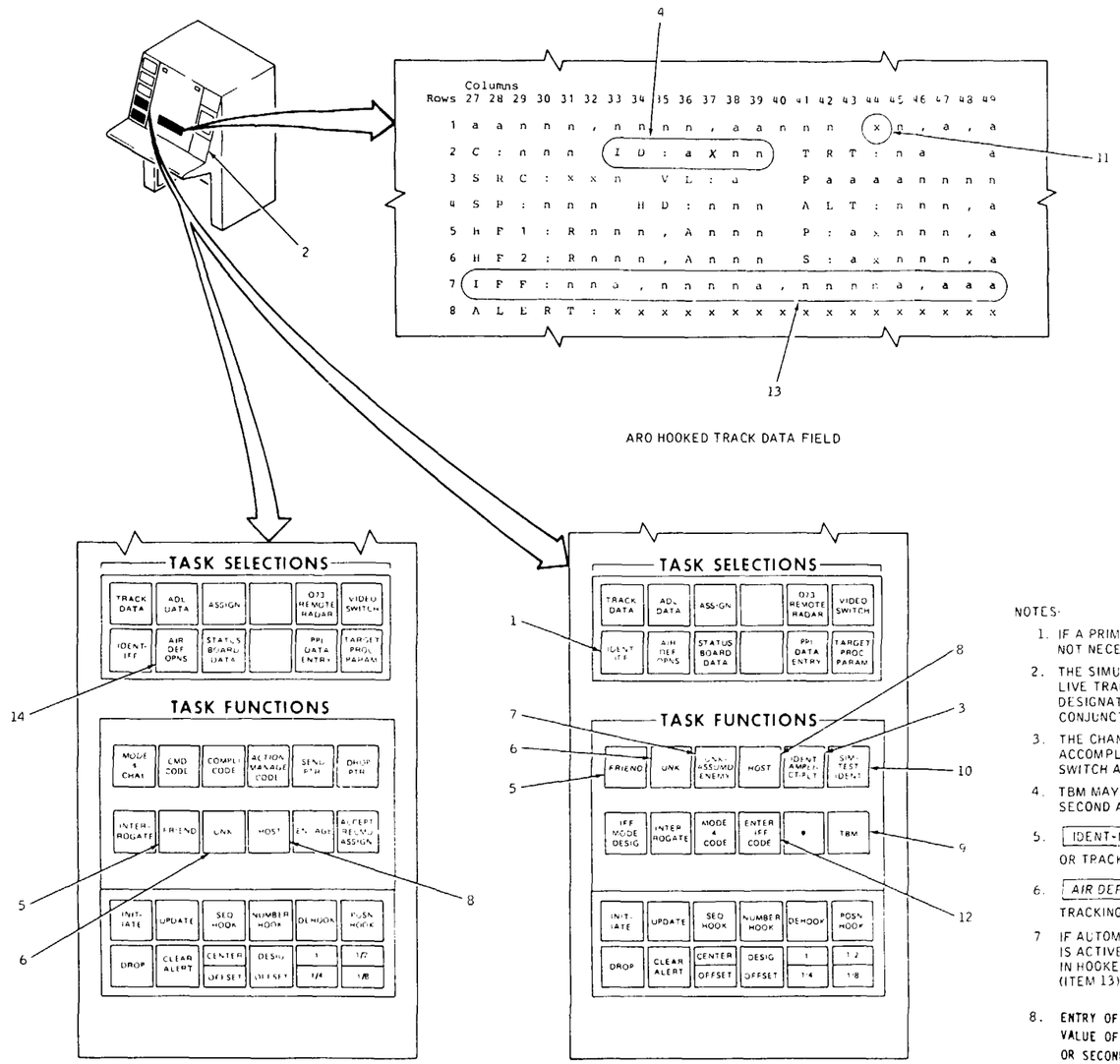


Figure 4-29. Enter ID and IFF Data (Sheet 1 of 2)



ARO HOOKED TRACK DATA FIELD

NOTES:

1. IF A PRIMARY ID IS DISPLAYED, IT IS NOT NECESSARY TO ENTER A PRIMARY ID.
2. THE SIMULATED-TEST MODIFIER ALLOWS LIVE TRACKS TO BE GIVEN A SIM-TEST DESIGNATION. ALL IDs MAY BE USED IN CONJUNCTION WITH SIM-TEST.
3. THE CHANGE FROM SIM-TEST TO LIVE IS ACCOMPLISHED BY ACTIVATING THE SWITCH A SECOND TIME.
4. TBM MAY BE USED ONLY WITH HOSTILE ID. SECOND ACTIVATION REMOVES TBM MODIFIER.
5. IDENT-IFF IS VALID ONLY IN TRACKING OR TRACKING TACTICAL MODE.
6. AIR DEF OPNS IS VALID ONLY IN TRACKING/TACTICAL MODE.
7. IF AUTOMATIC SIF CODE VALIDATION IS ACTIVE, THE RESULT WILL APPEAR IN HOOKED TRACK DATA FIELD, ROW 7 (ITEM 13).
8. ENTRY OF A SPARE OR ILLEGAL VALUE OF AN ID, PRIMARY ID AMP OR SECONDARY ID AMP CODE WILL RESULT IN A SIM ERR ILLEGAL ACTION.
9. ▭ INDICATES EQUIPMENT MARKING.

MS 588758A

Figure 4-29. Enter ID and IFF Data (Sheet 2 of 2)

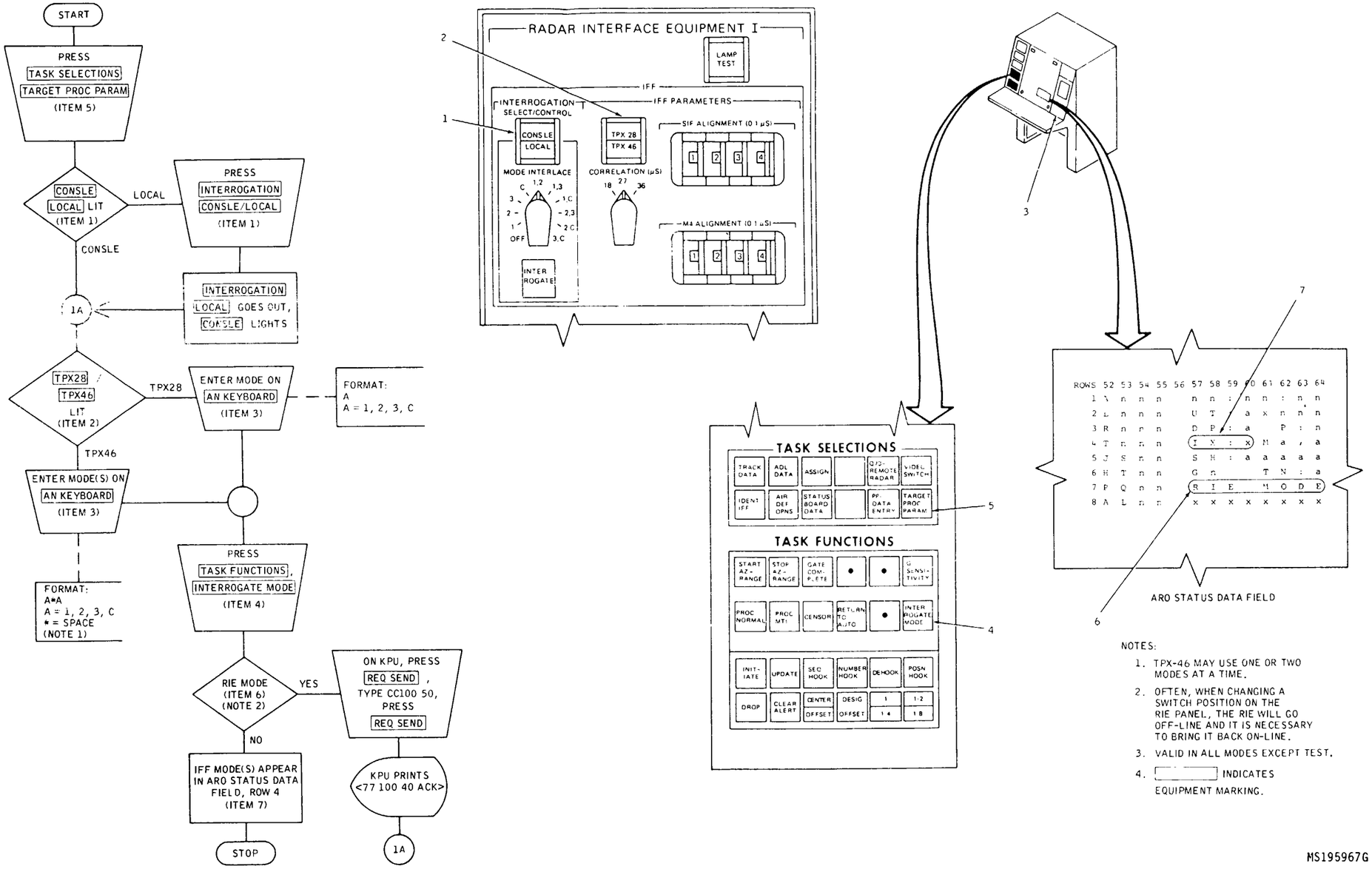


Figure 4-30. Enter Interrogate Mode)

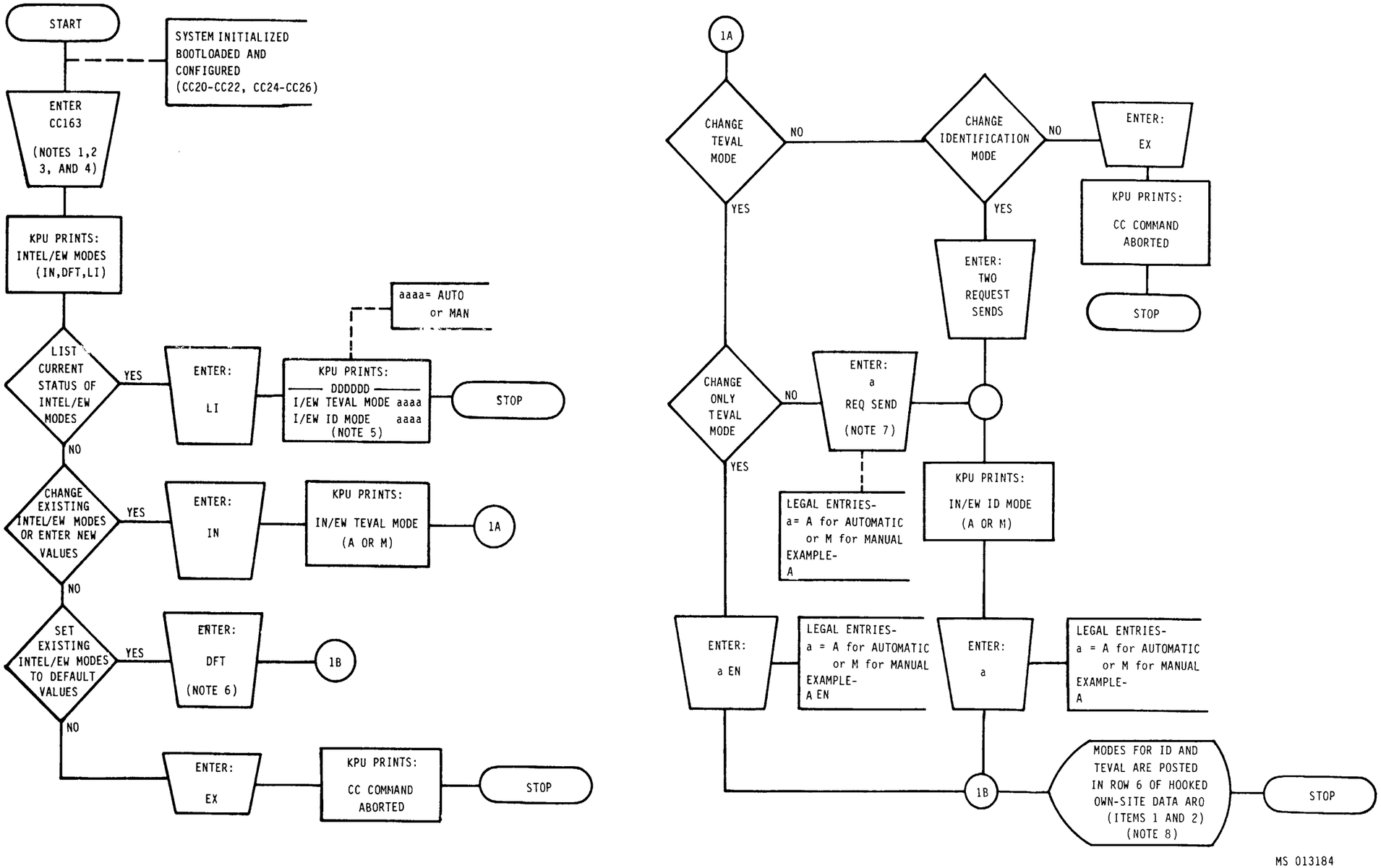
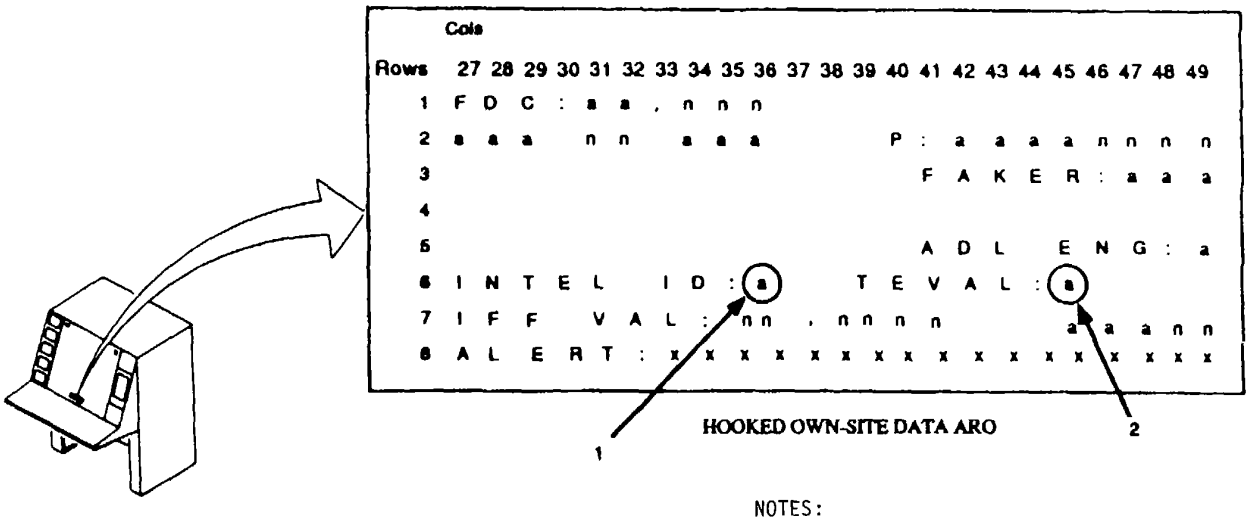


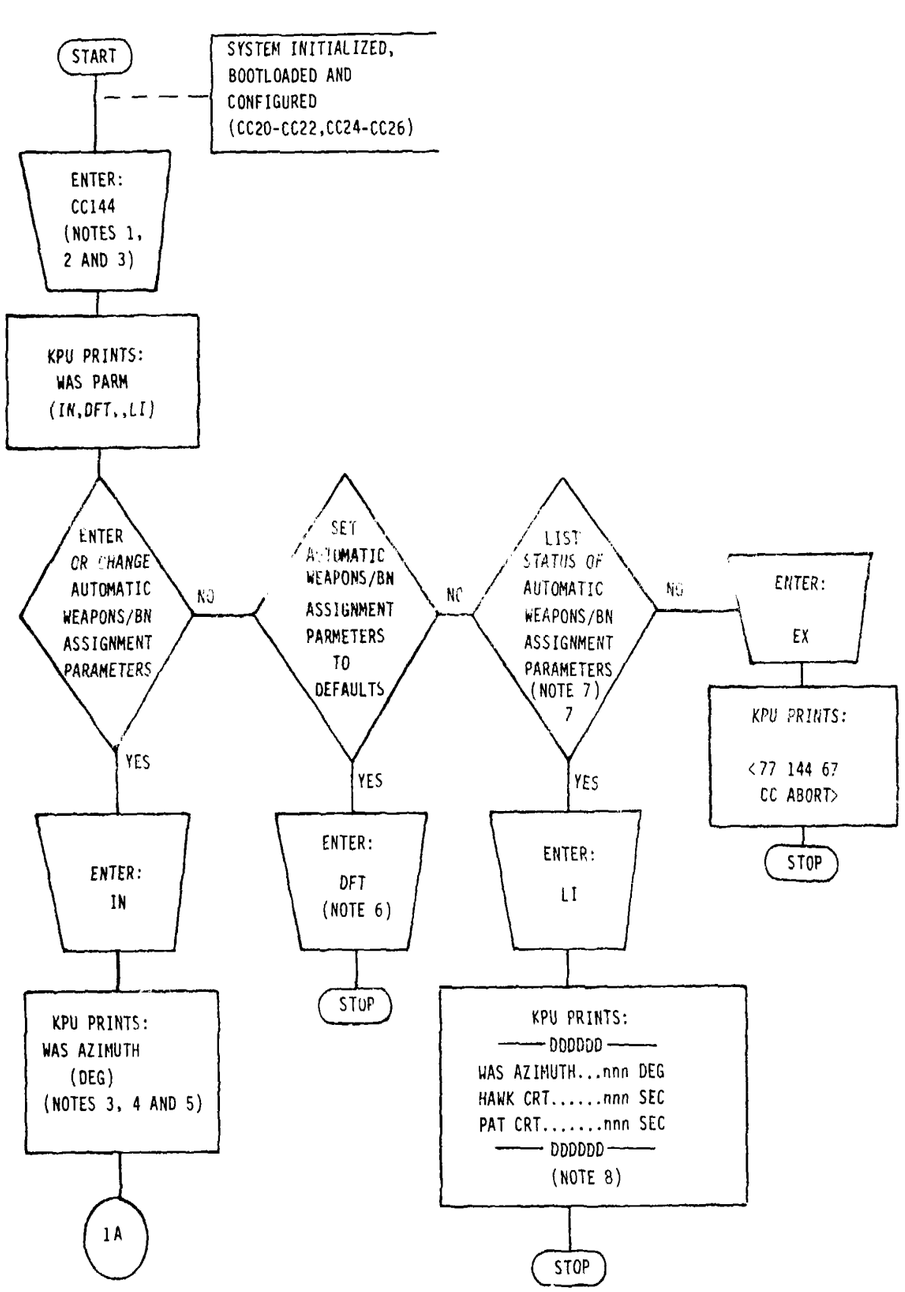
Figure 4-31. Enter Intelligence/EW Processing Modes (Sheet 1 of 2)



NOTES:

1. COMMAND IS PLACED IN THE PROMPT-DRIVEN MODE BY ENTERING ONLY THE CC163.
2. OPERATOR HAS THE OPTION TO ENTER THE COMMAND IN A STRING FORMAT.
   EXAMPLE: CC163 IN A M
3. TO ABORT CC163 DATA ENTRY (EXIT COMMAND *WITHOUT SAVING DATA* ENTERED), ENTER: EX.
   KPU PRINTS: CC COMMAND ABORTED.
4. AT ANY TIME, A VARIABLE PARAMETER MAY BE BY-PASSED WITH NO EFFECT ON EXISTING DATA BY *ENTRY OF THE NULL* PARAMETER.
5. DDDDDD-SECRET PAGE HEADER.
6. DEFAULT VALUE FOR BOTH MODES (IDENTIFICATION AND TEVAL) IS MANUAL.
7. ENTERING 'a REQ SEND' WILL CHANGE TEVAL MODE. KPU THEN PRINTS: *IN/EW MODE (A OR M) TO ALLOW* IDENTIFICATION MODE CHANGE.
8. INTELLIGENCE/EW PROCESSING MODES FOR IDENTIFICATION AND THREAT EVALUATION ARE POSTED *IN ROW 6 OF HOOKED OWN-SITE DATA* ARO, COLUMNS 36 (ITEM 1) AND 45 (ITEM 2), RESPECTIVELY.

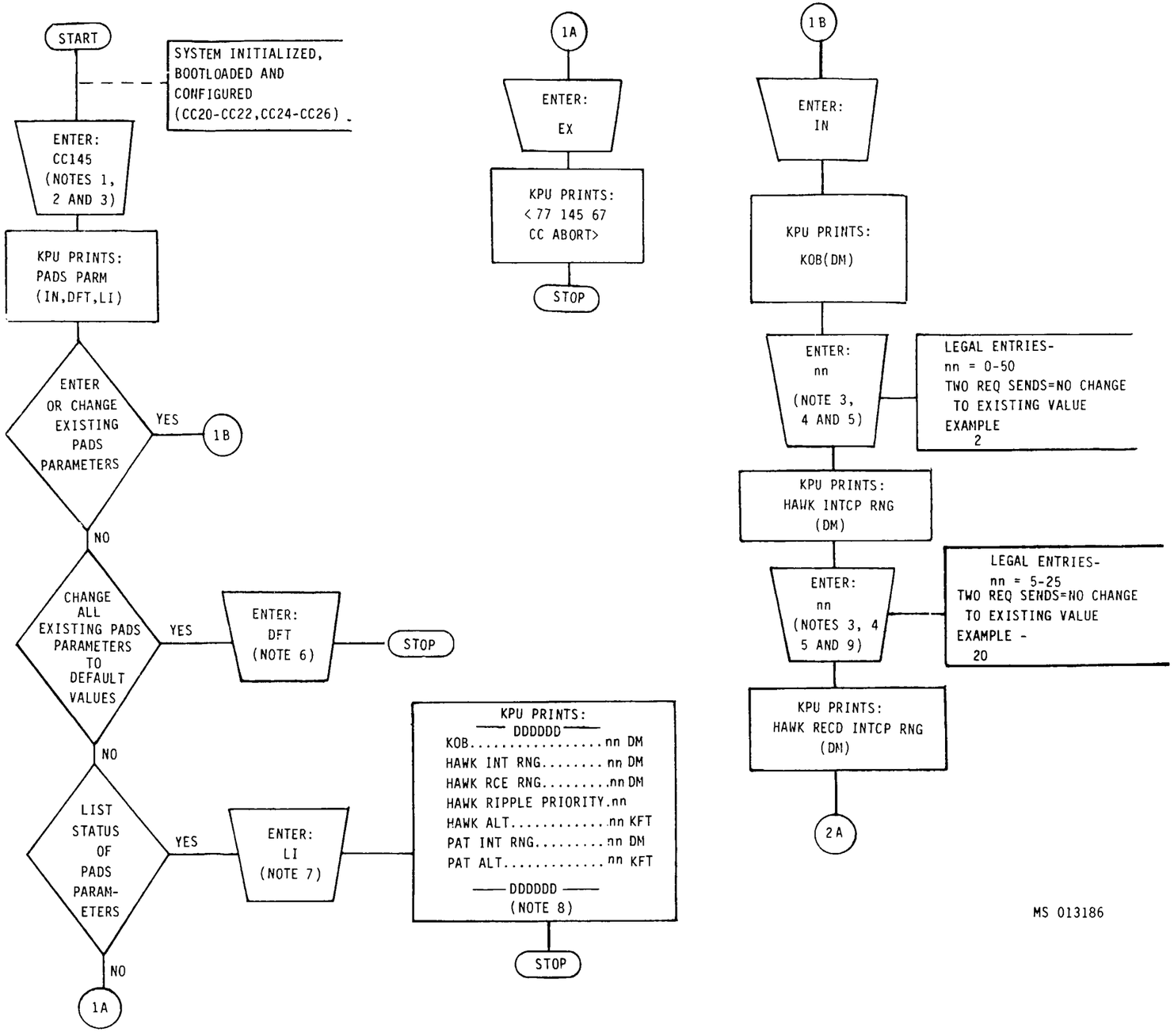
Figure 4-31. Enter Intelligence/EW Processing Modes (Sheet 2 of 2)



NOTES:
1. COMMAND IS PLACED IN THE PROMPT-DRIVEN MODE BY ENTERING ONLY THE CC144.
2. OPERATOR HAS THE OPTION TO ENTER THE COMMAND IN A STRING FORMAT. EXAMPLE: CC144 IN 120 45 10 KPU PRINTS ACKNOWLEDGE MESSAGE <77 144 40 ACK >
3. TO ABORT CC144 DATA ENTRY (EXIT COMMAND WITHOUT SAVING DATA ENTERED), ENTER: EX. KPU PRINTS: <77 144 67 CC ABORT>.
4. A VARIABLE PARAMETER MAY BE BYPASSED WITH NO EFFECT ON EXISTING DATA BY ENTRY OF THE NULL PARAMETER (TWO REQUEST SENDS).
5. ENTRY OF A VALID VALUE FOLLOWED BY AN "EN" RESULTS IN THE STORING OF WHAT HAS BEEN ENTERED ON THE COMMAND LINE AND EXITING OF THE CC COMMAND.
6. DEFAULTS TO WAS AZIMUTH=000 DEGREES, HAWK RESPONSE TIME= 30 SECONDS, PATRIOT RESPONSE TIME=10 SECONDS.
7. IF A PREVIOUS CC144 HAS NOT BEEN ENTERED, ENTRY OF LI WILL LIST DEFAULT VALUES.
8. DDDDDD=SECRET PAGE HEADER.
9. NULL PARAMETER (TWO REQUEST SENDS) IS INVALID FOR THEIS ENTRY.

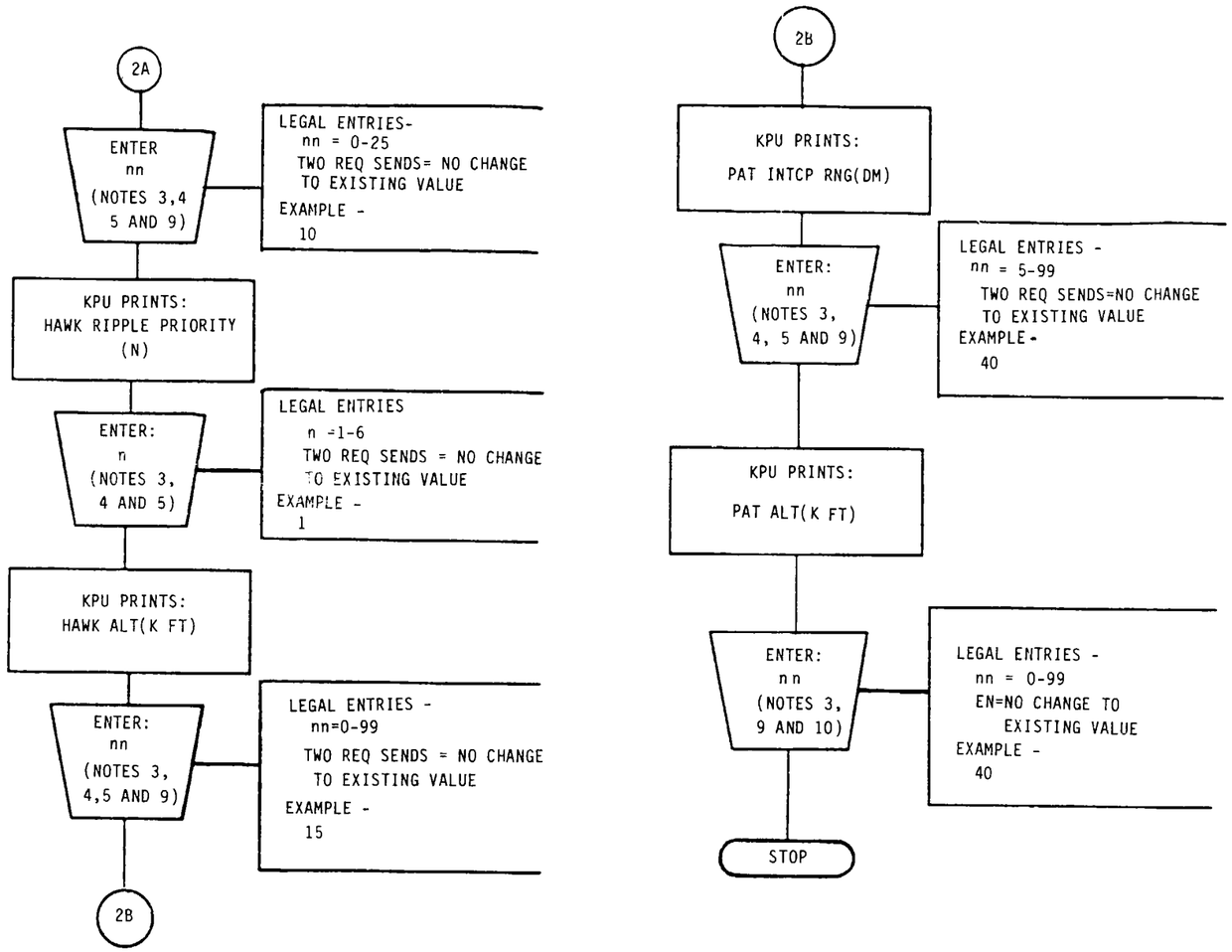
MS 013185

Figure 4-32. Enter Automatic Weapons Assignment Parameters



MS 013186

Figure 4-32.1 Enter PADS Parameters (Sheet 1 of 2)



NOTES:

1. COMMAND IS PLACED IN THE PROMPT-DRIVEN MODE BY ENTERING ONLY THE CC145.
2. OPERATOR HAS THE OPTION TO ENTER THE COMMAND IN A STRING FORMAT. EXAMPLE: CC145 IN 0 20 10 1 15 40 40 KPU PRINTS ACKNOWLEDGE MESSAGE < 77 145 40 ACK>.
3. TO ABORT CC145 DATA ENTRY (EXIT COMMAND WITHOUT SAVING DATA ENTERED). ENTER: EX KPU PRINTS: < 77 145 67 CC ABORT>.
4. A VARIABLE PARAMETER MAY BE BYPASSED WITH NO EFFECT ON EXISTING DATA BY ENTRY OF THE NULL PARAMETER (TWO REQUEST SENDS).
5. ENTRY OF A VALID VALUE FOLLOWED BY AN 'EN' RESULTS IN THE STORING OF WHAT HAS BEEN ENTERED ON THE COMMAND LINE AND EXITING OF THE CC COMMAND.
6. DEFAULTS TO KEEP OUT BOUNDARY= 2.5, MAX THREAT PRIORITY TO ALLOW HAWK ENGAGE RIPPLE=1, UPPER HAWK APPROACH INTERCEPT RANGE=16 DM, UPPER HAWK RECEDE INTERCEPT RANGE= 8 DM, UPPER HAWK INTERCEPT ALTITUDE=45 KFT, UPPER PATRIOT INTERCEPT VALUE=55 KFT, UPPER PATRIOT INTERCEPT ALTITUDE=80 KFT.
7. IF A PREVIOUS CC145 HAS NOT BEEN ENTERED, ENTRY OF LI WILL LIST DEFAULT VALUES.
8. DDDDDD= SECRET PAGE HEADER.
9. REFER TO FM44-1A FOR TRUE VALUES.
10. NULL PARAMETER (TWO REQUEST SENDS) IS INVALID FOR THIS ENTRY.

MS 013187

Figure 4-32.1 Enter PADS Parameters (Sheet 2 of 2)

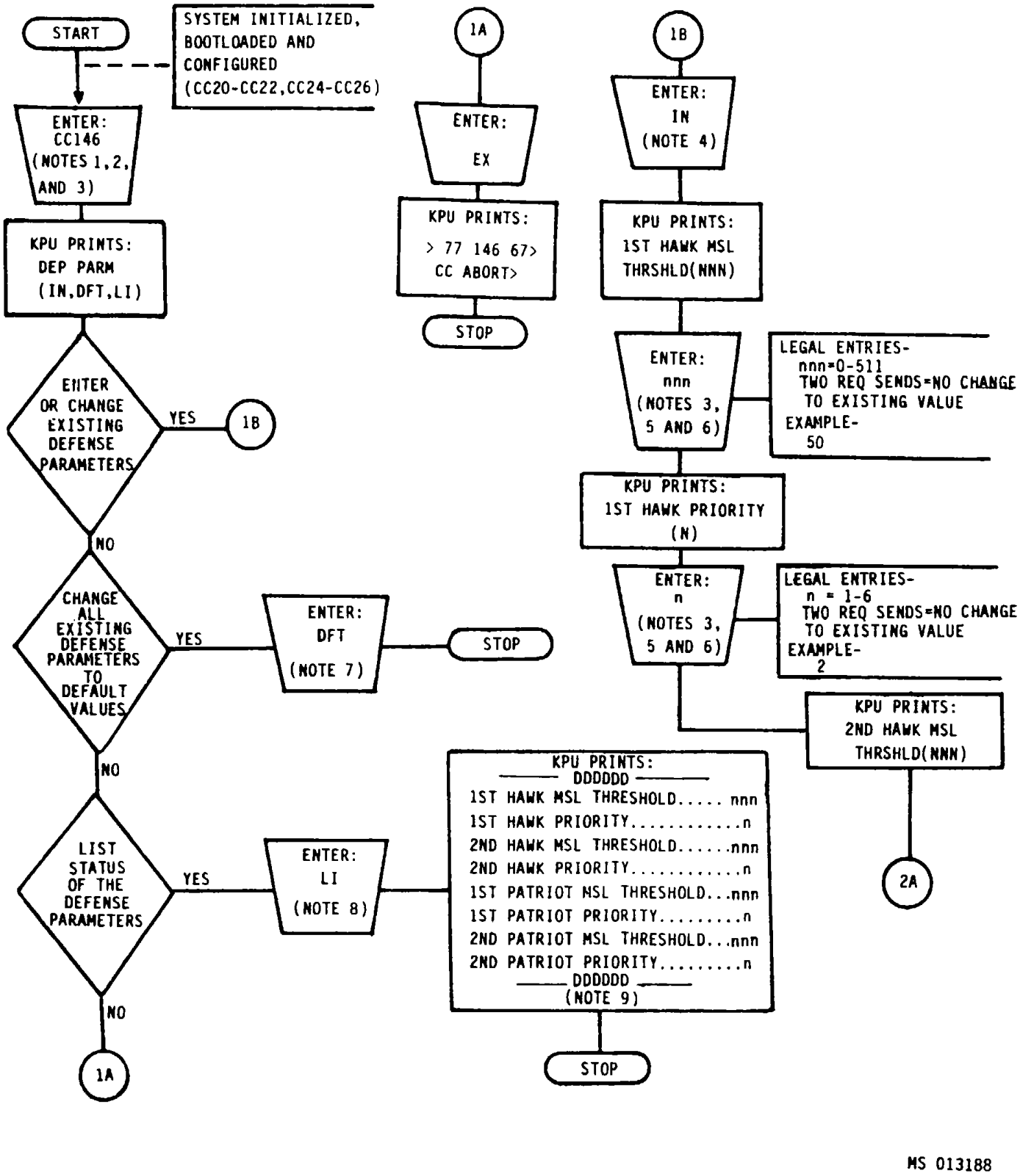
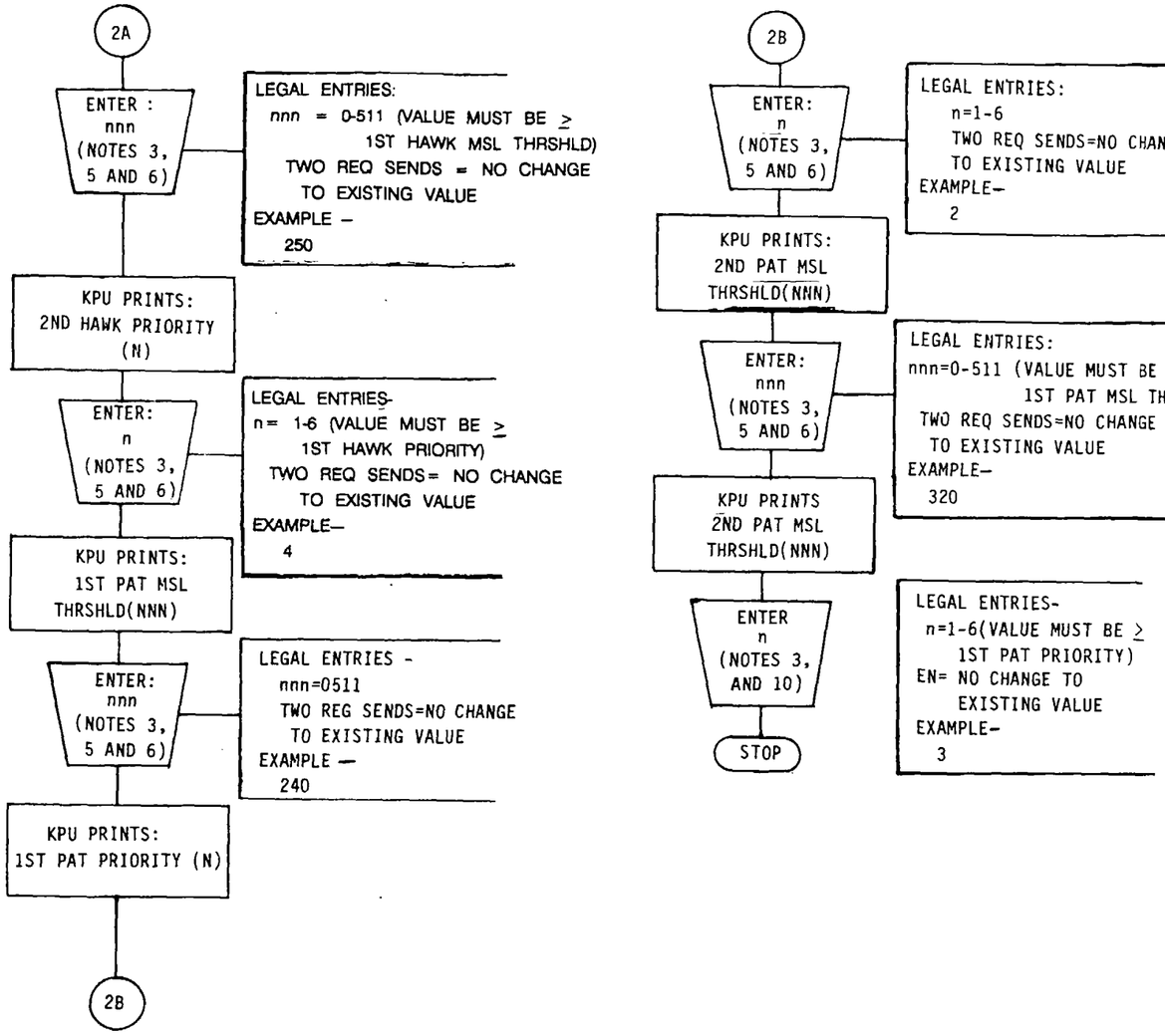


Figure 4-32.2 Enter Defense Priority/Missile Count Thresholds (Sheet 1 of 2)



NOTES:

1. COMMAND IS PLACED IN THE PROMPT-DRIVEN MODE BY ENTERING ONLY THE CC146.
2. OPERATOR HAS THE OPTION TO ENTER THE COMMAND IN A STRING FORMAT. EXAMPLE: CC146 IN 50 2 250 4 75 3 375 5 KPU PRINTS ACKNOWLEDGE MESSAGE <77 146 40 ACK>.
3. TO ABORT CC146 DATA ENTRY (EXIT COMMAND WITHOUT SAVING DATA ENTERED), ENTER: EX. KPU PRINTS: <77 146 67 CC ABORT>.
4. FOR EACH WEAPON TYPE, THE SECOND VALUE (MISSILE COUNT THRESHOLD, THREAT PRIORITY) MUST BE GREATER THAN OR EQUAL TO CORRESPONDING FIRST VALUE OR THE ERROR MESSAGE SECOND VALUE MUST BE GREATER THAN OR EQUAL TO ITS CORRESPONDING FIRST WILL BE PRINTED TO THE KPU.
5. A VARIABLE PARAMETER MAY BE BYPASSED WITH NO EFFECT ON EXISTING DATA BY ENTRY OF THE NULL PARAMETER (TWO REQUEST SENDS).
6. ENTRY OF A VALID VALUE FOLLOWED BY AN "EN" RESULTS IN THE STORING OF WHAT HAS BEEN ENTERED ON THE COMMAND LINE AND EXITING OF THE CC COMMAND
7. DEFAULTS TO MISSILE COUNT THRESHOLDS=0, THREAT PRIORITY THRESHOLDS=6.
8. IF A PREVIOUS CC146 HAS NOT BEEN ENTERED, ENTRY OF LI WILL LIST DEFAULT VALUES.
9. DDDDDD=SECRET PAGE HEADER
10. NULL PARAMETER (TWO REQUEST SENDS) IS INVALID FOR THIS ENTRY.

MS013189A

Figure 4-32.2 Enter Defense Priority/Missile Count Thresholds (Sheet 2 of 2)

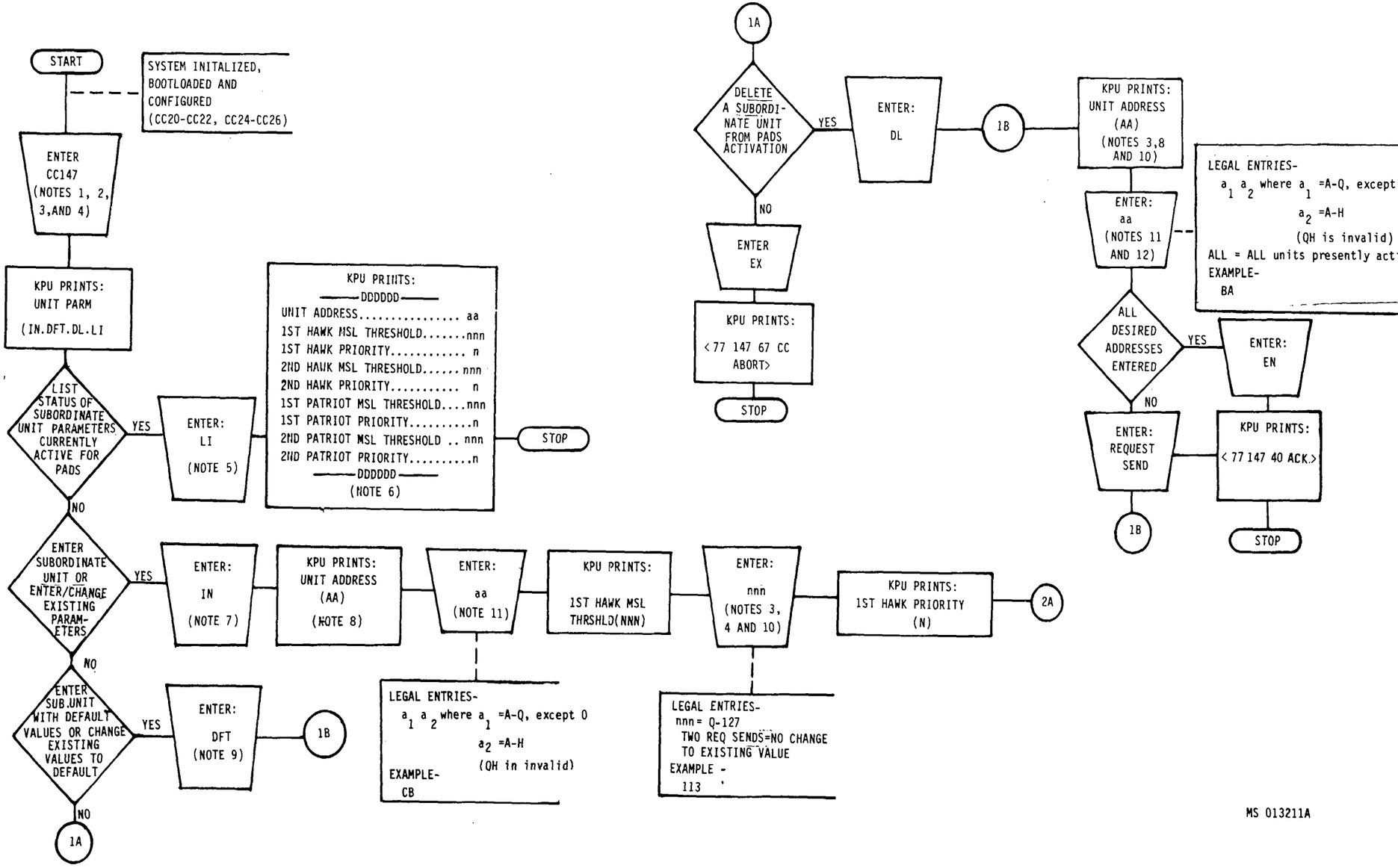
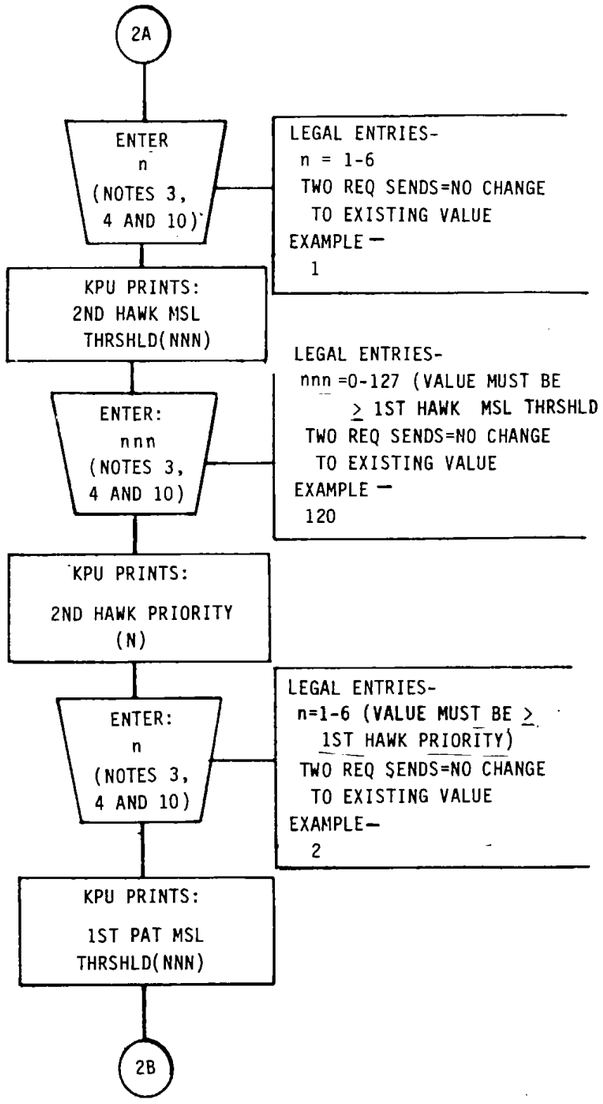
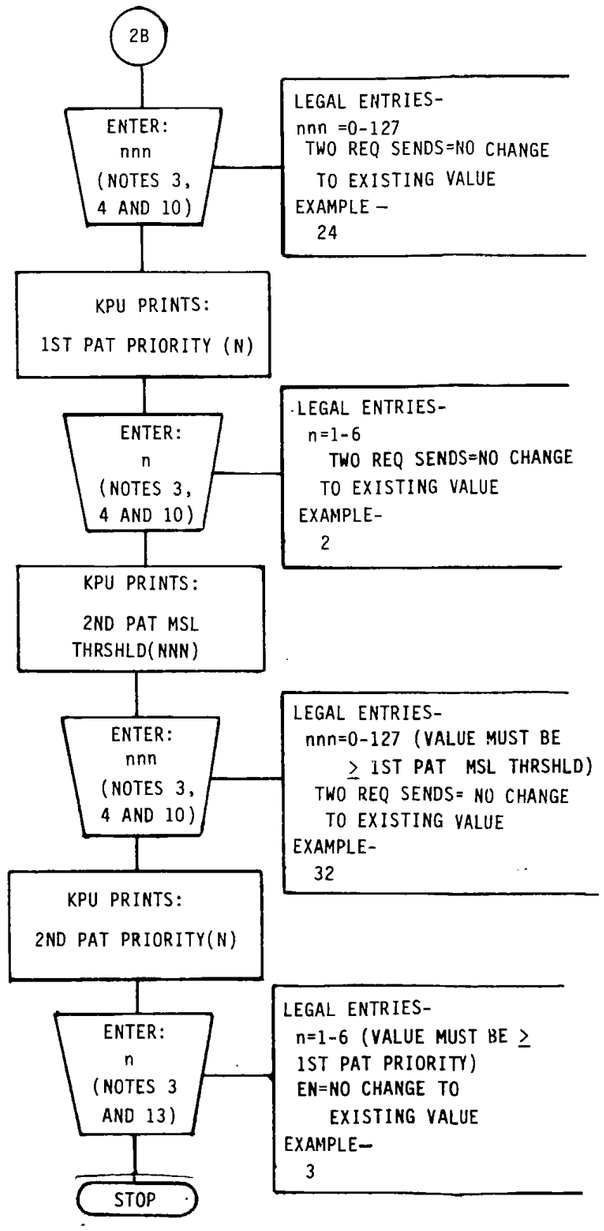


Figure 4-32.3. Enter Subordinate Priority/Missile Count thresholds (Sheet 1 of 2)





NOTES:

1. COMMAND IS PLACED IN THE PROMPT DRIVEN MODE BY ENTERING ONLY THE CC147.
2. OPERATOR HAS THE OPTION TO ENTER THE COMMAND IN A STRING FORMAT. EXAMPLE: CC147 AD 20 2 40 4 30 3 60 5 KPU PRINTS ACKNOWLEDGE MESSAGE <77 147 ACK>.
3. TO ABORT CC147 DATA ENTRY (EXIT COMMAND WITHOUT SAVING DATA ENTERED). ENTER: EX. KPU PRINTS: <77 147 67 CC ABORT>.
4. A VARIABLE PARAMETER MAY BE BYPASSED WITH NO EFFECT ON EXISTING DATA BY ENTRY OF THE NULL PARAMETER (TWO REQUEST SENDS).
5. IF A PREVIOUS CC147 HAS NOT BEEN ENTERED UPON ENTRY OF LI, OUTPUT WILL BE BLANK.
6. DDDDDD = SECRET PAGE HEADER.
7. FOR EACH WEAPON TYPE, THE SECOND VALUE (MISSILE COUNT THRESHOLD, THREAT PRIORITY) MUST BE GREATER THAN OR EQUAL TO CORRESPONDING FIRST VALUE OR THE ERROR MESSAGE SECOND VALUE MUST BE GREATER THAN OR EQUAL TO ITS CORRESPONDING FIRST WILL BE PRINTED TO THE KPU.
8. THE ERROR MESSAGE TADIL-B ILLEGAL FOR PADS' WILL BE PRINTED TO THE KPU IF THE ADDRESS IS NOT AN ATDL-1 UNIT.
9. DEFAULTS TO MISSILE COUNT THRESHOLDS=0, THREAT PRIORITY THRESHOLDS=6.
10. ENTRY OF A VALID VALUE FOLLOWED BY AN "EN" RESULTS IN THE STORING OF WHAT HAS BEEN ENTERED ON THE COMMAND LINE AND EXITING OF THE CC COMMAND.
11. VALID ENTRY CALLS THE SAME PROMPT FOR THE NEXT UNIT ENTRY (UP TO 25 ATDL-1 ADDRESSES).
12. UNITS NEED NOT BE PREVIOUSLY ENTERED.
13. NULL PARAMETER (TWO REQUEST SENDS) IS INVALID FOR THIS ENTRY.

MS 013203A

Figure 4-32.3. Enter Subordinate Priority/Missile Count Thresholds (Sheet 2 of 2)

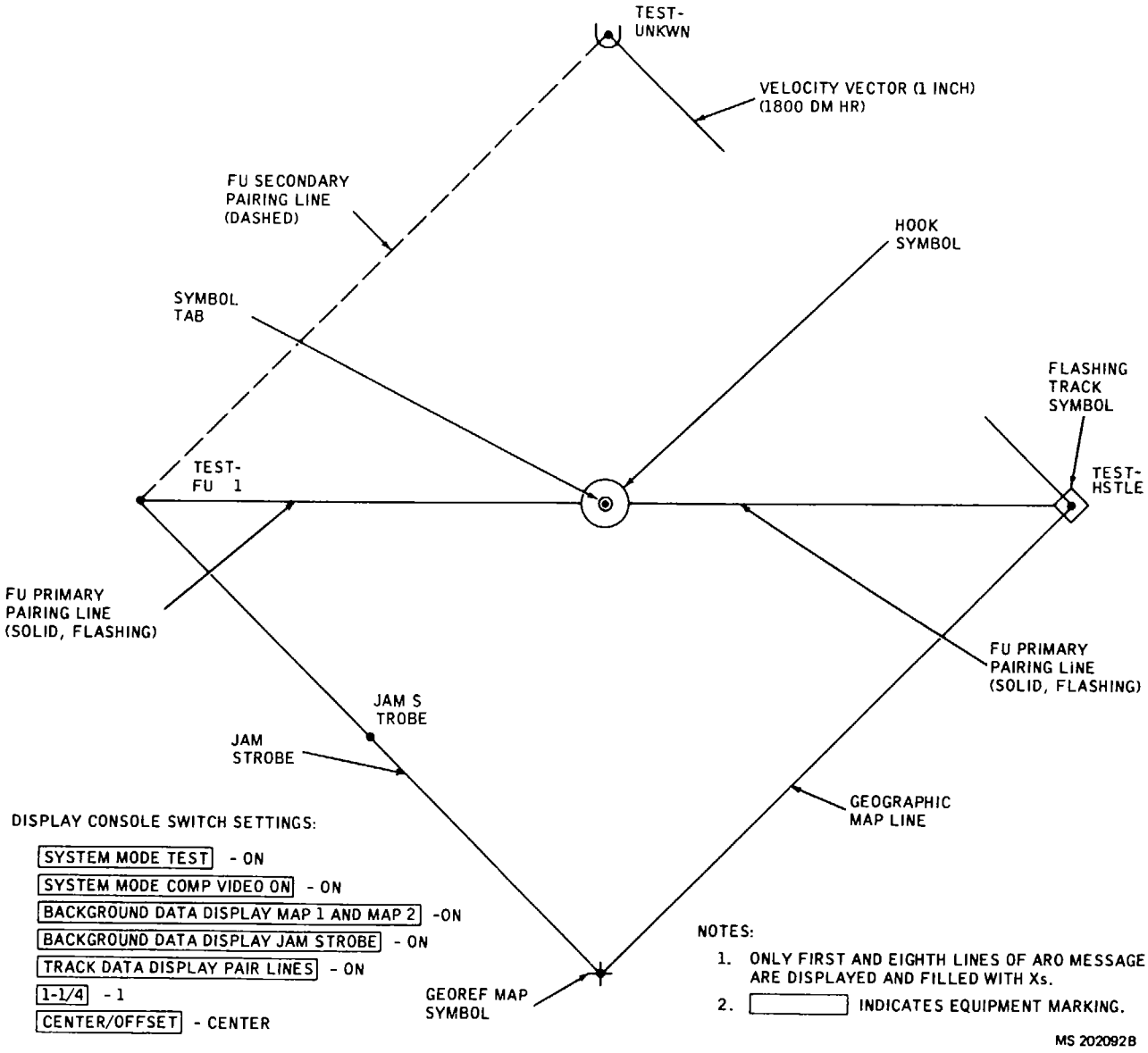
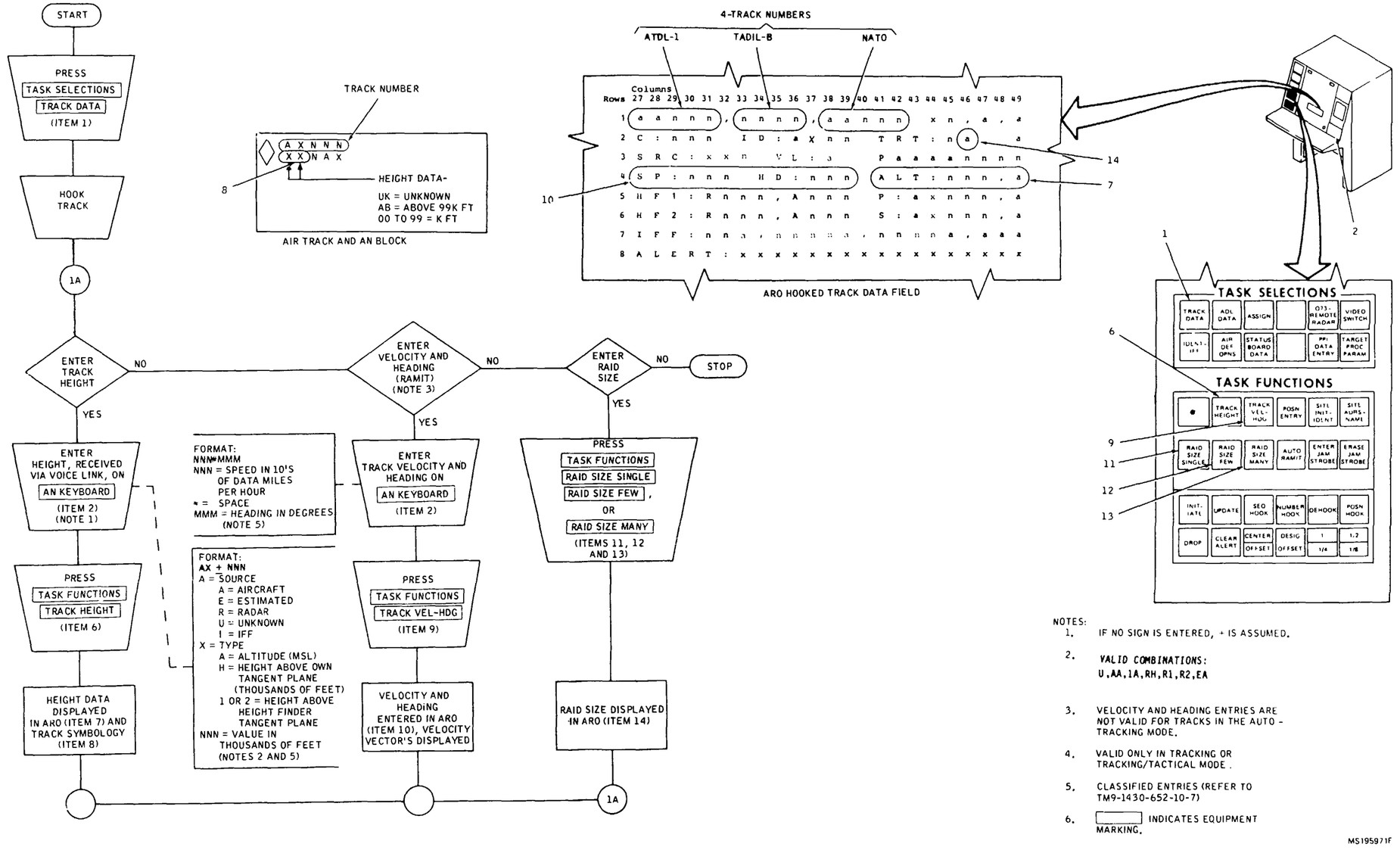


Figure 4-33. Test Pattern Display

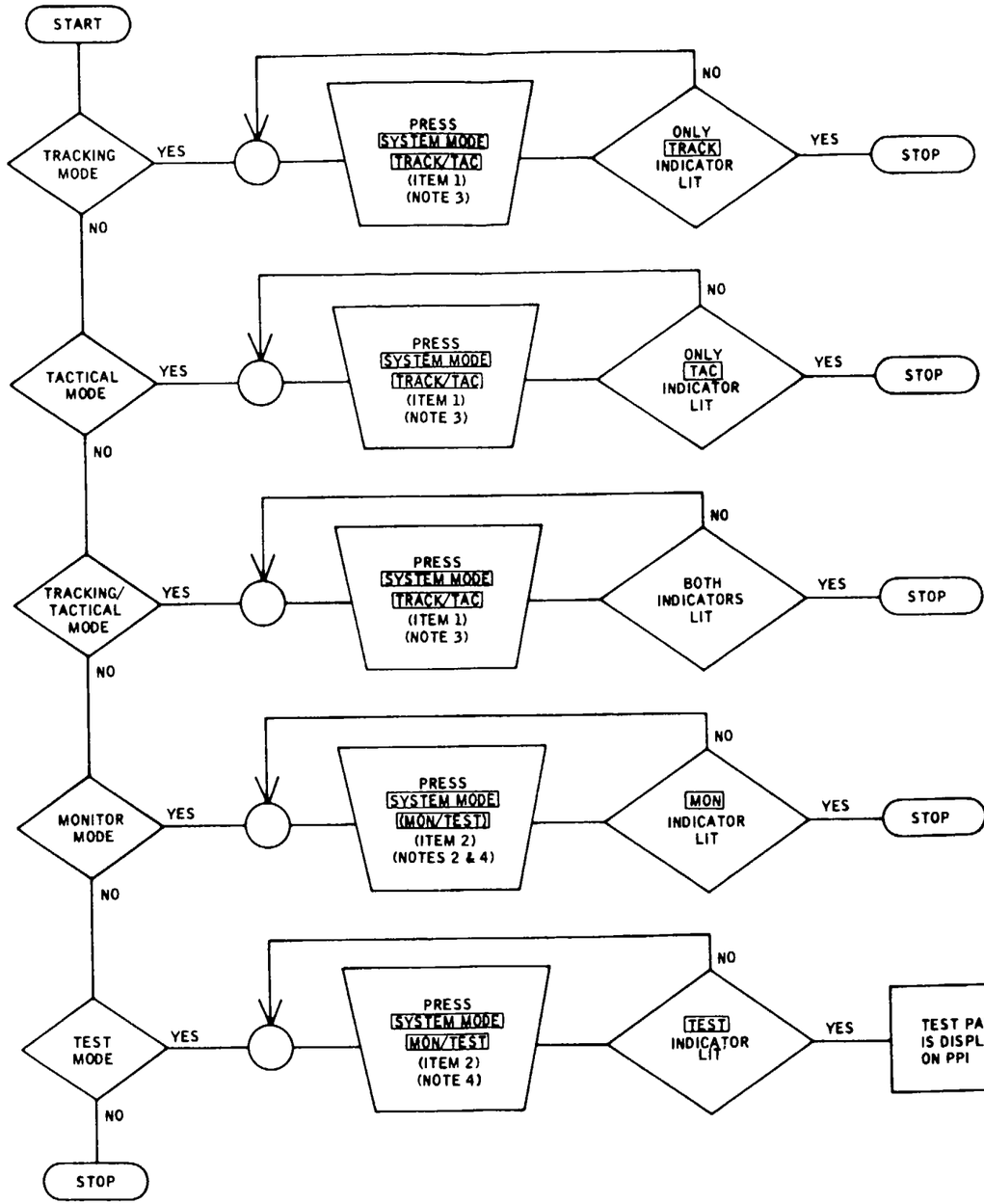


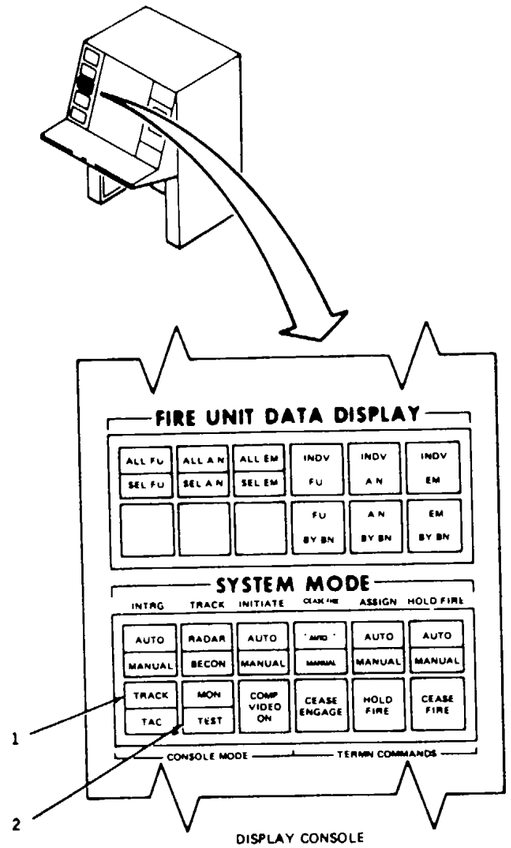
NOTES:
1. IF NO SIGN IS ENTERED, + IS ASSUMED.
2. *VALID COMBINATIONS:*
   U,AA,1A,RH,R1,R2,EA
3. VELOCITY AND HEADING ENTRIES ARE NOT VALID FOR TRACKS IN THE AUTO-TRACKING MODE.
4. VALID ONLY IN TRACKING OR TRACKING/TACTICAL MODE.
5. CLASSIFIED ENTRIES (REFER TO TM9-1430-652-10-7)
6. [ ] INDICATES EQUIPMENT MARKING.

MS195971F

Pages 4-59 and 4-60 including figures 4-35 and 4-36, deleted

Figure 4-34. Enter Track Data



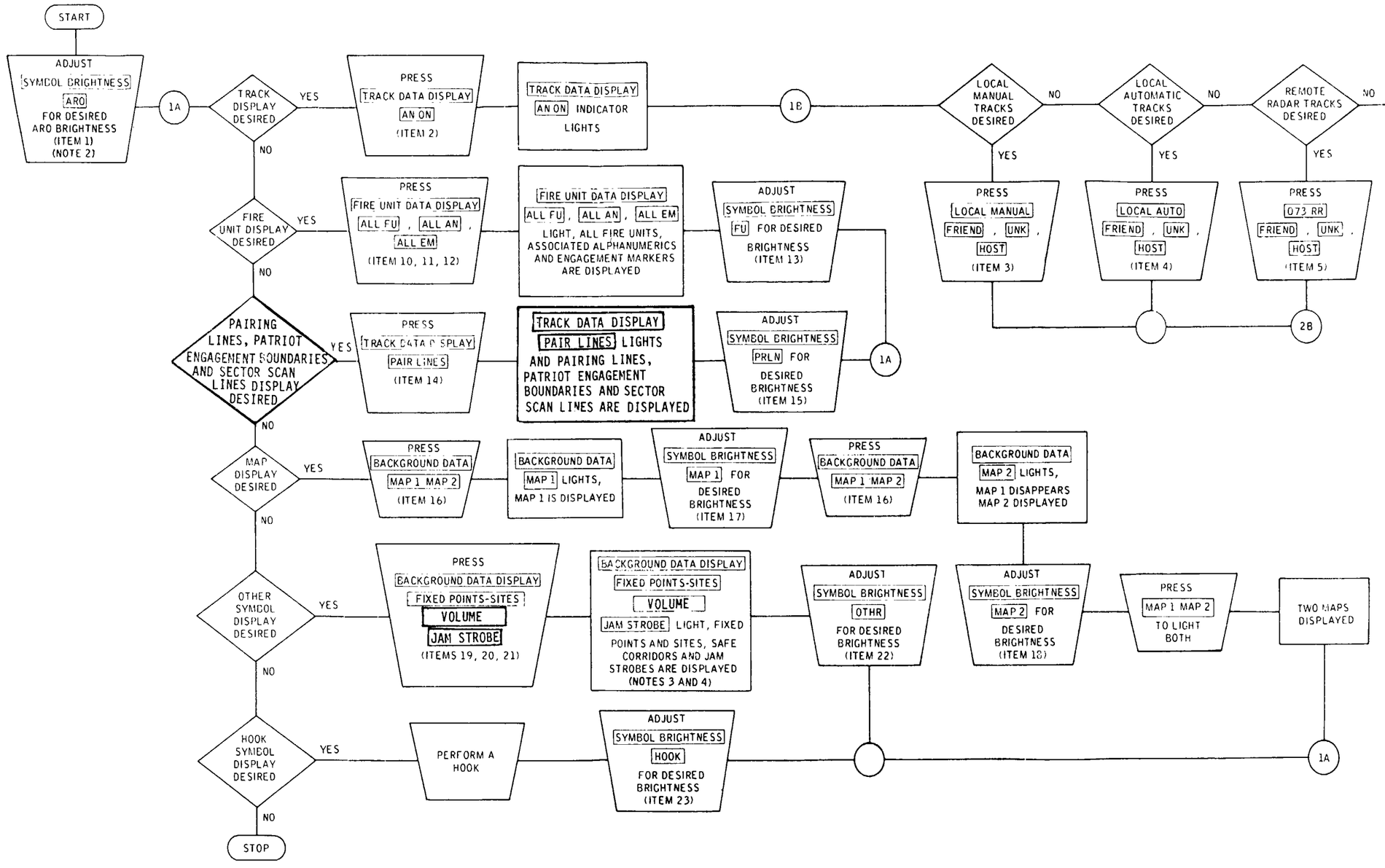


NOTES:

1. VALID IN ALL MODES.
2. MONITOR MODE IS ACTIVATED DURING INITIALIZATION.
3. FIRST ACTUATION [TRACK] LIGHTS; SECOND ACTUATION, [TAC] LIGHTS; THIRD ACTUATION [TRACK/TAC] LIGHTS.
4. FIRST ACTUATION [MON] LIGHTS; SECOND ACTUATION [TEST] LIGHTS.
5. [ ] INDICATES EQUIPMENT MARKING.

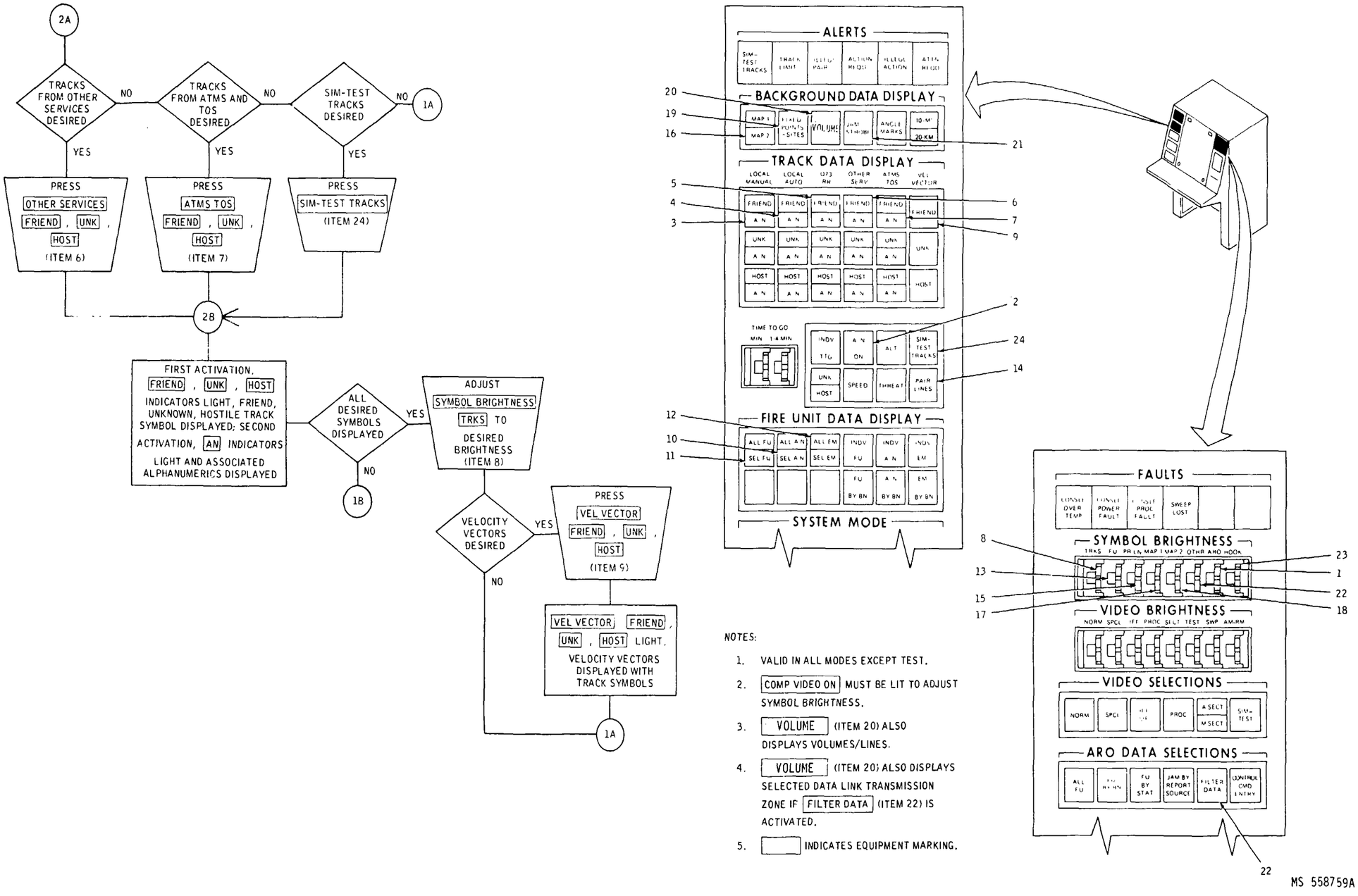
MS 428006A

Figure 4-36.1. Establish Console Mode



MS 568759A

Figure 4-37. Establish Symbol Display (Sheet 1 of 2)



NOTES:

1. VALID IN ALL MODES EXCEPT TEST.
2. COMP VIDEO ON MUST BE LIT TO ADJUST SYMBOL BRIGHTNESS.
3. VOLUME (ITEM 20) ALSO DISPLAYS VOLUMES/LINES.
4. VOLUME (ITEM 20) ALSO DISPLAYS SELECTED DATA LINK TRANSMISSION ZONE IF FILTER DATA (ITEM 22) IS ACTIVATED.
5. [ ] INDICATES EQUIPMENT MARKING.

Figure 4-37. Establish Symbol Display (Sheet 2 of 2)

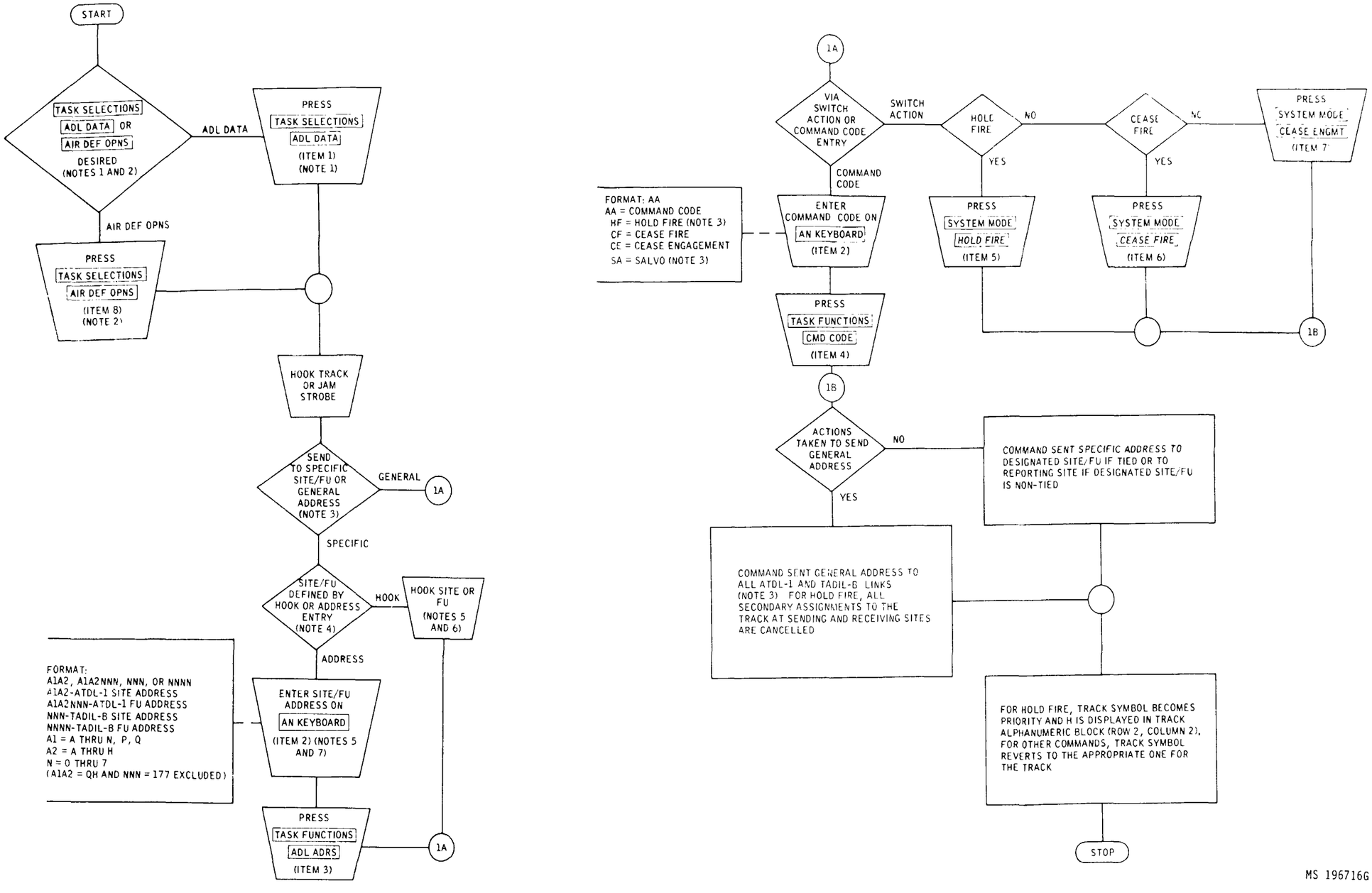
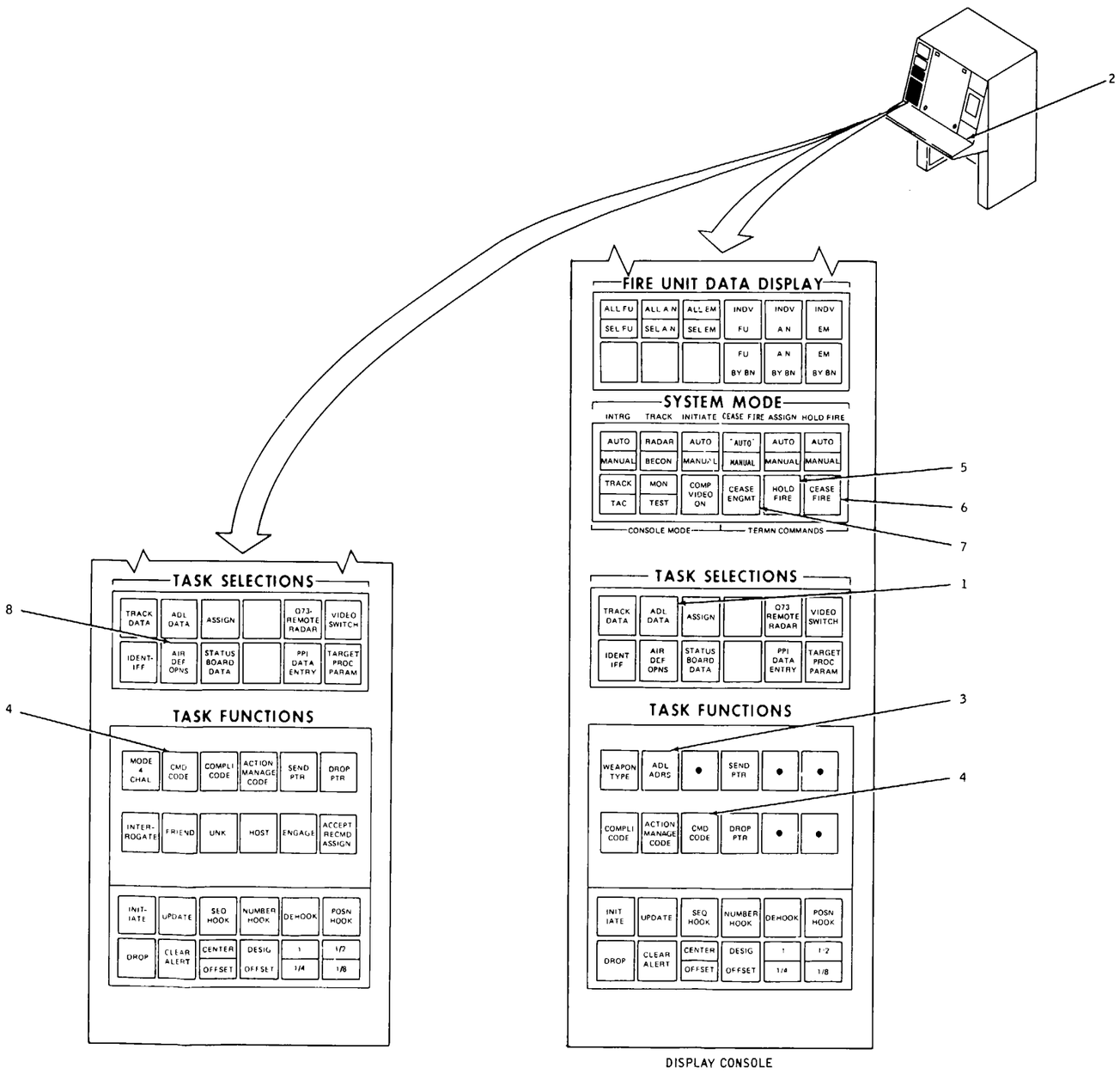


Figure 4-38. Send Salvo and Terminate Commands (Hold Fire, Cease Fire/Engagement) (Sheet 1 of 2)



NOTES:

1. ADL DATA IS VALID ONLY IN TRACKING, TACTICAL, OR TRACKING/TACTICAL MODES.
2. AIR DEF OPNS IS VALID ONLY IN TRACKING/TACTICAL MODE.
3. GENERAL ADDRESS IS VALID ONLY FOR HOLD FIRE AND SALVO. GENERAL ADDRESS MAY ALSO BE SENT BY PRESSING ADL DATA, ENTERING QH OR 177, AND PRESSING ADL ADRS.
4. USE OF SITE/FU ADDRESS REQUIRES THE USE OF ADL DATA.
5. HOOKED TRACK MUST BE THE PRIMARY ASSIGNMENT OF THE FU.
6. ILLEGAL IF ADL ADRS PREVIOUSLY ENTERED.
7. ILLEGAL IF SITE/FU IS CURRENTLY HOOKED.
8. [ ] INDICATES EQUIPMENT MARKING.

MS 558760A

Figure 4-38. Send Salvo and Terminate Commands (Hold Fire, Cease Fire/Engagement) (Sheet 2 of 2)

Figure 4-38-1. Deleted

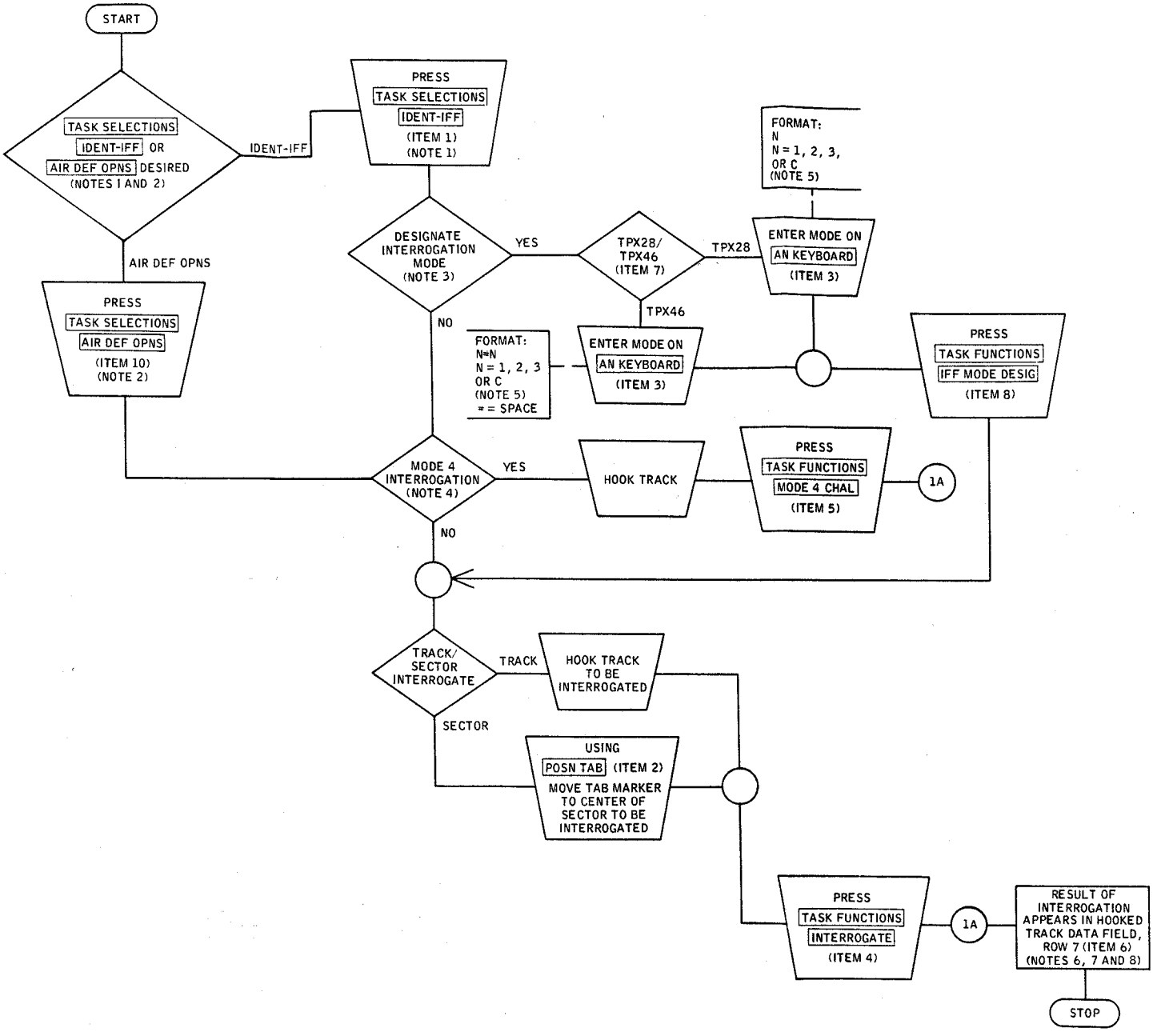


Figure 4-39. Interrogate a Target or a Sector (Sheet 1 of 2)

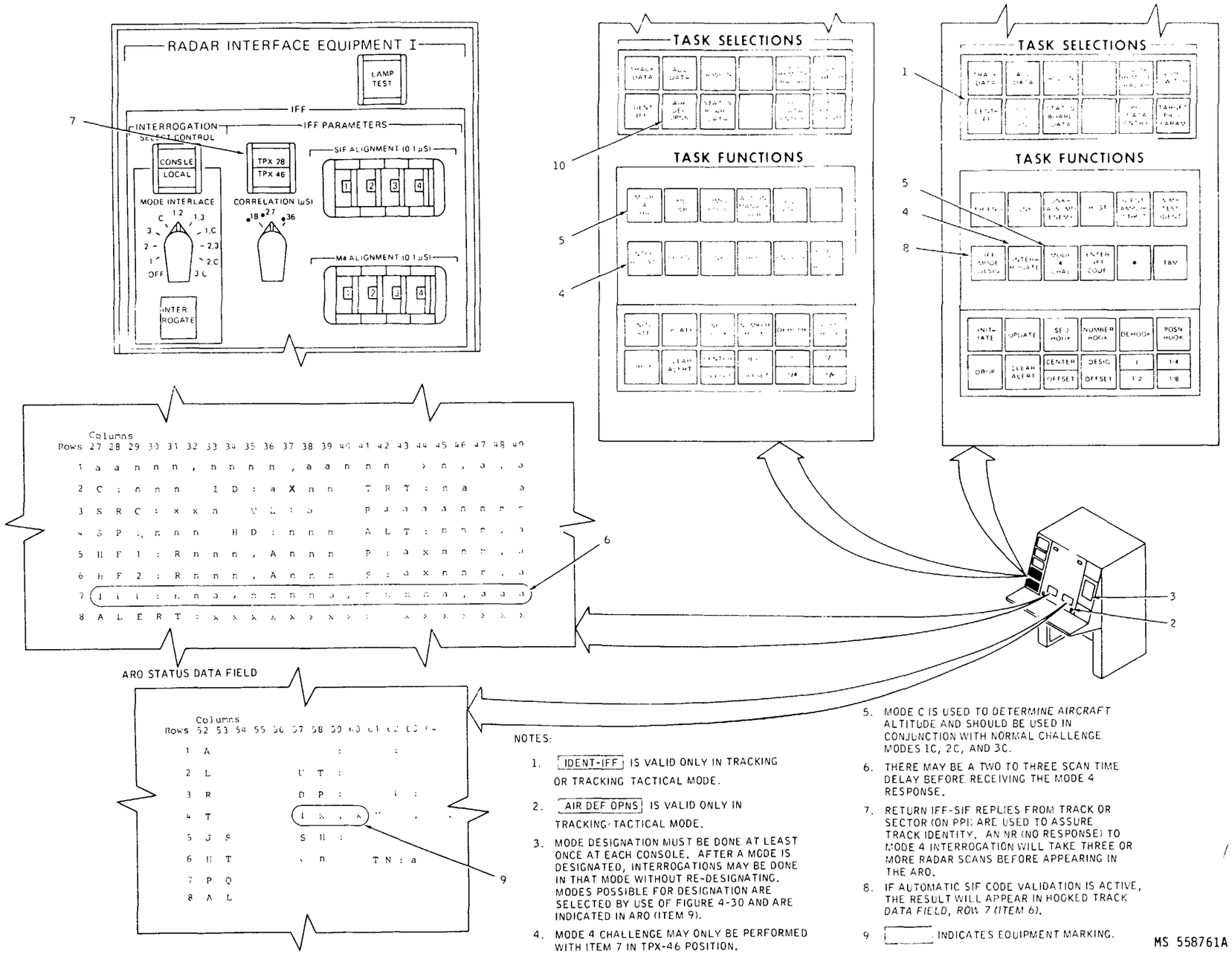


Figure 4-39. Interrogate a Target or a Sector (Sheet 2 of 2)

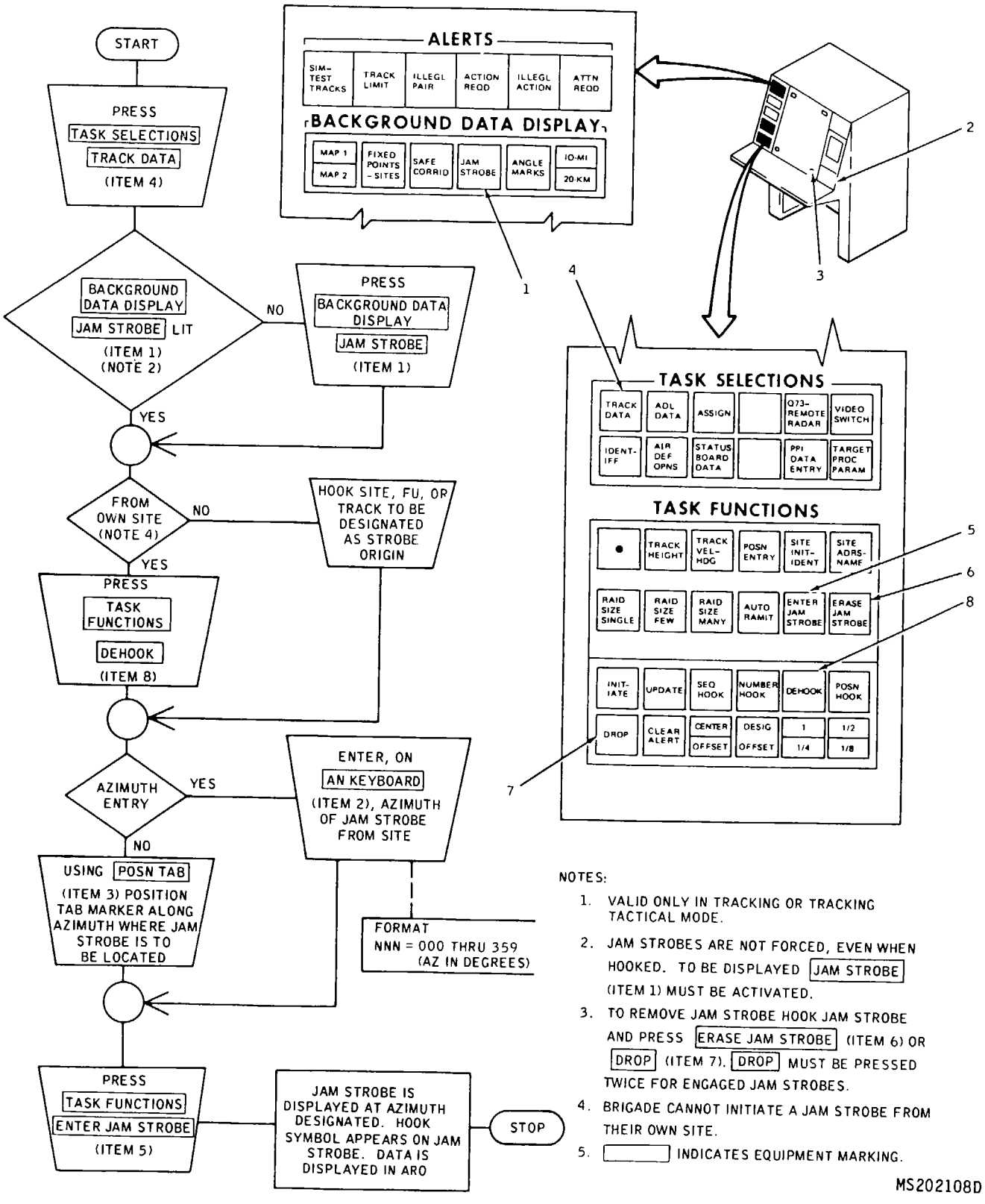
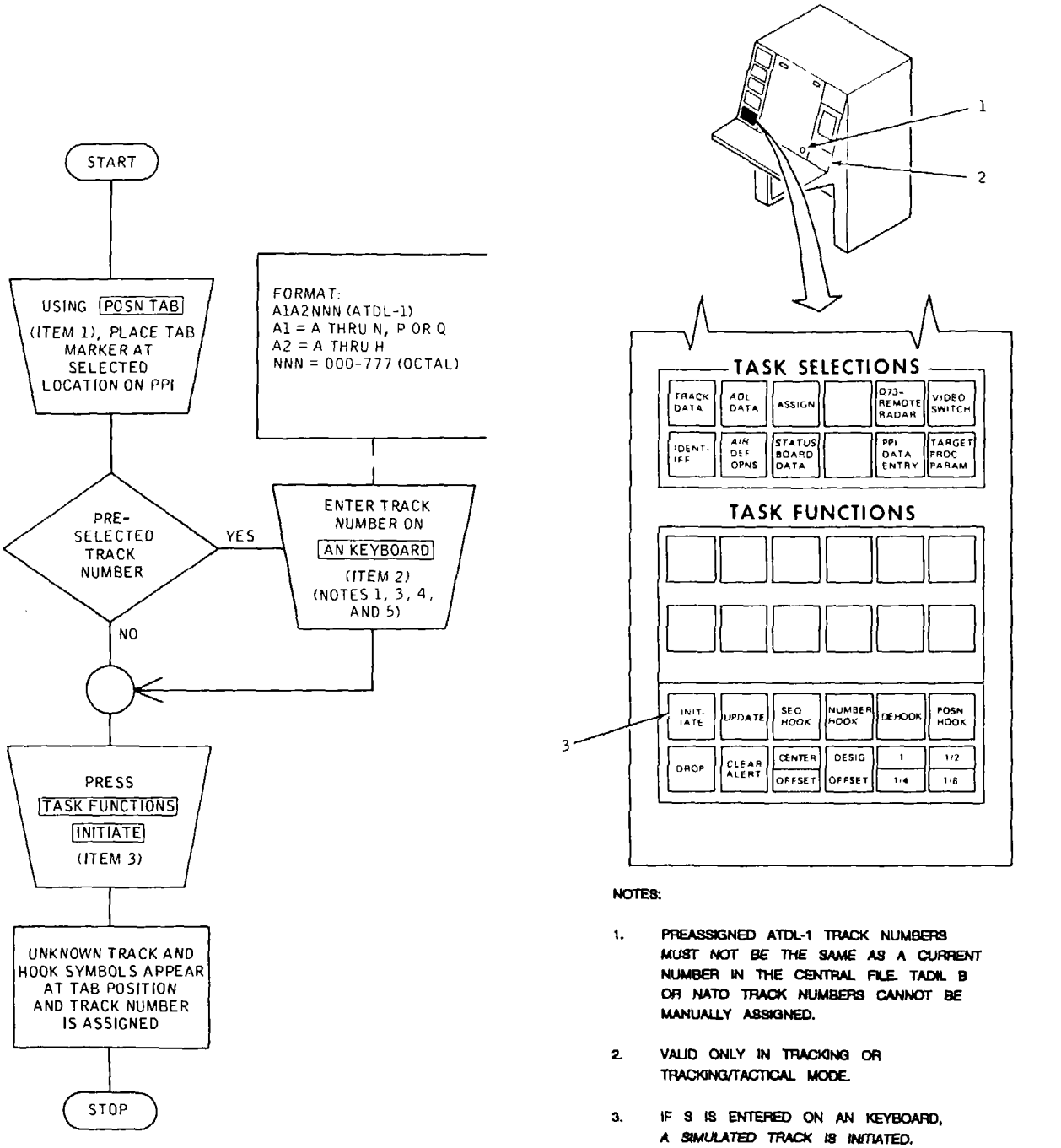


Figure 4-40. Jam Strobe--Enter non-ESM Jam Strobe

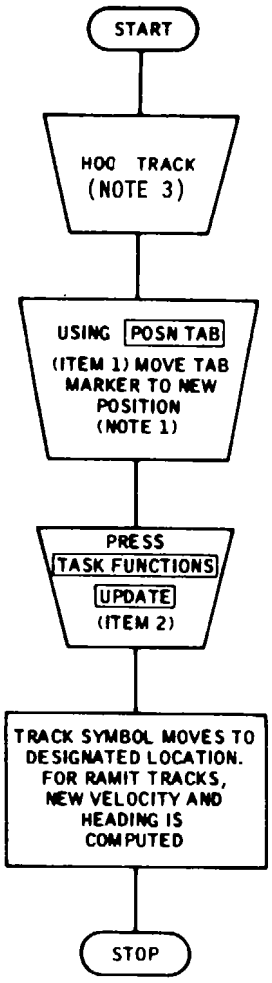


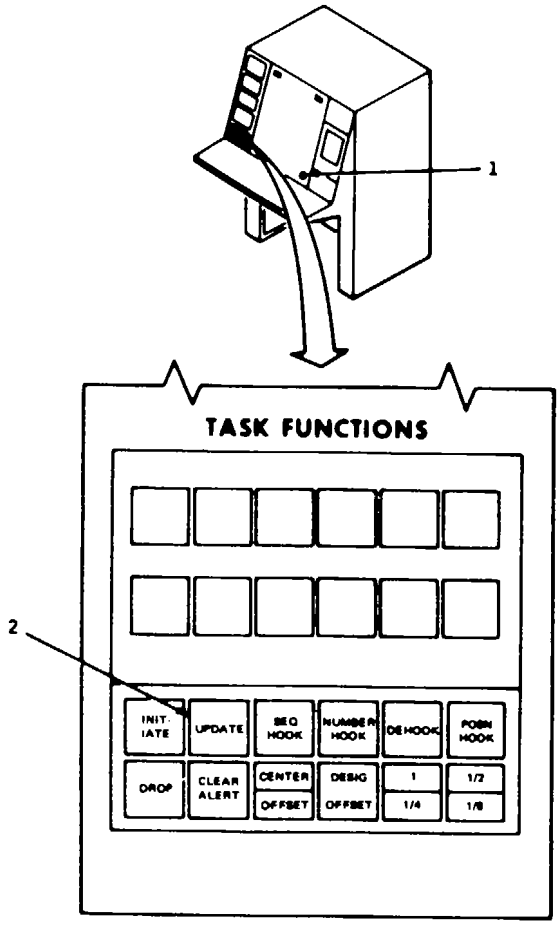
NOTES:

1. PREASSIGNED ATDL-1 TRACK NUMBERS MUST NOT BE THE SAME AS A CURRENT NUMBER IN THE CENTRAL FILE. TADIL B OR NATO TRACK NUMBERS CANNOT BE MANUALLY ASSIGNED.
2. VALID ONLY IN TRACKING OR TRACKING/TACTICAL MODE.
3. IF S IS ENTERED ON AN KEYBOARD, A SIMULATED TRACK IS INITIATED.
4. IF E IS ENTERED ON AN KEYBOARD, AN EW TRACK IS INITIATED.
5. MANUALLY ENTERED TRACK NUMBER AND SIMULATED OR EW TRACK DESIGNATOR CANNOT BE DONE SIMULTANEOUSLY.
6. [ ] INDICATES EQUIPMENT MARKING.

MS195978F

Figure 4-41. Manually Initiate a Track

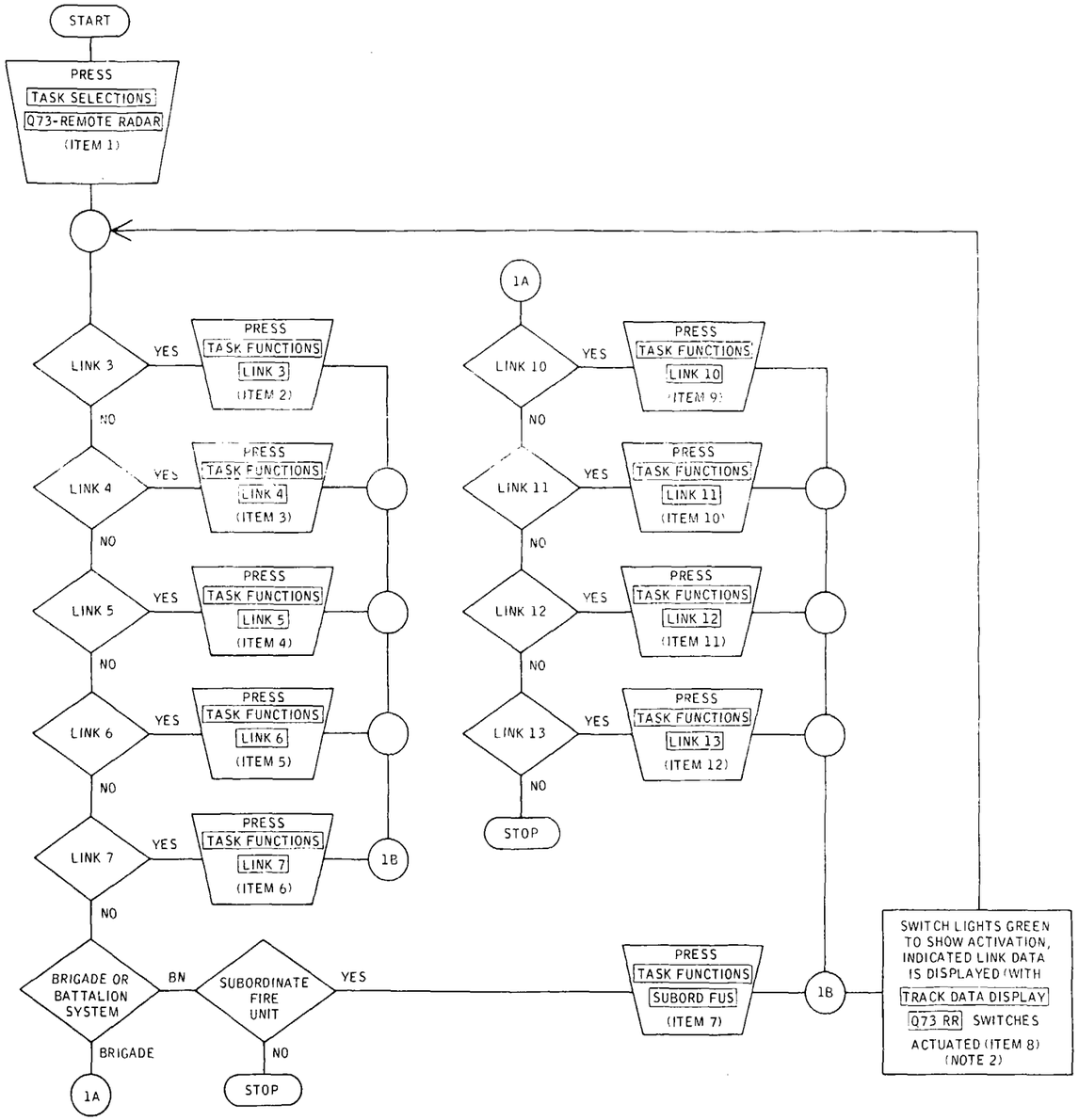


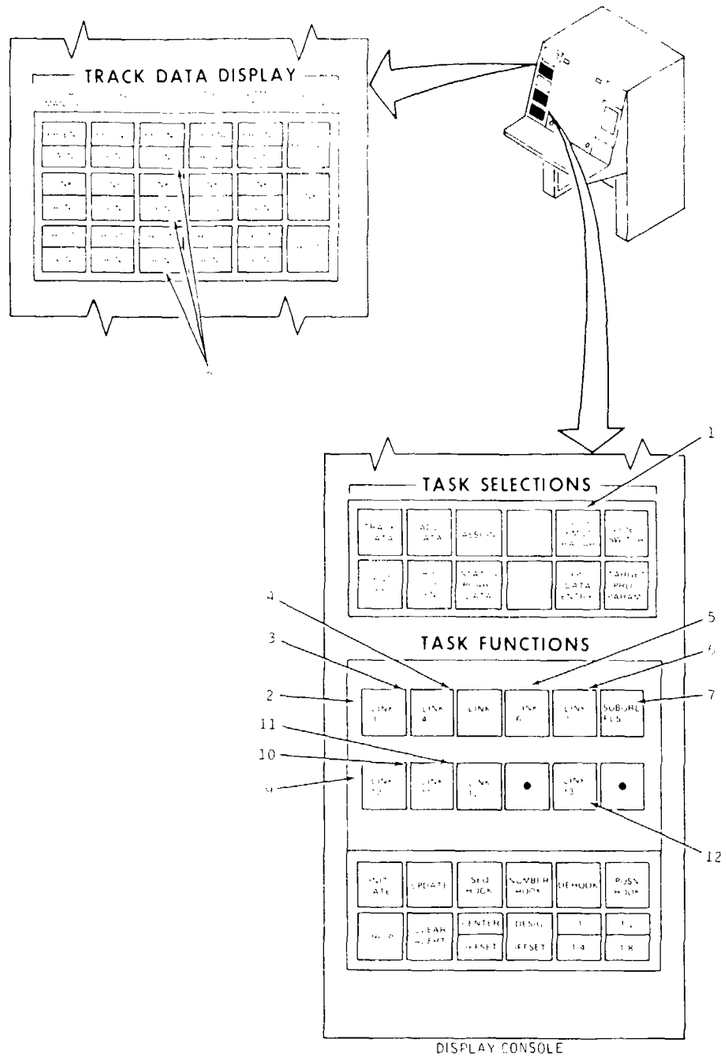


NOTES:

1. UPDATE POSITION MUST BE WITHIN 64 DATA MILES OF PREVIOUS POSITION.
2. VALID ONLY IN TRACKING OR TRACKING/TACTICAL MODE.
3. UPDATING AN AUTO TRACK WILL CAUSE AN ILLEGAL ACTION ALERT 'TK AUTO'.
4. [ ] INDICATES EQUIPMENT MARKING.

Figure 4-42. Manually Update a Track

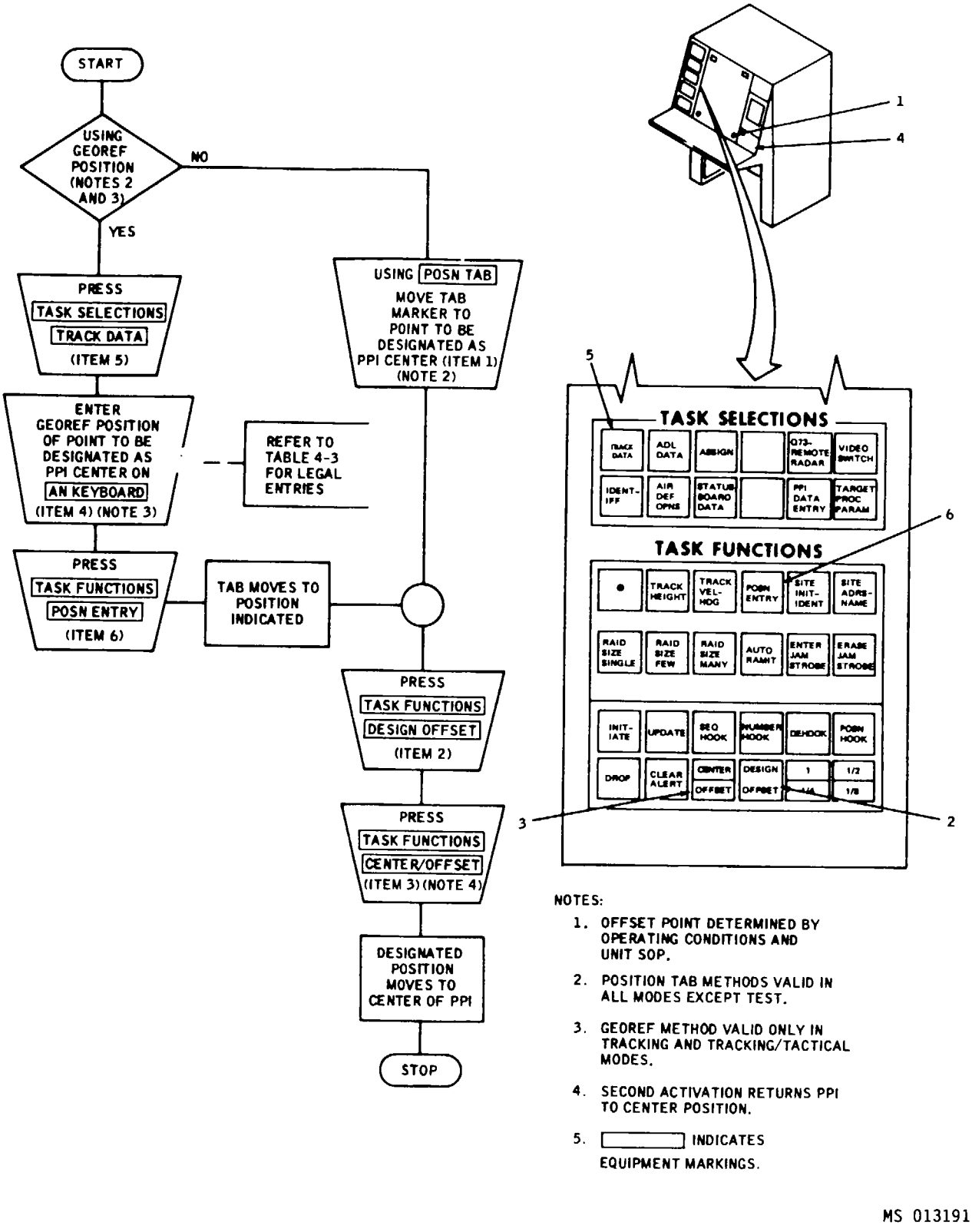




NOTES:
1. VALID IN ALL MODES EXCEPT TEST
2. SECOND ACTUATION INHIBITS DISPLAY.
3. [ ] INDICATES EQUIPMENT MARKING.

MS 195980B

Figure 4-43. Q73 Remote Radar Selections

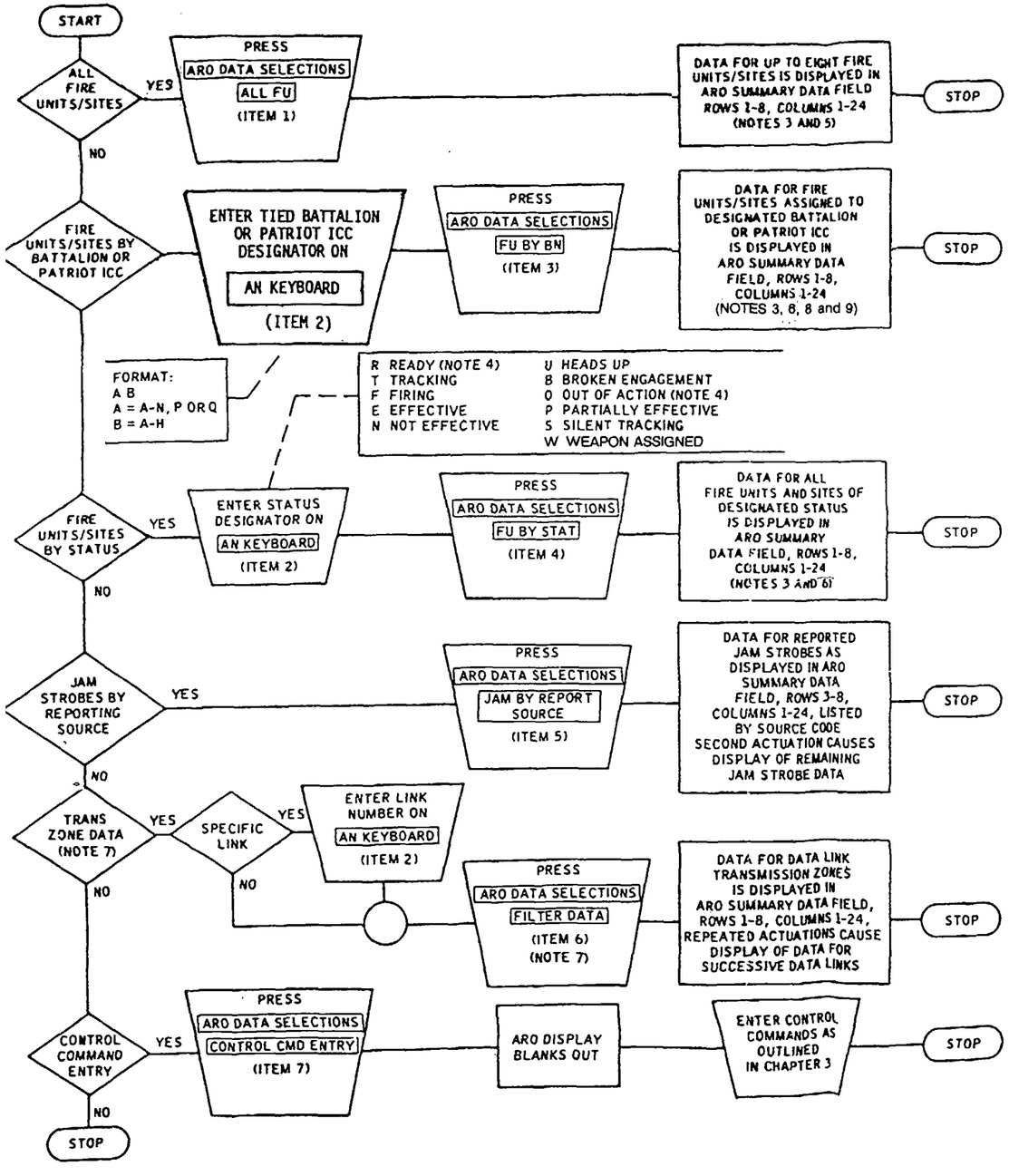


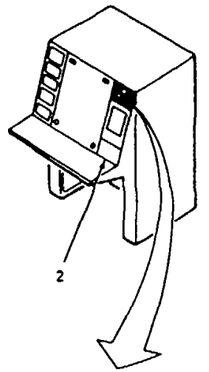
NOTES:

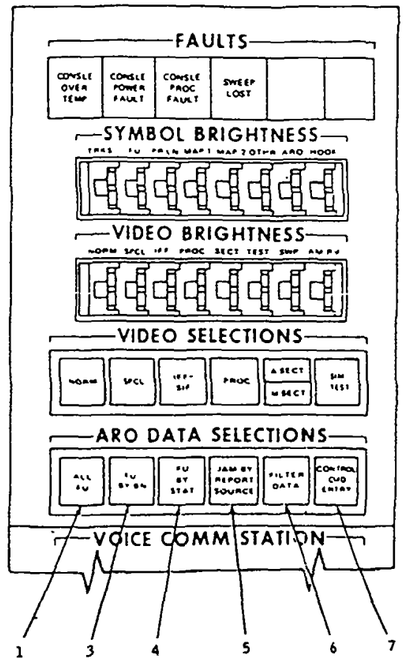
1. OFFSET POINT DETERMINED BY OPERATING CONDITIONS AND UNIT SOP.
2. POSITION TAB METHODS VALID IN ALL MODES EXCEPT TEST.
3. GEOREF METHOD VALID ONLY IN TRACKING AND TRACKING/TACTICAL MODES.
4. SECOND ACTIVATION RETURNS PPI TO CENTER POSITION.
5. [ ] INDICATES EQUIPMENT MARKINGS.

MS 013191

Figure 4-44. Select and Designate Display Offset





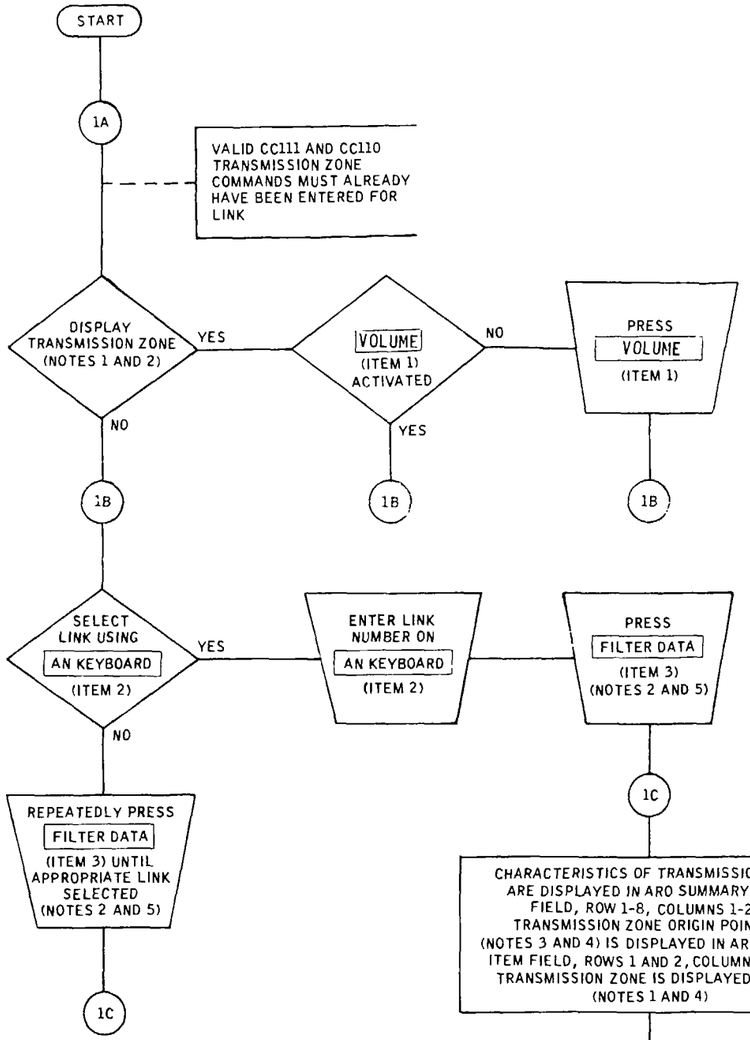


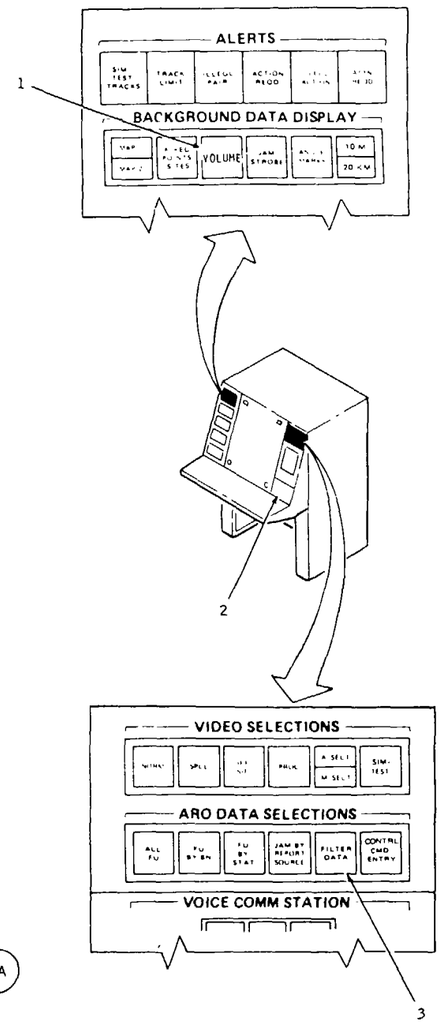
NOTES:

1. IF NO SELECTION IS MADE, ALL FIRE UNITS/SITES (FIRST EIGHT) WILL BE DISPLAYED.
2. VALID IN ALL MODES EXCEPT TEST.
3. FU/SITES MUST BE ON DDG BEFORE ARO WILL DISPLAY FU/SITES DATA.
4. FOR SITE OR PATRIOT FU, ONLY READY (R) OR OUT OF ACTION (O) STATUS IS APPLICABLE.
5. SUCCESSIVE ACTUATIONS DISPLAY DATA FOR REMAINING FUs/SITES IF MORE THAN EIGHT PRESENT.
6. IF MORE THAN EIGHT FUs/SITES ARE PRESENT, REPEAT [AN KEYBOARD] ENTRY AND PRESS [ARO DATA SELECTIONS] FOR DISPLAY OF REMAINING FUs/SITES.
7. FIGURE 4-45.1 PROVIDES INSTRUCTIONS FOR DISPLAYING DATA LINK TRANSMISSION ZONES INFORMATION ON THE PPI AND ARO.
8. SITES ENTRIES SHALL ALWAYS BE DISPLAYED.
9. IF OTHER BATTALIONS/BRIGADES ARE DAISY-CHAINED OFF THE TIED UNIT, FUs/SITES OF THE DAISY-CHAINED UNITS SHALL BE DISPLAYED ACCORDINGLY AND CONSIDERED AS BELONGING TO THE DIRECTLY TIED UNIT.
10. [ ] INDICATES EQUIPMENT MARKING.

MS 202497E

Figure 4-45. Select Auxiliary Read Out Data



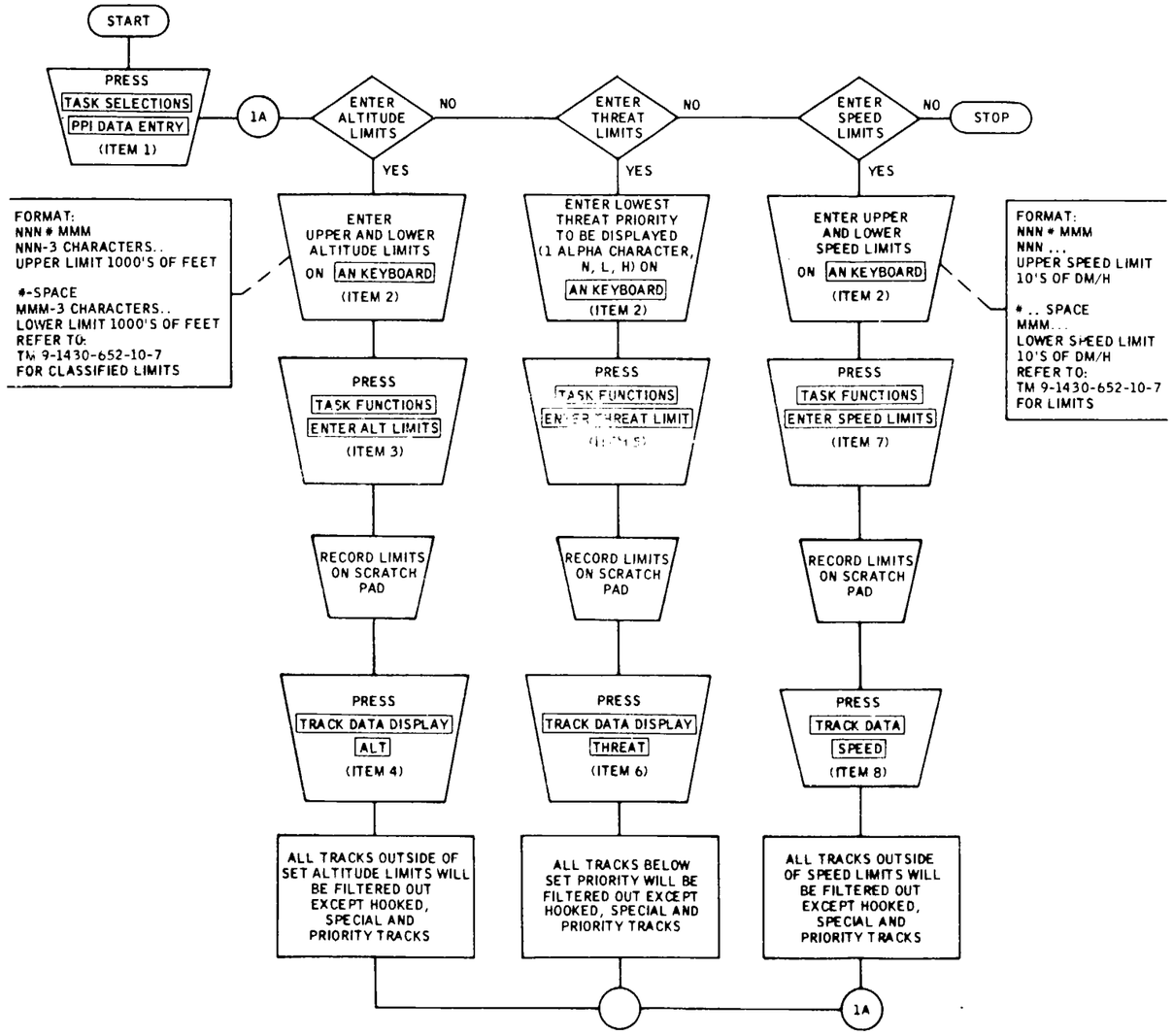


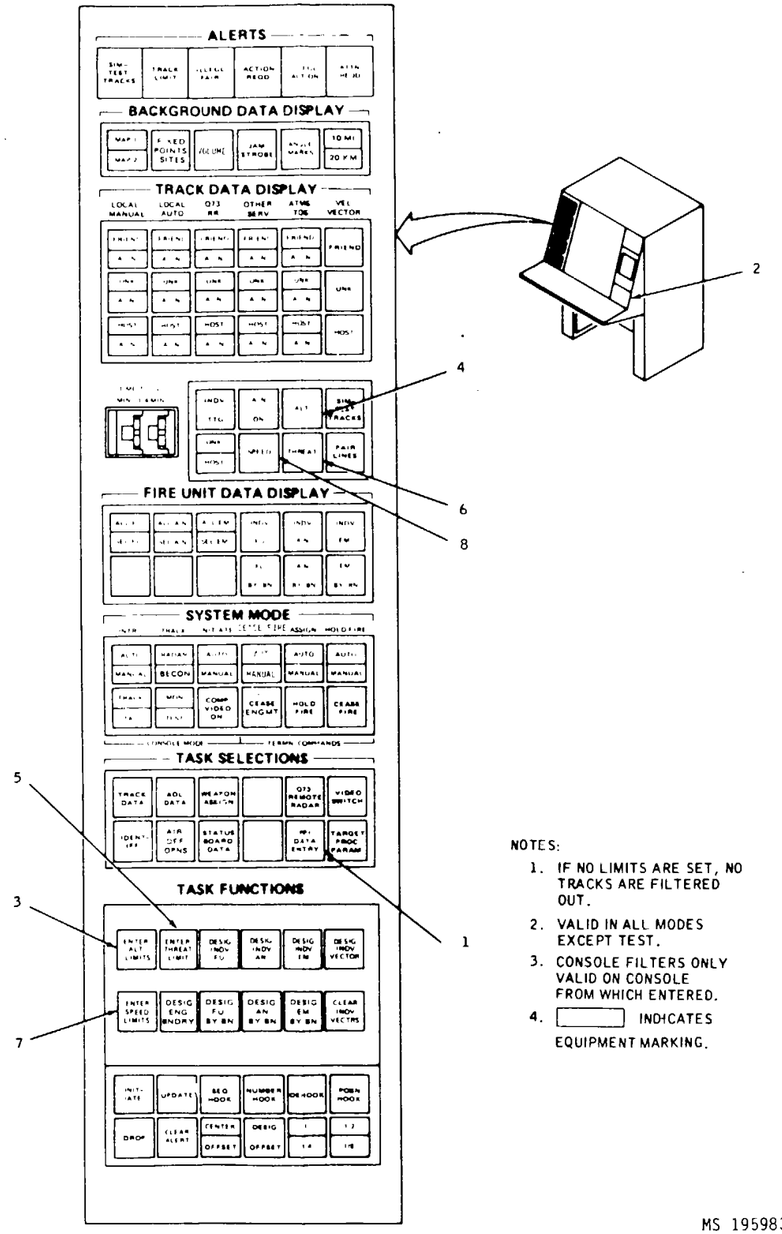
NOTES:

1. ONLY ONE TRANSMISSION ZONE CAN BE DISPLAYED. IT WILL BE DISPLAYED ON ALL CONSOLES HAVING VOLUME ACTIVATED EVEN IF ANOTHER LINK IS SELECTED ON THE OTHER CONSOLES.
2. HOOKED ITEM IS DEHOOKED.
3. CYLINDRICAL TRANSMISSION ZONE HAS ONLY ONE ORIGIN POINT.
4. THE HOOKING OF ANY ITEM ON THE INITIATING CONSOLE WILL REMOVE THE TRANSMISSION ZONE ORIGIN POINT(S) FROM THE ARO. THE OPERATOR CAN HOOK AND CLEAR THE ALERTS WITHOUT CHANGING THE PPI DISPLAY.
5. THE TRANSMISSION ZONE CAN BE REMOVED FROM THE PPI BY SELECTING ANOTHER LINK TRANSMISSION ZONE FOR DISPLAY OR DEACTIVATING THE ZONE (CC110 1k OFF) AND RESELECTING THE LINK FOR DISPLAY.
6. VALID IN ALL MODES EXCEPT TEST.
7. [ ] INDICATES EQUIPMENT MARKING.

MS 558767A

Figure 4-45.1. Display Data Link Transmission Zone Information on PPI and in ARO





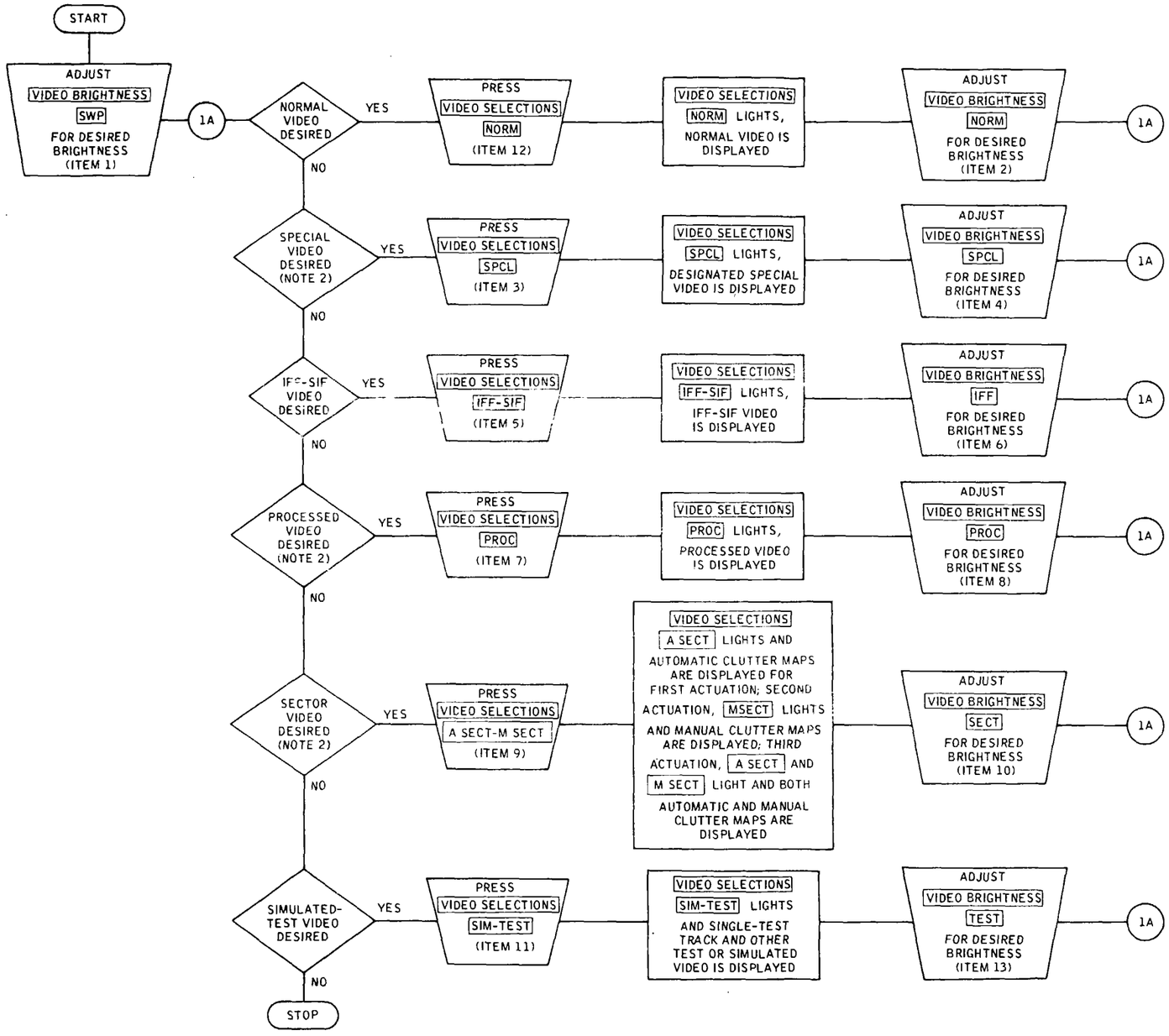
NOTES:

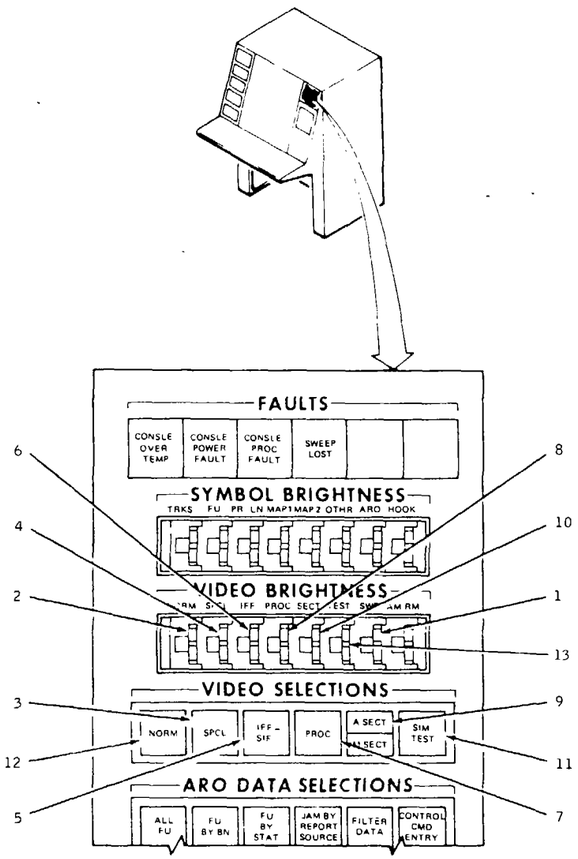
1. IF NO LIMITS ARE SET, NO TRACKS ARE FILTERED OUT.
2. VALID IN ALL MODES EXCEPT TEST.
3. CONSOLE FILTERS ONLY VALID ON CONSOLE FROM WHICH ENTERED.
4. [ ] INDICATES EQUIPMENT MARKING.

MS 195983B

Figure 4-46. Set Console Filter

All data on page 4-79/(4-80 blank), including figure 4-47, deleted





NOTES:

1. VALID IN ALL MODES EXCEPT TEST.
2. SPCL, PROC, AND A SECT/M SECT VIDEO SELECTIONS ARE NOT USED WHEN SYSTEM IS CONNECTED TO AN/TPS-32 RADAR.
3. [ ] INDICATES EQUIPMENT MARKING.

MS 202749

Figure 4-48. Video Selections Procedures

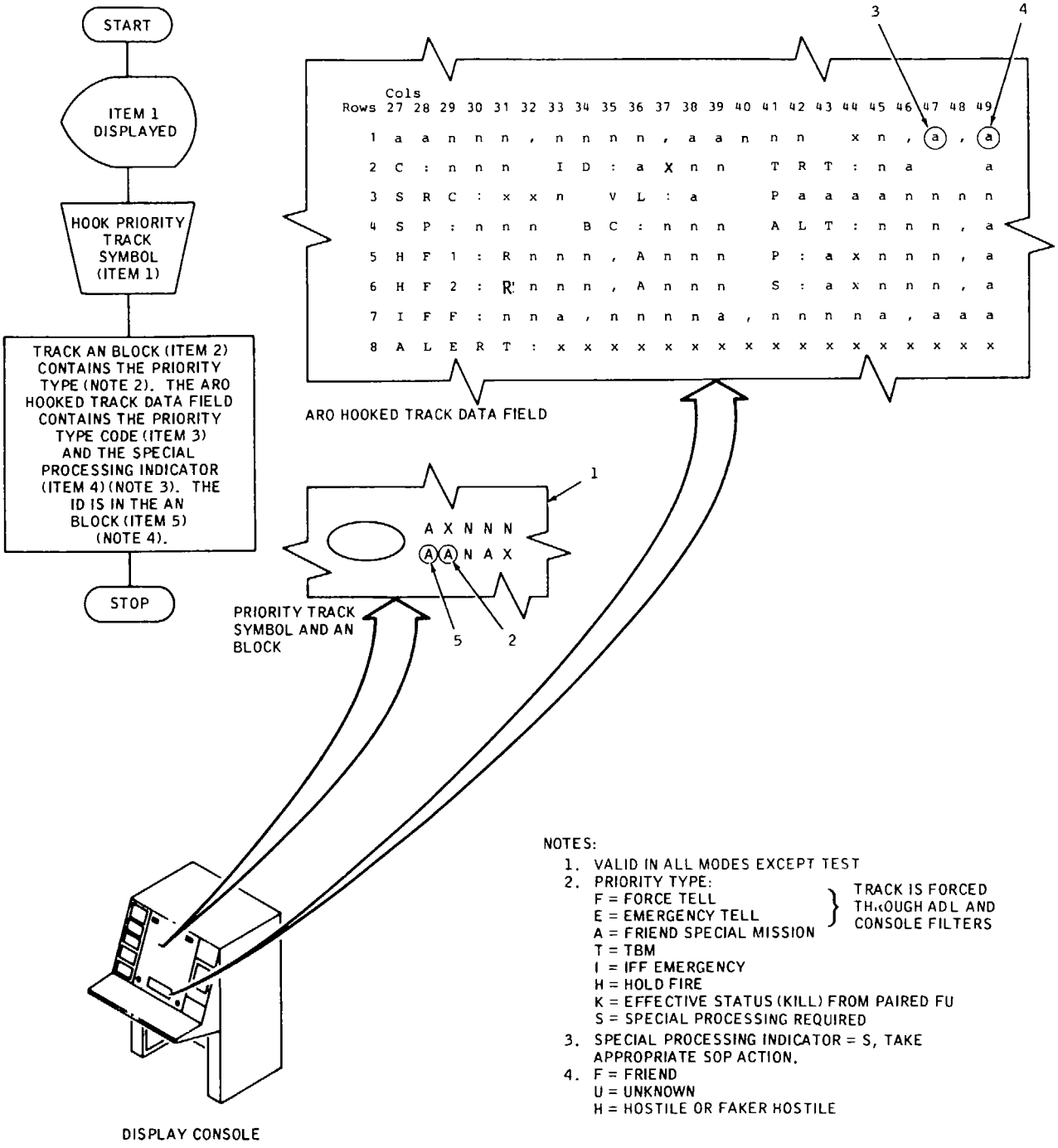
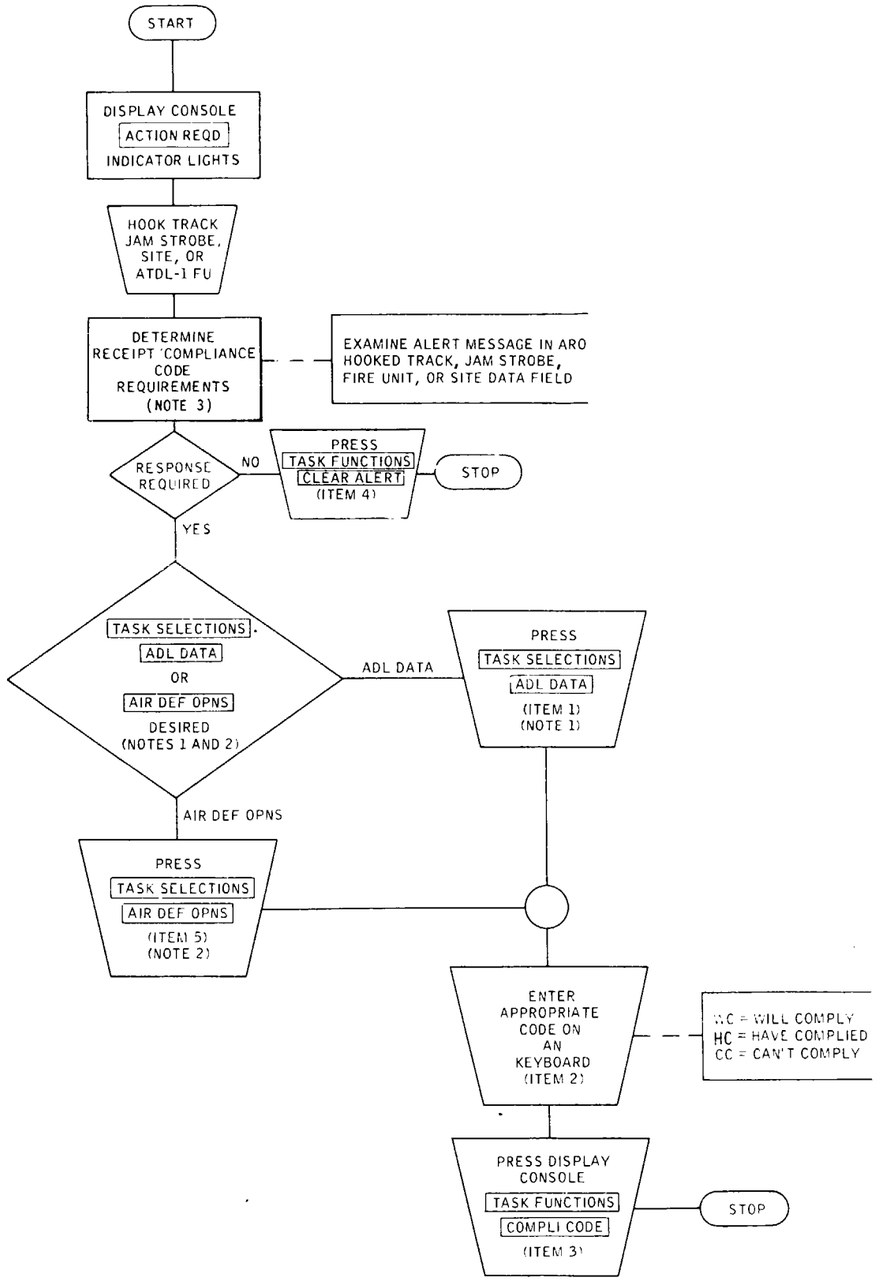
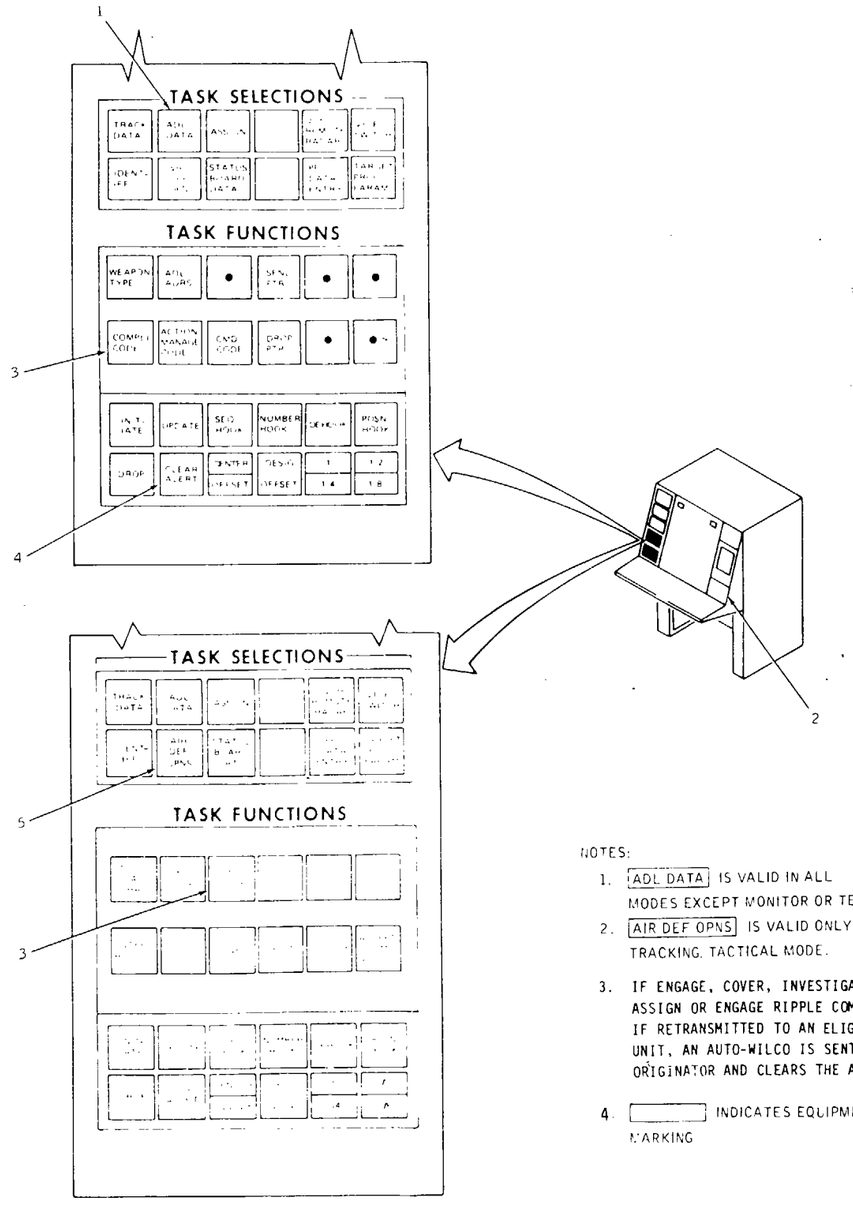


Figure 4-49. Receive Force Tell, Emergency Tell, and Special Processing





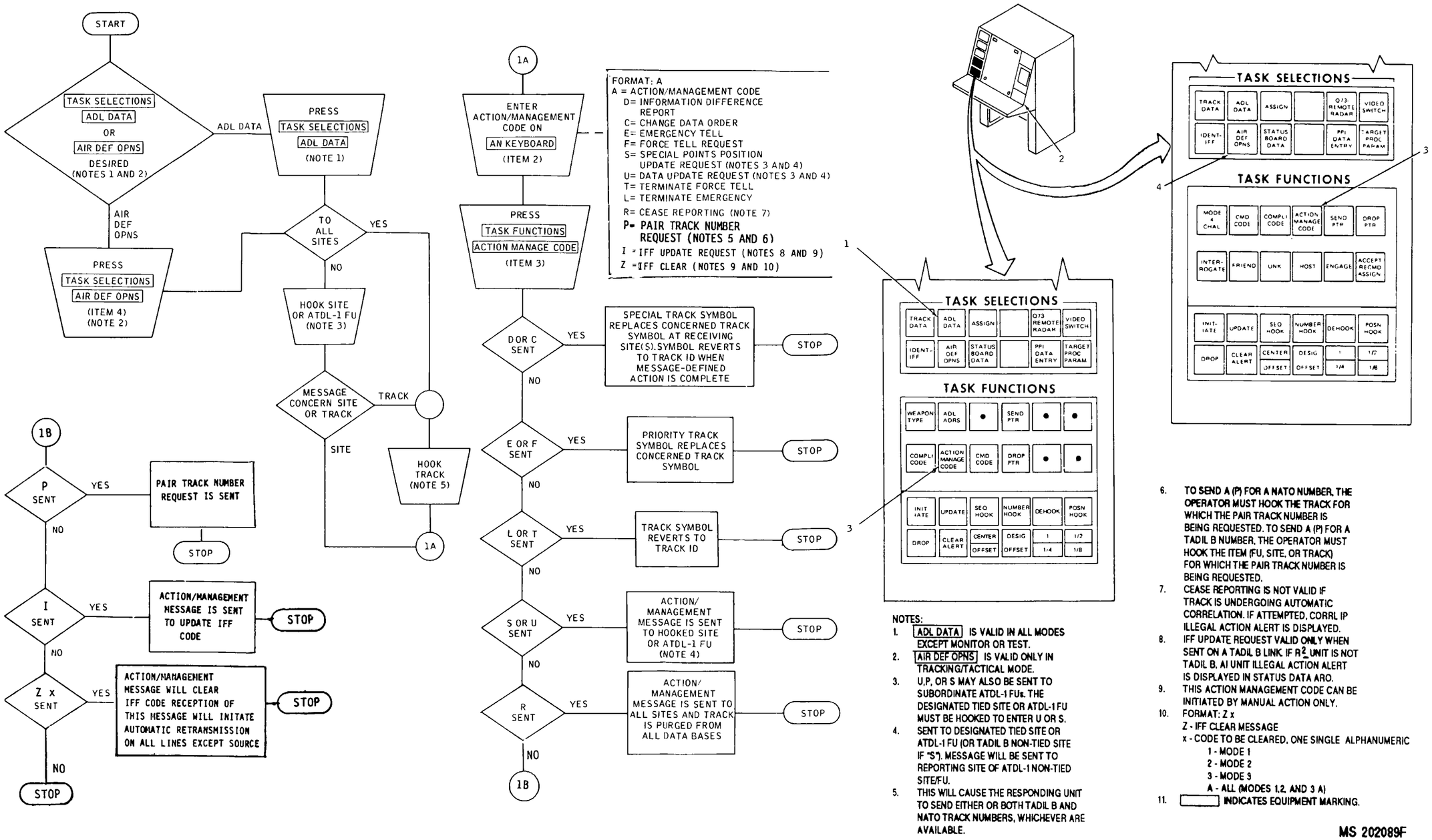
NOTES:

1. ADL DATA IS VALID IN ALL MODES EXCEPT MONITOR OR TEST.
2. AIR DEF OPNS IS VALID ONLY IN TRACKING, TACTICAL MODE.
3. IF ENGAGE, COVER, INVESTIGATE/ ASSIGN OR ENGAGE RIPPLE COMMAND IF RETRANSMITTED TO AN ELIGIBLE UNIT, AN AUTO-WILCO IS SENT TO THE ORIGINATOR AND CLEARS THE ALERT.
4. [ ] INDICATES EQUIPMENT MARKING

MS 428009A

Figure 4-50. Receive Commands

Page 4-85/(4-86 blank), including figure 4-51, deleted



NOTES:

1. ADL DATA IS VALID IN ALL MODES EXCEPT MONITOR OR TEST.
2. AIR DEF OPNS IS VALID ONLY IN TRACKING/TACTICAL MODE.
3. U,P, OR S MAY ALSO BE SENT TO SUBORDINATE ATDL-1 FUs. THE DESIGNATED TIED SITE OR ATDL-1 FU MUST BE HOOKED TO ENTER U OR S.
4. SENT TO DESIGNATED TIED SITE OR ATDL-1 FU (OR TADIL B NON-TIED SITE IF "S"). MESSAGE WILL BE SENT TO REPORTING SITE OF ATDL-1 NON-TIED SITE/FU.
5. THIS WILL CAUSE THE RESPONDING UNIT TO SEND EITHER OR BOTH TADIL B AND NATO TRACK NUMBERS, WHICHEVER ARE AVAILABLE.
6. TO SEND A (P) FOR A NATO NUMBER, THE OPERATOR MUST HOOK THE TRACK FOR WHICH THE PAIR TRACK NUMBER IS BEING REQUESTED. TO SEND A (P) FOR A TADIL B NUMBER, THE OPERATOR MUST HOOK THE ITEM (FU, SITE, OR TRACK) FOR WHICH THE PAIR TRACK NUMBER IS BEING REQUESTED.
7. CEASE REPORTING IS NOT VALID IF TRACK IS UNDERGOING AUTOMATIC CORRELATION. IF ATTEMPTED, CORRL IP ILLEGAL ACTION ALERT IS DISPLAYED.
8. IFF UPDATE REQUEST VALID ONLY WHEN SENT ON A TADIL B LINK. IF R2 UNIT IS NOT TADIL B, AI UNIT ILLEGAL ACTION ALERT IS DISPLAYED IN STATUS DATA ARO.
9. THIS ACTION MANAGEMENT CODE CAN BE INITIATED BY MANUAL ACTION ONLY.
10. FORMAT: Z x
    Z - IFF CLEAR MESSAGE
    x - CODE TO BE CLEARED, ONE SINGLE ALPHANUMERIC
    1 - MODE 1
    2 - MODE 2
    3 - MODE 3
    A - ALL (MODES 1,2, AND 3 A)
11. [ ] INDICATES EQUIPMENT MARKING.

MS 202089F

Figure 4-52. Send Action/Management Message

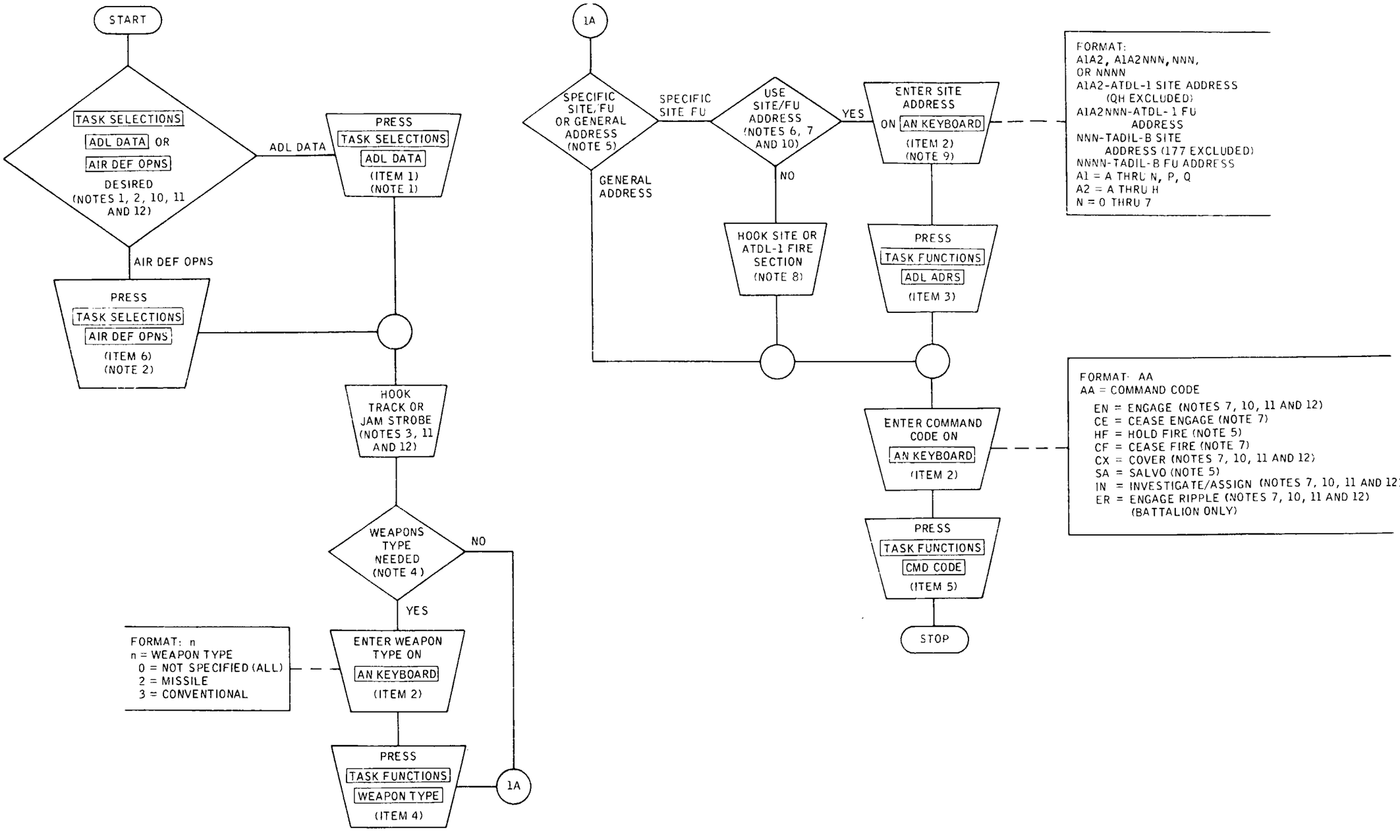
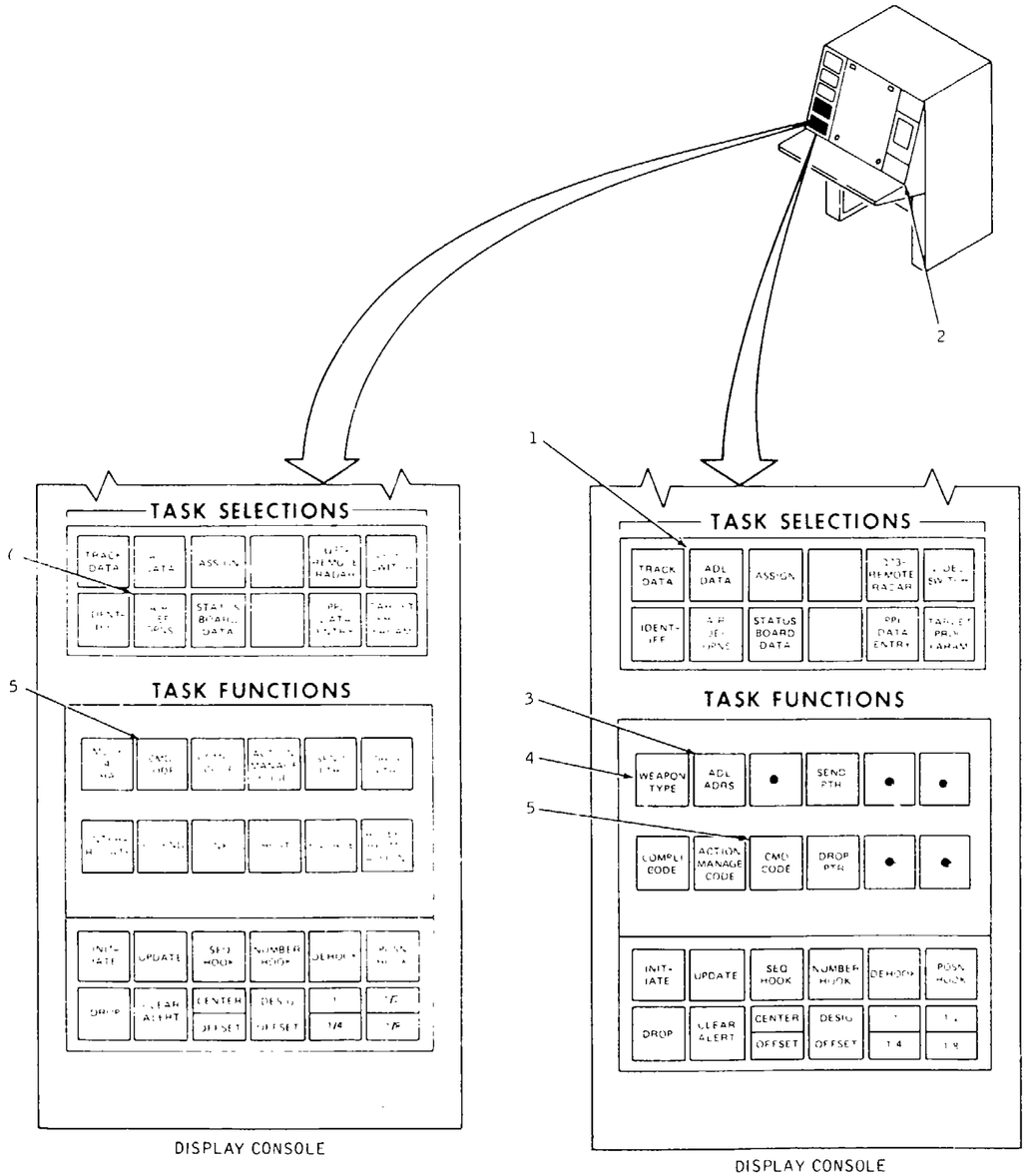


Figure 4-52.1. Send Command Message (Sheet 1 of 2)



NOTES:

1. [ADL DATA] IS VALID IN ALL MODES EXCEPT MONITOR OR TEST.
2. [AIR DEF OPNS] IS VALID ONLY IN TRACKING TACTICAL MODE.
3. JAM STROBE ENGAGEMENT IS ONLY POSSIBLE WITH ATDL-1 FUs.
4. USE OF WEAPON TYPE REQUIRES THE USE OF [ADL DATA]. IF NO ENTRY IS MADE, 0 IS ASSUMED.
5. GENERAL ADDRESS IS VALID ONLY FOR COMMANDS HOLD FIRE OR SALVO. GENERAL ADDRESS MAY ALSO BE SENT BY PRESSING [ADL DATA], ENTERING 0H OR 177, AND PRESSING [ADL ADRS].
6. USE OF SITE FU ADDRESS REQUIRES THE USE OF [ADL DATA].
7. SPECIFIC ADDRESS IS VALID FOR COMMANDS ENGAGE, ENGAGE RIPPLE, COVER, INVESTIGATE ASSIGN, CEASE FIRE, AND CEASE ENGAGE. MESSAGE IS SENT TO DESIGNATED TIED SITE, FU, OR TADIL-B NON-TIED SITE. MESSAGE WILL BE SENT TO REPORTING SITE OF ATDL-1 NON-TIED SITE OR FU.
8. ILLEGAL IF [ADL ADRS] PREVIOUSLY ENTERED.
9. ILLEGAL IF SITE FU IS CURRENTLY HOOKED.
10. ATTEMPTING TO SEND ENGAGE, ENGAGE RIPPLE, INVESTIGATE, ASSIGN, OR COVER COMMAND TO A LASHE FU WILL RESULT IN FU LASHE ILLEGAL ACTION.
11. ATTEMPTING TO SEND ENGAGE OR ENGAGE RIPPLE COMMANDS ON A HOSTILE OR UNKNOWN TRACK IN A HOLD ZONE WILL RESULT IN TK IN HZ ILLEGAL ACTION. IF THE TRACK IS HOSTILE AND THE COMMAND WAS ORIGINALLY RECEIVED VIA ADL, A MANUAL ASSIGN WILL SEND THE COMMAND. IF THE TRACK IS UNKNOWN, THE COMMAND CANNOT BE SENT. IF THE TRACK IS HOSTILE, AND THE COMMAND DID NOT ORIGINATE FROM ADL, THE COMMAND CANNOT BE SENT. ATTEMPTING TO ASSIGN AN UNKNOWN TRACK IN A TIGHT ZONE IF THE COMMAND WAS ORIGINALLY RECEIVED VIA ADL WILL RESULT IN TK N/HST ILLEGAL ACTION.
12. FOR TRACKS IN HOLD OR TIGHT ZONE, RETRANSMISSION OF COMMANDS MAY BE NECESSARY. REFER TO LOCAL SOP.
13. [ ] INDICATES EQUIPMENT MARKING.

MS 195916H

Figure 4-52.1. Send Command Message (Sheet 2 of 2)

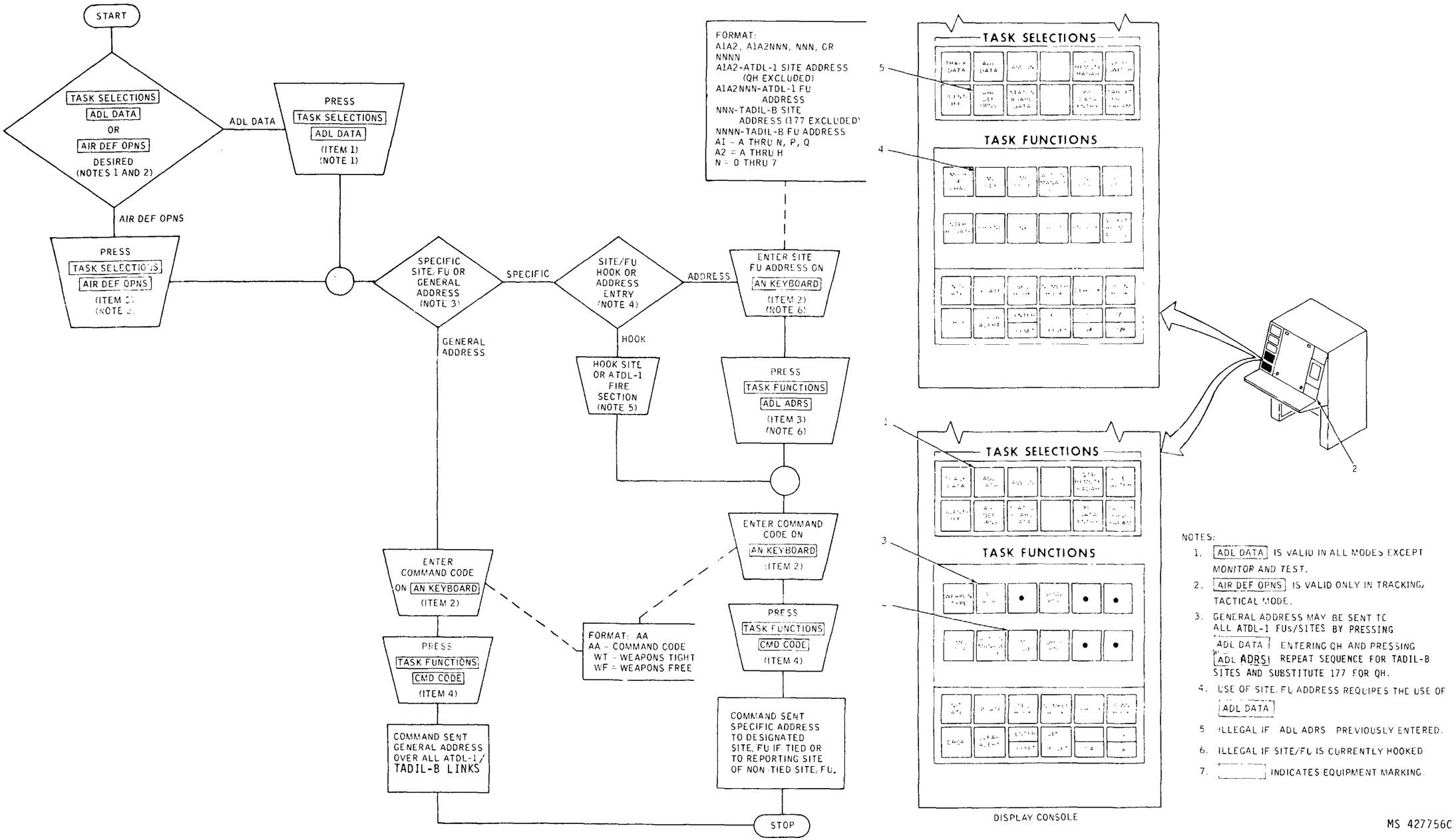
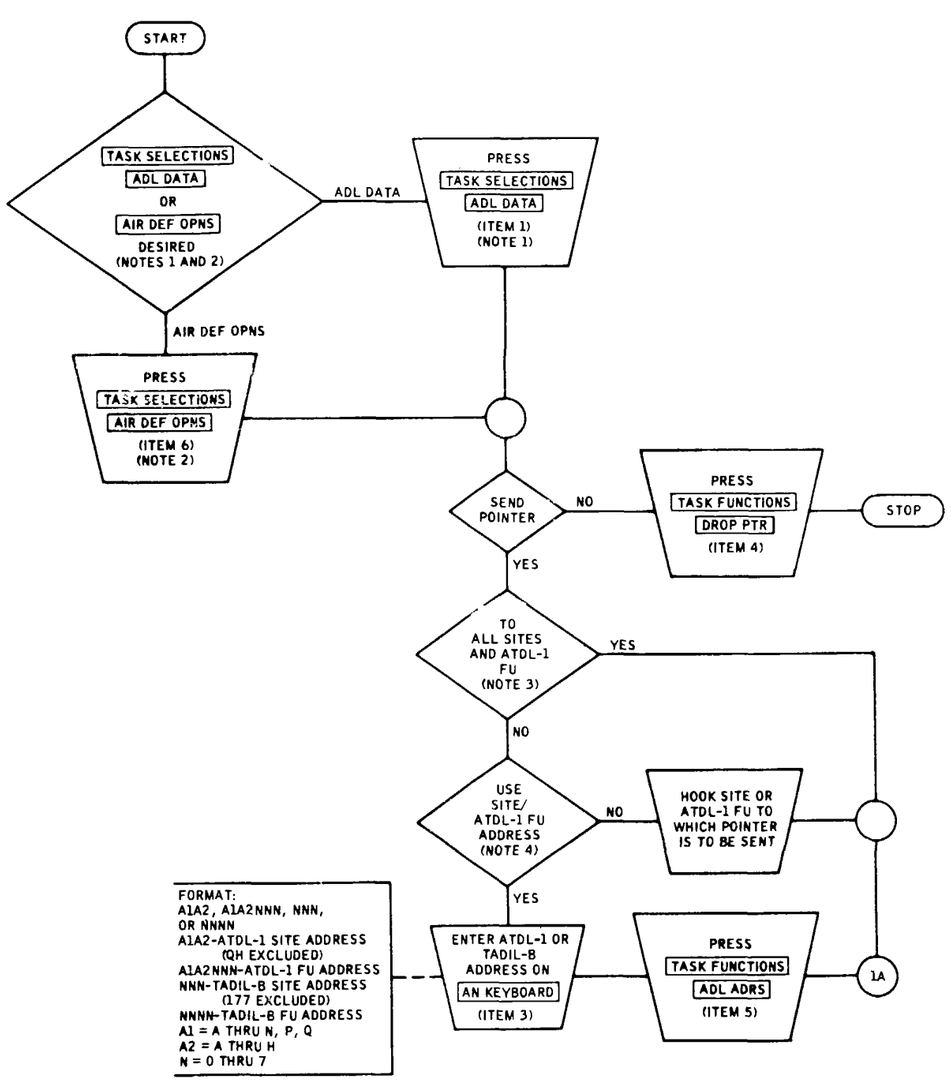
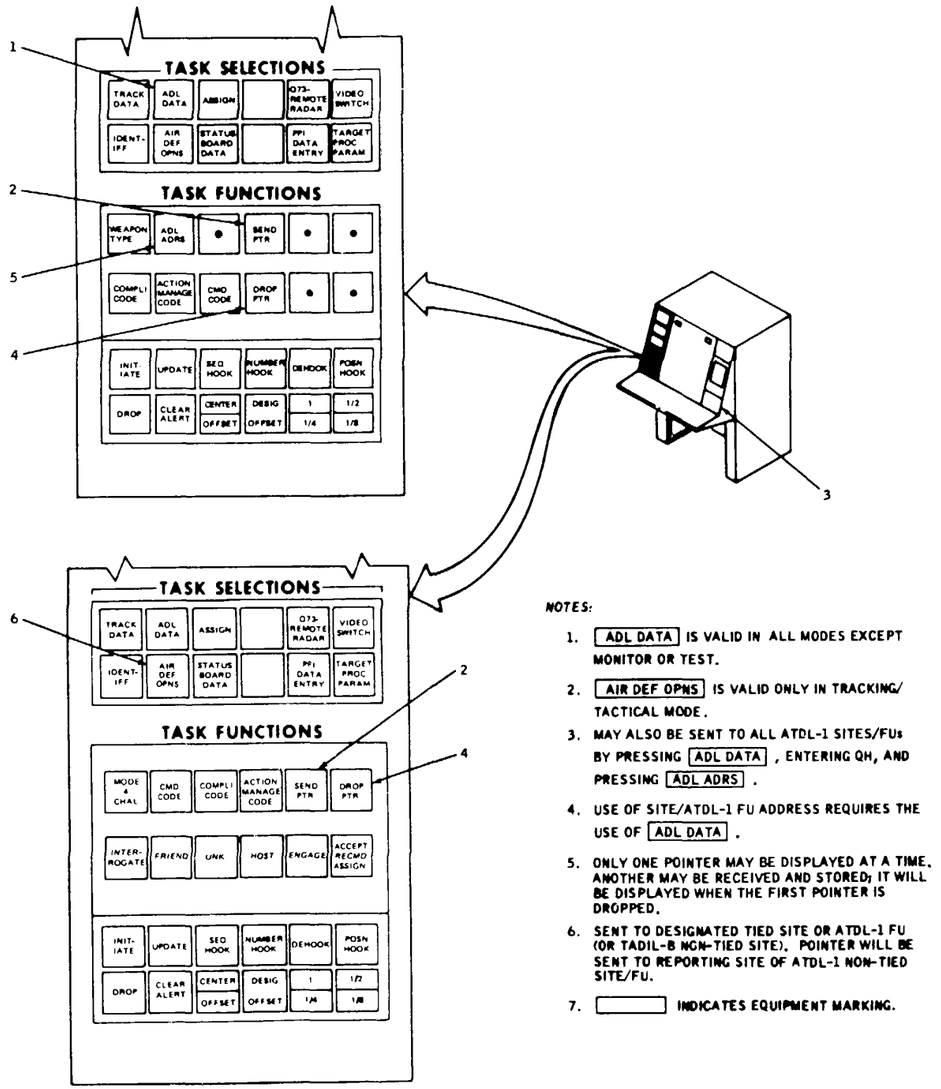


Figure 4-53. Send operational Status Command Message



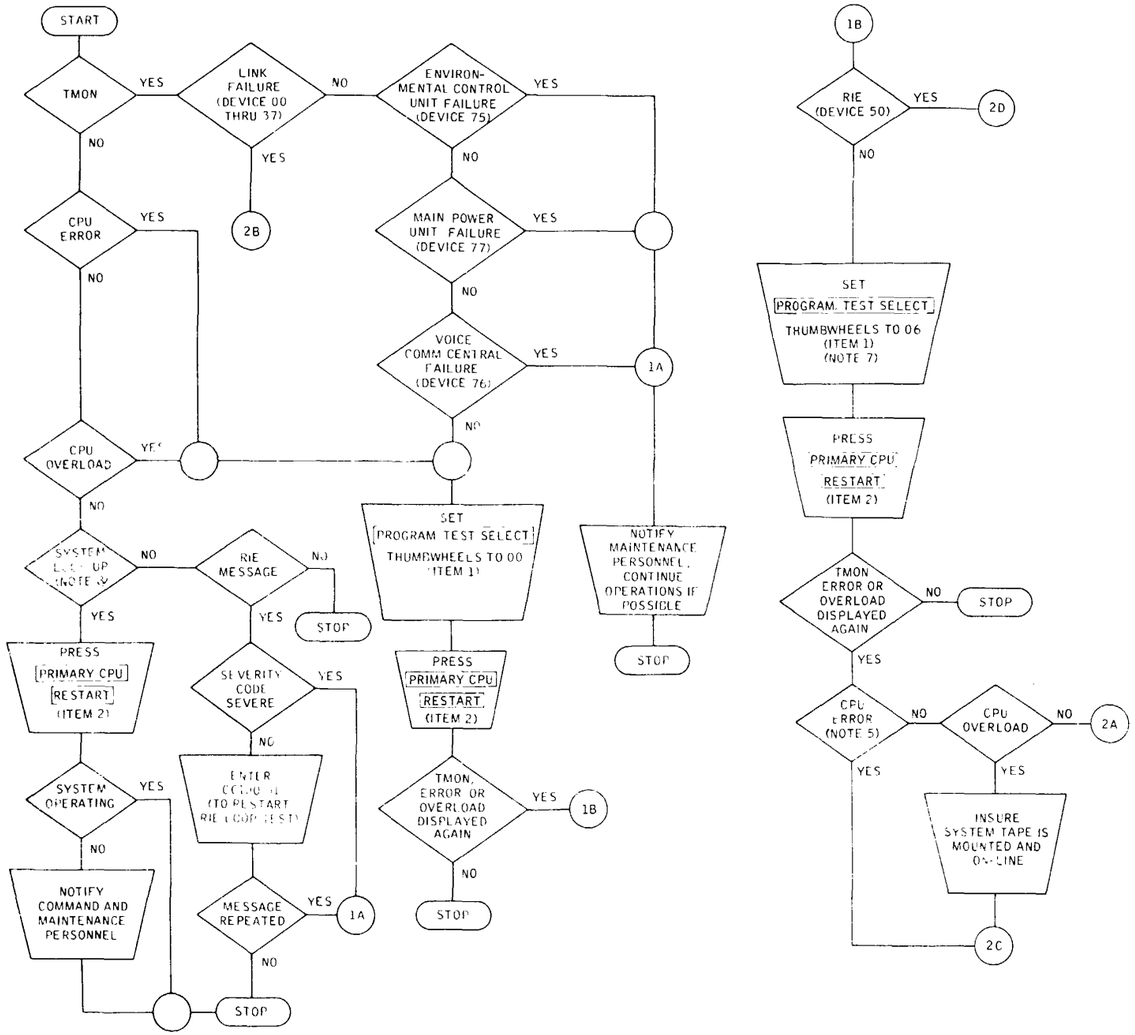


NOTES:

1. ADL DATA IS VALID IN ALL MODES EXCEPT MONITOR OR TEST.
2. AIR DEF OPNS IS VALID ONLY IN TRACKING/ TACTICAL MODE.
3. MAY ALSO BE SENT TO ALL ATDL-1 SITES/FUs BY PRESSING ADL DATA , ENTERING QH, AND PRESSING ADL ADRS .
4. USE OF SITE/ATDL-1 FU ADDRESS REQUIRES THE USE OF ADL DATA .
5. ONLY ONE POINTER MAY BE DISPLAYED AT A TIME. ANOTHER MAY BE RECEIVED AND STORED; IT WILL BE DISPLAYED WHEN THE FIRST POINTER IS DROPPED.
6. SENT TO DESIGNATED TIED SITE OR ATDL-1 FU (OR TADIL-B NON-TIED SITE). POINTER WILL BE SENT TO REPORTING SITE OF ATDL-1 NON-TIED SITE/FU.
7. [ ] INDICATES EQUIPMENT MARKING.

MS 202083E

Figure 4-54. Send/Drop Pointer



NOTES:

1. 21 BRIGADE
   - SINGLE OR DUAL CPU
   - ONE MEMORY DOWN
   - *NORMAL OPERATIONS*
   - NO AUXILIARY FUNCTION AVAILABLE

2. 22 BRIGADE OR 26 BATTALION
   - SINGLE OR DUAL CPU
   - ONE MEMORY DOWN
   - REDUCED TRACKS
   - AUXILIARY FUNCTION AVAILABLE

3. 25 BATTALION
   - DUAL CPU ONLY
   - ONE MEMORY DOWN
   - NORMAL OPERATIONS
   - NO AUXILIARY FUNCTION AVAILABLE

4. IF MEMORY BANK THREE IS OFFLINE, THE KPU WILL PRINT: < ERROR CODE 037770 BANK THREE OFFLINE >.

5. THE CONTENTS OF THE CPU ERROR MESSAGE MAY CHANGE EACH TIME IT OCCURS UNTIL CORRECTIVE ACTION IS TAKEN. IN ADDITION, THE CPU ERROR MAY CAUSE AN OVERLOAD CONDITION AND THIS SHOULD NOT BE TREATED AS A NEW PROBLEM.

6. PHYSICAL MEMORIES (CMOS HARDWARE CONSISTS OF PHYSICAL BANKS 1-4) NEED NOT BE NUMBERED CONSECUTIVELY FROM LEFT TO RIGHT. EXAMPLE - IF PHYSICAL MEMORY 2 FAILS, THE MOST EFFICIENT METHOD OF ESTABLISHING CONSECUTIVELY NUMBERED MEMORIES IS TO RE-DESIGNATE PHYSICAL MEMORY 4 (FROM LOGICAL MEMORY ADDRESS 3 TO 1). MEMORY SELECT (ITEM 9) FOR PHYSICAL MEMORIES 5-8 IS OFF.

PHYSICAL BANK	1	2	3	4	5	6	7	8	
BANK ADDRESS / THUMBWHEEL (ITEM 10)	0	1	2	3	OFF	OFF	OFF	OFF	BEFORE FAULT
	0	OFF LINE	2	1	OFF	OFF	OFF	OFF	AFTER RENUMBERING

7. CC06 RESETS AUTO INITIATE. THIS MUST BE RESTORED BY OPERATOR ACTION.

8. LOCK-UP = SYSTEM REFUSES TO RESPOND TO INPUTS.

9. THE ACTIVE CONSOLES ADDRESSES MUST BE SEQUENTIAL BEGINNING AT ZERO.

10. PHYSICAL MODEM NUMBER ASSIGNED TO LINK DURING INITIALIZATION, CC102 mm nn WHERE mm = LOGICAL DEVICE NUMBER (LINK) AND nn = PHYSICAL MODEM NUMBER.

11. RESET PRIMARY CPU SELECT TO OTHER POSITION.

12. BATTALION CONFIGURATION 26 IS THE ONLY BATTALION CONFIGURATION OPERABLE WITH A SINGLE CPU.

13. IF MEMORY BANK TWO IS OFFLINE, THE KPU WILL PRINT: < ERROR CODE 027770 BANK TWO OFFLINE >.

14. [ ] INDICATES EQUIPMENT MARKING

MS 195992E

Figure 4-55. System Status Messages/Emergency Reconfiguration (Sheet 1 of 5)

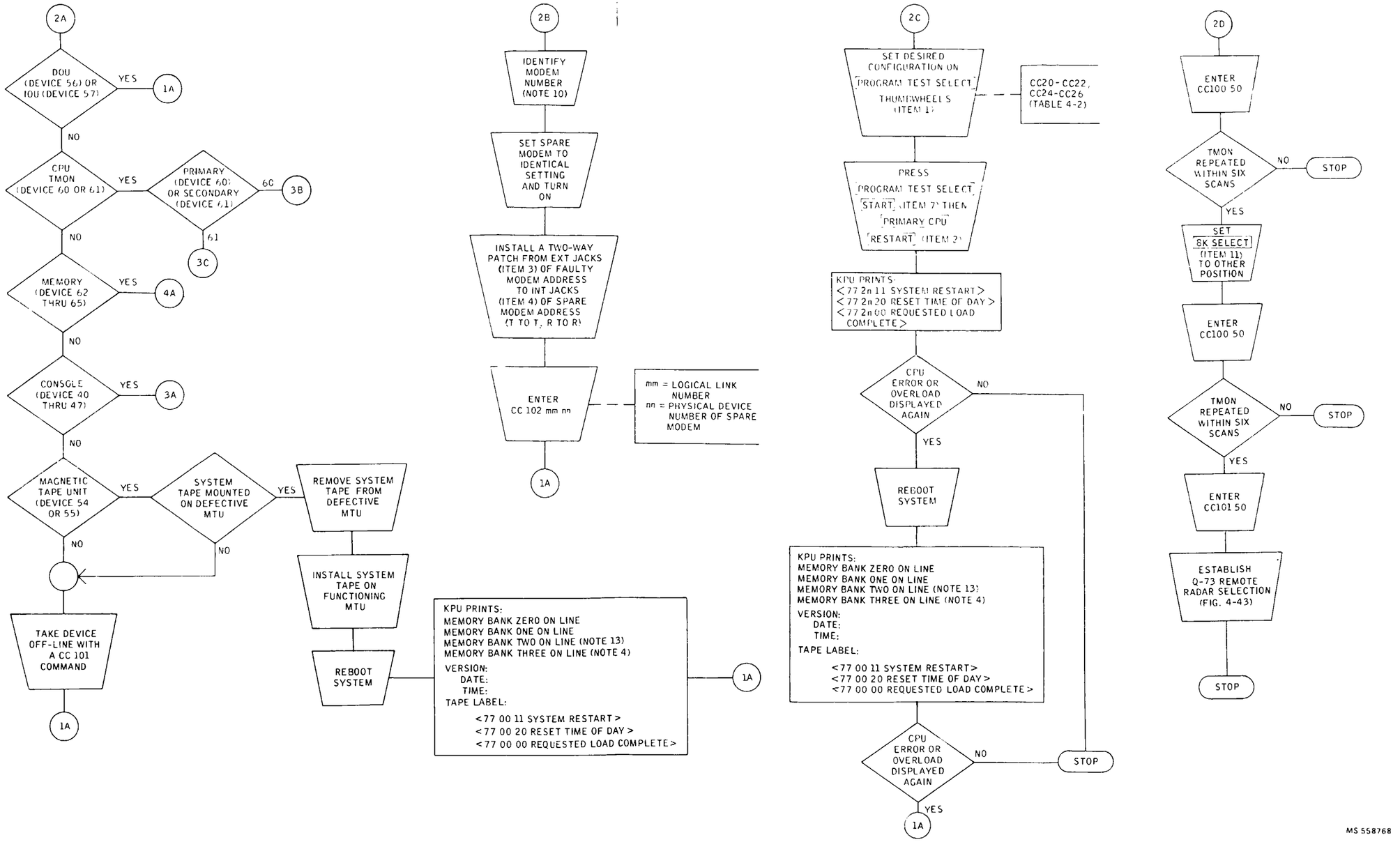


Figure 4-55. System Status Messages/Emergency Reconfiguration (Sheet 2 of 5)

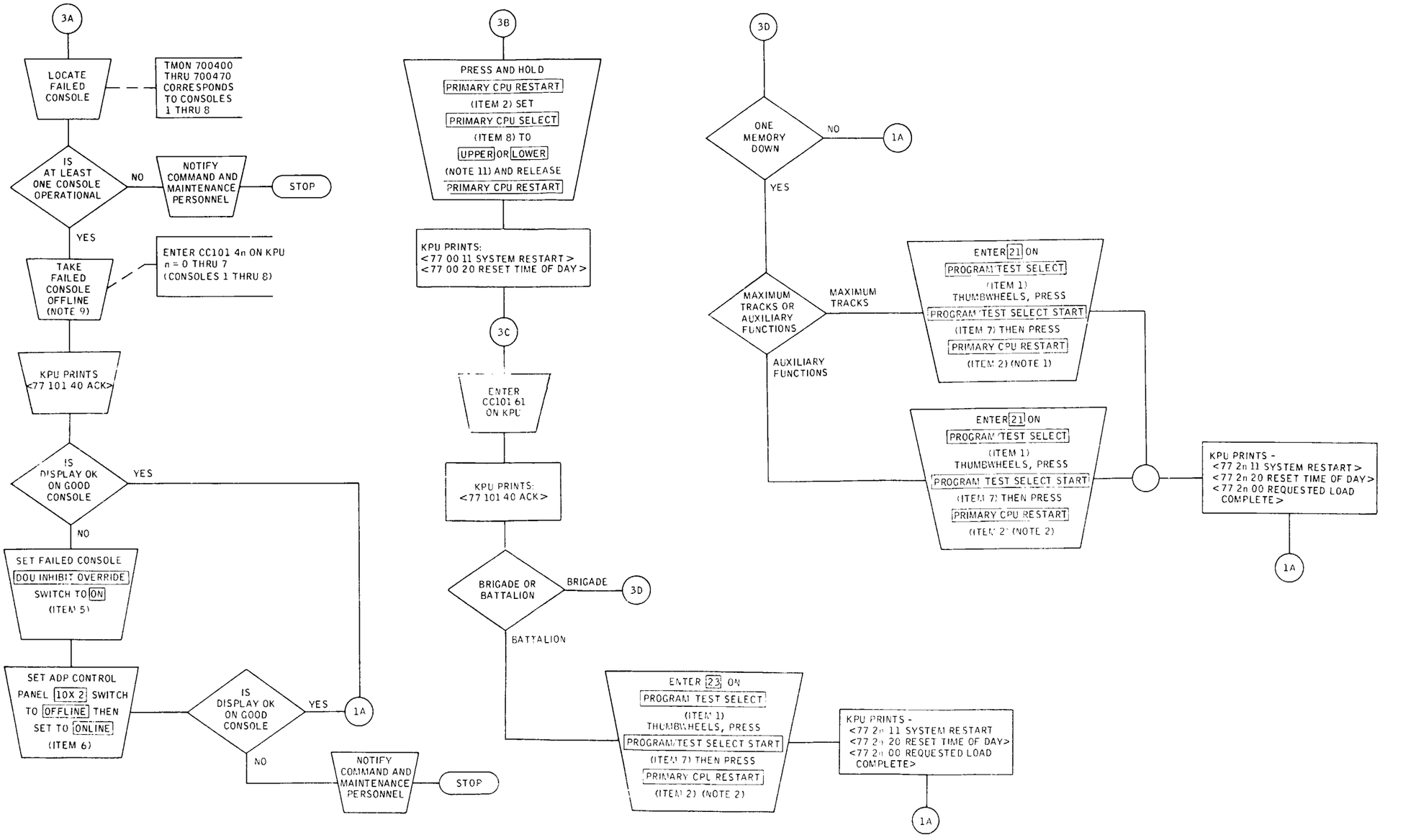


Figure 4-55. System Status Messages/Emergency Reconfiguration (Sheet 3 of 5)

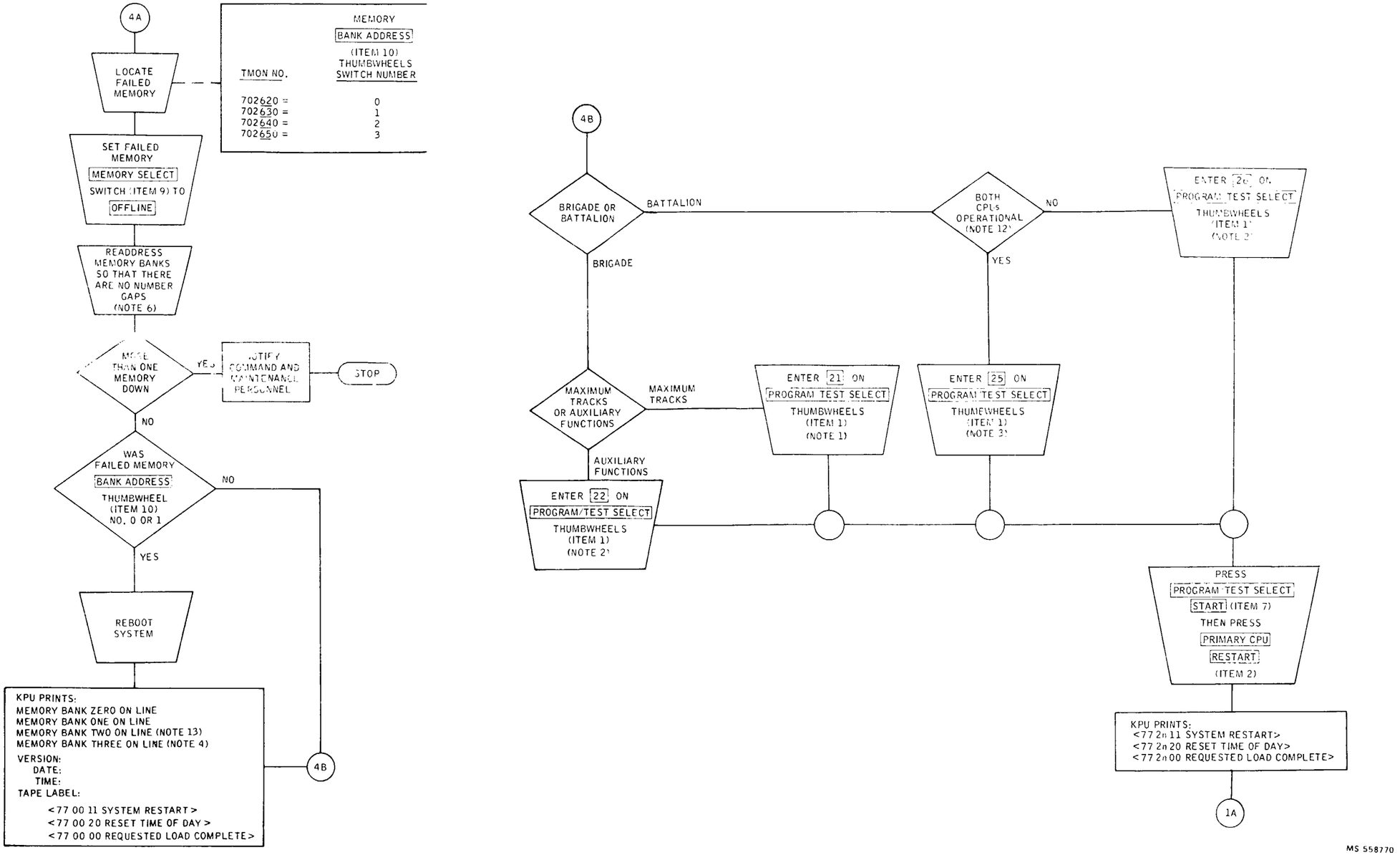


Figure 4-55. System Status Messages/Emergency Reconfiguration (Sheet 4 of 5)

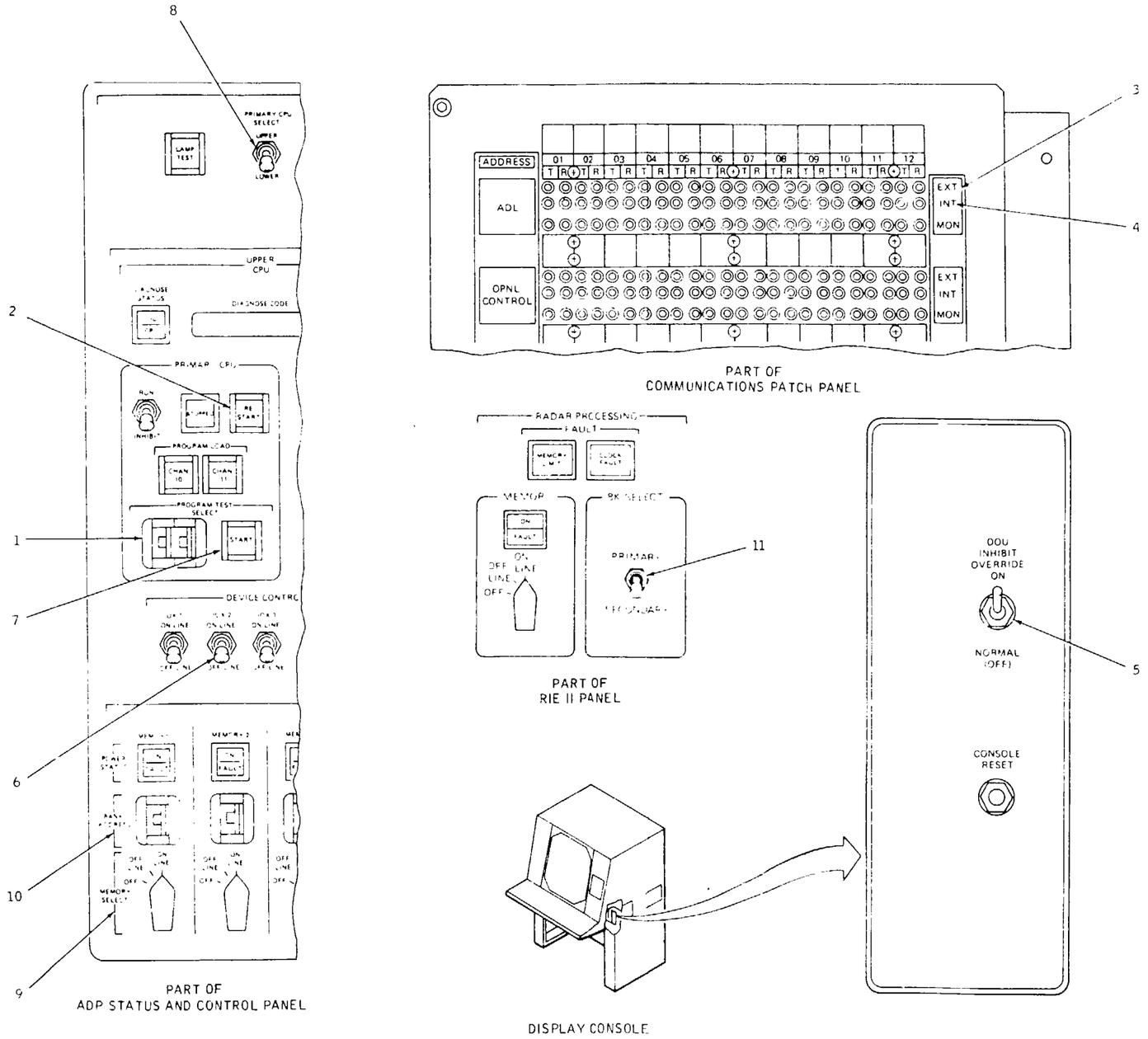


Figure 4-55. System Status Messages/Emergency Reconfiguration (Sheet 5 of 5)

4-8.1. Engagement of Jam Strobes. Hawk fire units equipped with the ATDL-1 Product Improvement package possess the capability to forward engagement status data (tracking, firing, effective/ineffective) on non-ESM jam strobes they are reporting. These Hawk units will report jam strobe engagement data for the particular fire section whose High Power Illuminator (HPI) radar is locked on the jamming. The AN/TSQ-73 processes and displays the jam strobe positional information and fire section engagement data forwarded by the ATDL-1 Hawk units, and it allows the operator to transmit command messages pertaining to the engagement of the jam strobe to the specified fire section. Pertinent information for the engagement of jam strobes is summarized as follows:

a. Commands on jam strobes may only be sent on those strobes reported by ATDL-1 fire units.

b. All commands that are legal for an air track are also legal for a jam strobe.

c. The ATDL-1 fire unit jam strobe is treated in essentially the same manner as an air track; consequently, procedures for transmitting commands on jam strobes are identical to those for sending commands on air tracks.

d. The ATDL-1 fire unit jam strobe is hooked in the same manner as an air track for the purposes of transmitting command messages and responding to system alerts.

e. In order to preserve the accuracy of bearing information used for jam strobe triangulation, a jam strobe reported by an ATDL- Hawk fire unit will always emanate from the battery site location. For a battery equipped with two fire sections , this location corresponds to the display location of the A section. Thus a battery which is reporting jamming from its B section HPI will have the jam strobe emanating from the A section.

f. The displayed jam strobe will include a hookable point 50 data miles from the origin. This point will expand and blink when an outstanding alert exists on the jam strobe.

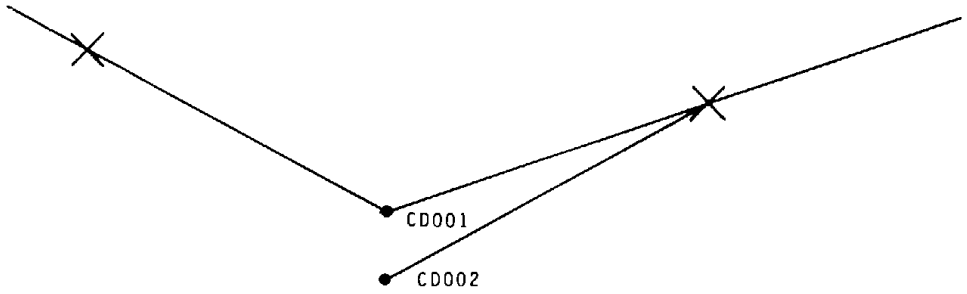
g. When the ATDL-1 Hawk fire unit reports a jam strobe, the display will be similar to that observed for a fire unit self-initiated engagement: the jam strobe will appear with its origin at the battery site location, a pairing line will be established from the reporting fire section to the hook point on the jam strobe, and an engagement marker will appear over the hook point on the jam strobe. For a battery equipped with two fire sections, the display will appear as in figure 4-55.1.

h. Non-ESM jam strobes will be allocated as non-engaged or as Hawk engaged. The sum of these types will give the total jam strobe capacity.

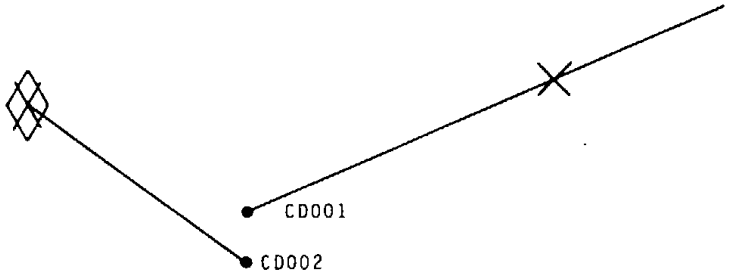
i. ESM jam strobes are not engageable or counted in jam strobe capacity. ESM jam strobes are counted as remote tracks.

4-8.2. Operation In EW Environment. Figures 4-55.2 thru 4-55.4 provide the operator the procedures for operating the AN/rSQ-73 in an EW environment.

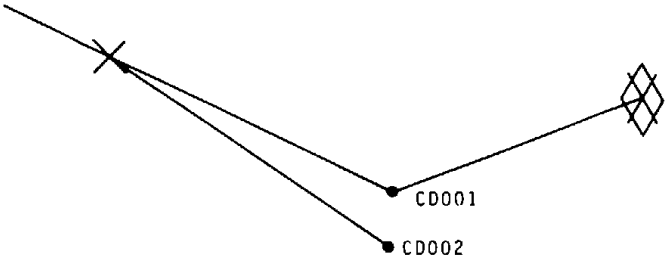
4-8.3. System Faker Operations. In order that operators may train in a realistically simulated battlefield environment, the AN/TSQ-73 system provides for special identifications (ID) of faker hostile. These IDs (see TM 9-1430-652-10-7) allow participating friendly aircraft to be processed as hostile tracks, thereby simulating a tactical scenario. System faker operations may be enhanced by the use of CC127 Set System Faker Mode (refer to table 12-1, TM 9-1430-652-10-6). The faker hostile ID may be entered (see figure 4-55.5) at either an AN/TSQ-73 or TADIL-B unit. Tracks designated as faker will always be identified by an "F" in row 2, column 5, of the track alphanumeric displayed on the PPI. The AN/rSQ-73 processes these tracks as valid for transmitting, receiving, and assigning. While in the CC127 mode, systems receiving data on hostiles from ATDL-1 fire units will convert this data to the applicable faker category. The systems will then transfer this data over all ATDL-1 links as related to the faker hostile. However, when transmitting over TADIL-B links, the AN/TSQ-73 systems will first convert the ID to the appropriate Friend Special Mission category.



BOTH FIRE SECTIONS ENGAGING REMOTE JAM STROBES



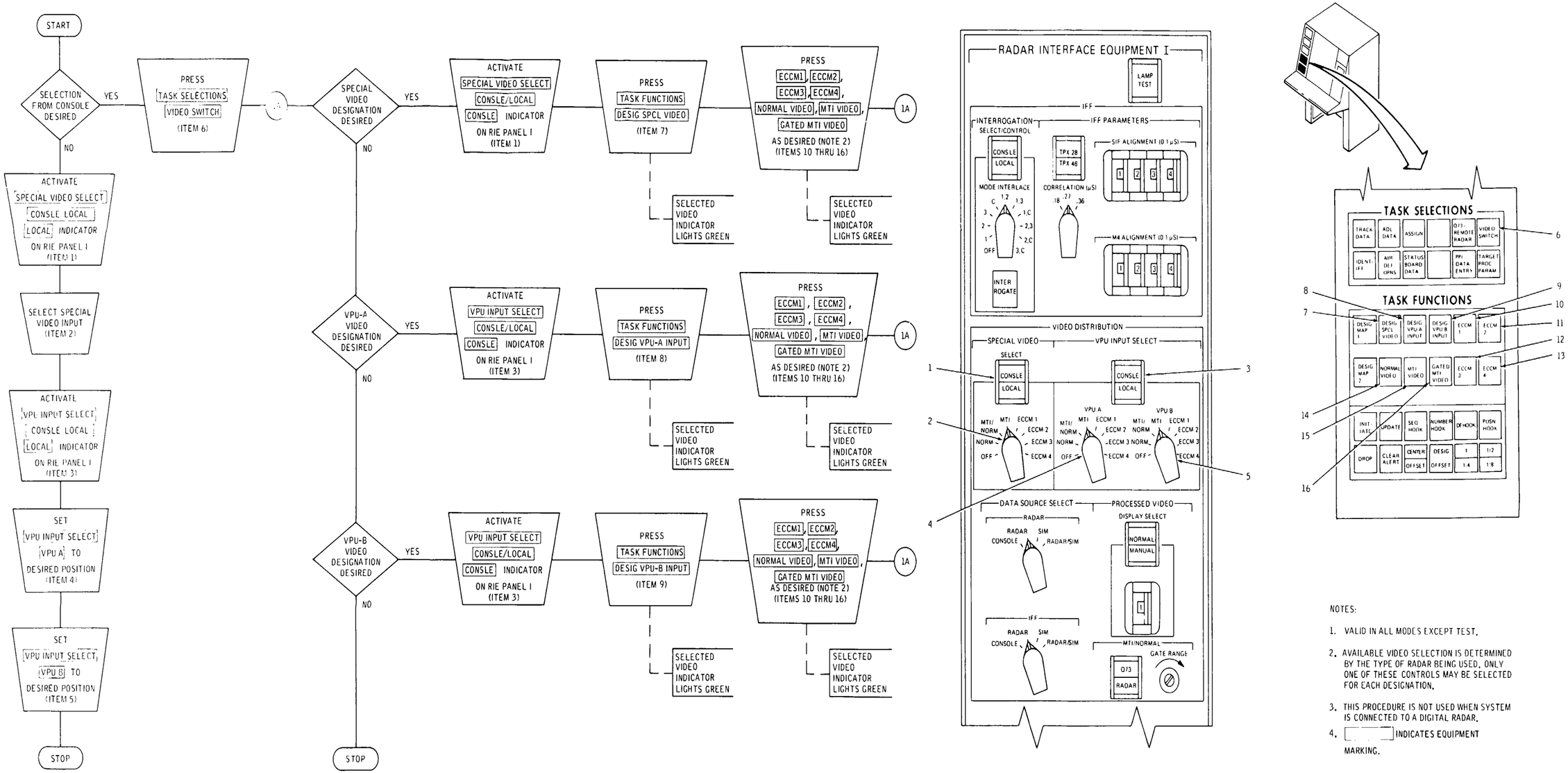
A SECTION ENGAGING A REMOTE JAM STROBE
B SECTION ENGAGING AN AIR TRACK



A SECTION ENGAGING AN AIR TRACK
B SECTION ENGAGING A REMOTE JAM STROBE

MS 196782

Figure 4-55.1. Jam Strobe Display for Two Fire-Section Battery

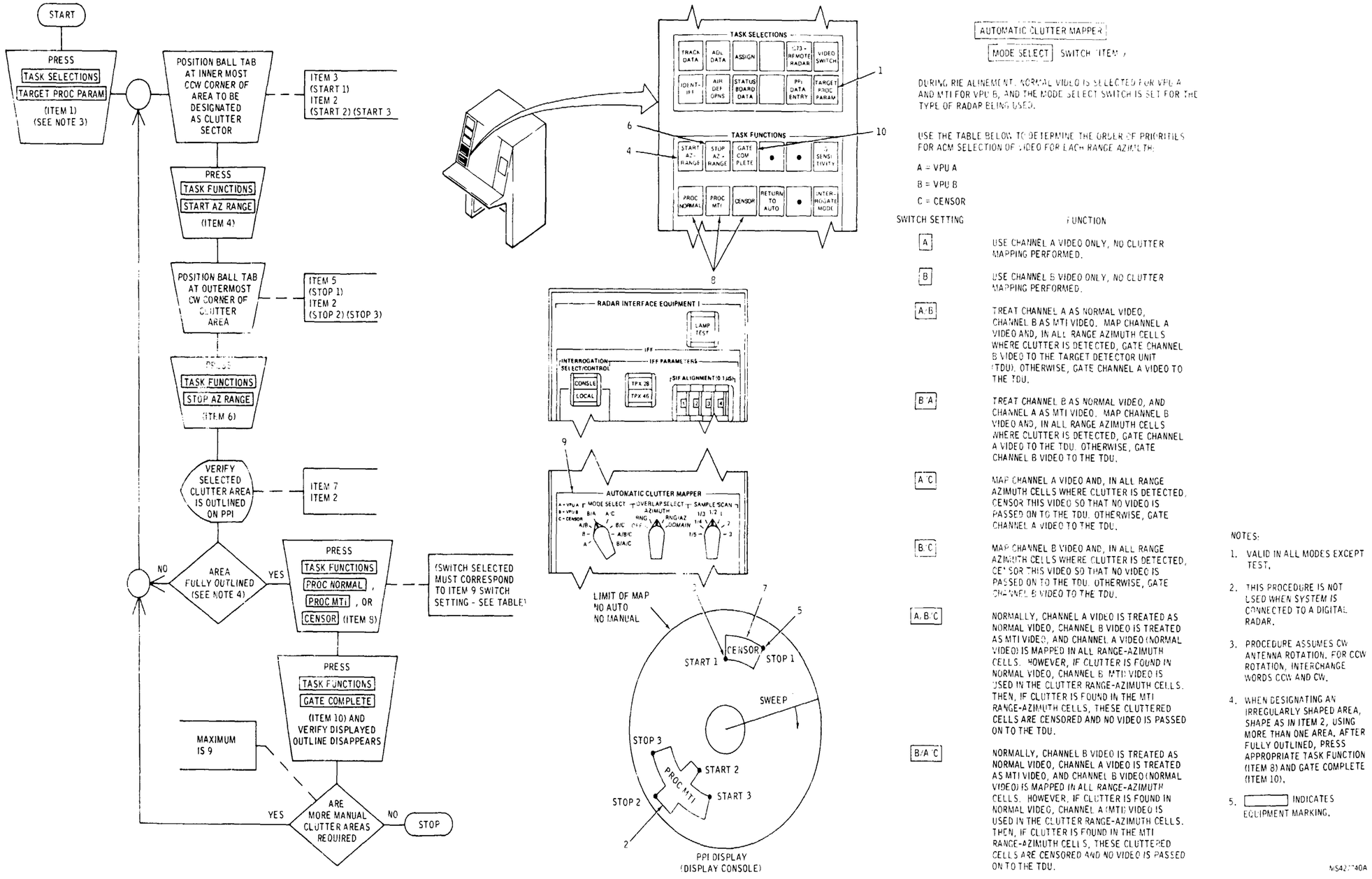


NOTES:

1. VALID IN ALL MODES EXCEPT TEST.
2. AVAILABLE VIDEO SELECTION IS DETERMINED BY THE TYPE OF RADAR BEING USED. ONLY ONE OF THESE CONTROLS MAY BE SELECTED FOR EACH DESIGNATION.
3. THIS PROCEDURE IS NOT USED WHEN SYSTEM IS CONNECTED TO A DIGITAL RADAR.
4. [ ] INDICATES EQUIPMENT MARKING.

MS 427739A

Figure 4-55.2. Select and Designate Video Channel Inputs and Outputs



AUTOMATIC CLUTTER MAPPER

MODE SELECT SWITCH (ITEM 9)

DURING RIE ALINEMENT, NORMAL VIDEO IS SELECTED FOR VPU A AND MTI FOR VPU B, AND THE MODE SELECT SWITCH IS SET FOR THE TYPE OF RADAR BEING USED.

USE THE TABLE BELOW TO DETERMINE THE ORDER OF PRIORITIES FOR ACM SELECTION OF VIDEO FOR EACH RANGE AZIMUTH:

A = VPU A

B = VPU B

C = CENSOR

SWITCH SETTING	FUNCTION
A	USE CHANNEL A VIDEO ONLY, NO CLUTTER MAPPING PERFORMED.
B	USE CHANNEL B VIDEO ONLY, NO CLUTTER MAPPING PERFORMED.
A/B	TREAT CHANNEL A AS NORMAL VIDEO, CHANNEL B AS MTI VIDEO. MAP CHANNEL A VIDEO AND, IN ALL RANGE AZIMUTH CELLS WHERE CLUTTER IS DETECTED, GATE CHANNEL B VIDEO TO THE TARGET DETECTOR UNIT (TDU). OTHERWISE, GATE CHANNEL A VIDEO TO THE TDU.
B/A	TREAT CHANNEL B AS NORMAL VIDEO, AND CHANNEL A AS MTI VIDEO. MAP CHANNEL B VIDEO AND, IN ALL RANGE AZIMUTH CELLS WHERE CLUTTER IS DETECTED, GATE CHANNEL A VIDEO TO THE TDU. OTHERWISE, GATE CHANNEL B VIDEO TO THE TDU.
A/C	MAP CHANNEL A VIDEO AND, IN ALL RANGE AZIMUTH CELLS WHERE CLUTTER IS DETECTED, CENSOR THIS VIDEO SO THAT NO VIDEO IS PASSED ON TO THE TDU. OTHERWISE, GATE CHANNEL A VIDEO TO THE TDU.
B/C	MAP CHANNEL B VIDEO AND, IN ALL RANGE AZIMUTH CELLS WHERE CLUTTER IS DETECTED, CENSOR THIS VIDEO SO THAT NO VIDEO IS PASSED ON TO THE TDU. OTHERWISE, GATE CHANNEL B VIDEO TO THE TDU.
A/B/C	NORMALLY, CHANNEL A VIDEO IS TREATED AS NORMAL VIDEO, CHANNEL B VIDEO IS TREATED AS MTI VIDEO, AND CHANNEL A VIDEO (NORMAL VIDEO) IS MAPPED IN ALL RANGE-AZIMUTH CELLS. HOWEVER, IF CLUTTER IS FOUND IN NORMAL VIDEO, CHANNEL B MTI VIDEO IS USED IN THE CLUTTER RANGE-AZIMUTH CELLS. THEN, IF CLUTTER IS FOUND IN THE MTI RANGE-AZIMUTH CELLS, THESE CLUTTERED CELLS ARE CENSORED AND NO VIDEO IS PASSED ON TO THE TDU.
B/A/C	NORMALLY, CHANNEL B VIDEO IS TREATED AS NORMAL VIDEO, CHANNEL A VIDEO IS TREATED AS MTI VIDEO, AND CHANNEL B VIDEO (NORMAL VIDEO) IS MAPPED IN ALL RANGE-AZIMUTH CELLS. HOWEVER, IF CLUTTER IS FOUND IN NORMAL VIDEO, CHANNEL A (MTI) VIDEO IS USED IN THE CLUTTER RANGE-AZIMUTH CELLS. THEN, IF CLUTTER IS FOUND IN THE MTI RANGE-AZIMUTH CELLS, THESE CLUTTERED CELLS ARE CENSORED AND NO VIDEO IS PASSED ON TO THE TDU.

NOTES:

1. VALID IN ALL MODES EXCEPT TEST.
2. THIS PROCEDURE IS NOT USED WHEN SYSTEM IS CONNECTED TO A DIGITAL RADAR.
3. PROCEDURE ASSUMES CW ANTENNA ROTATION. FOR CCW ROTATION, INTERCHANGE WORDS CCW AND CW.
4. WHEN DESIGNATING AN IRREGULARLY SHAPED AREA, SHAPE AS IN ITEM 2, USING MORE THAN ONE AREA. AFTER FULLY OUTLINED, PRESS APPROPRIATE TASK FUNCTION (ITEM 8) AND GATE COMPLETE (ITEM 10).
5. [ ] INDICATES EQUIPMENT MARKING.

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Figure 4-55.3. Designate Manual Clutter Areas

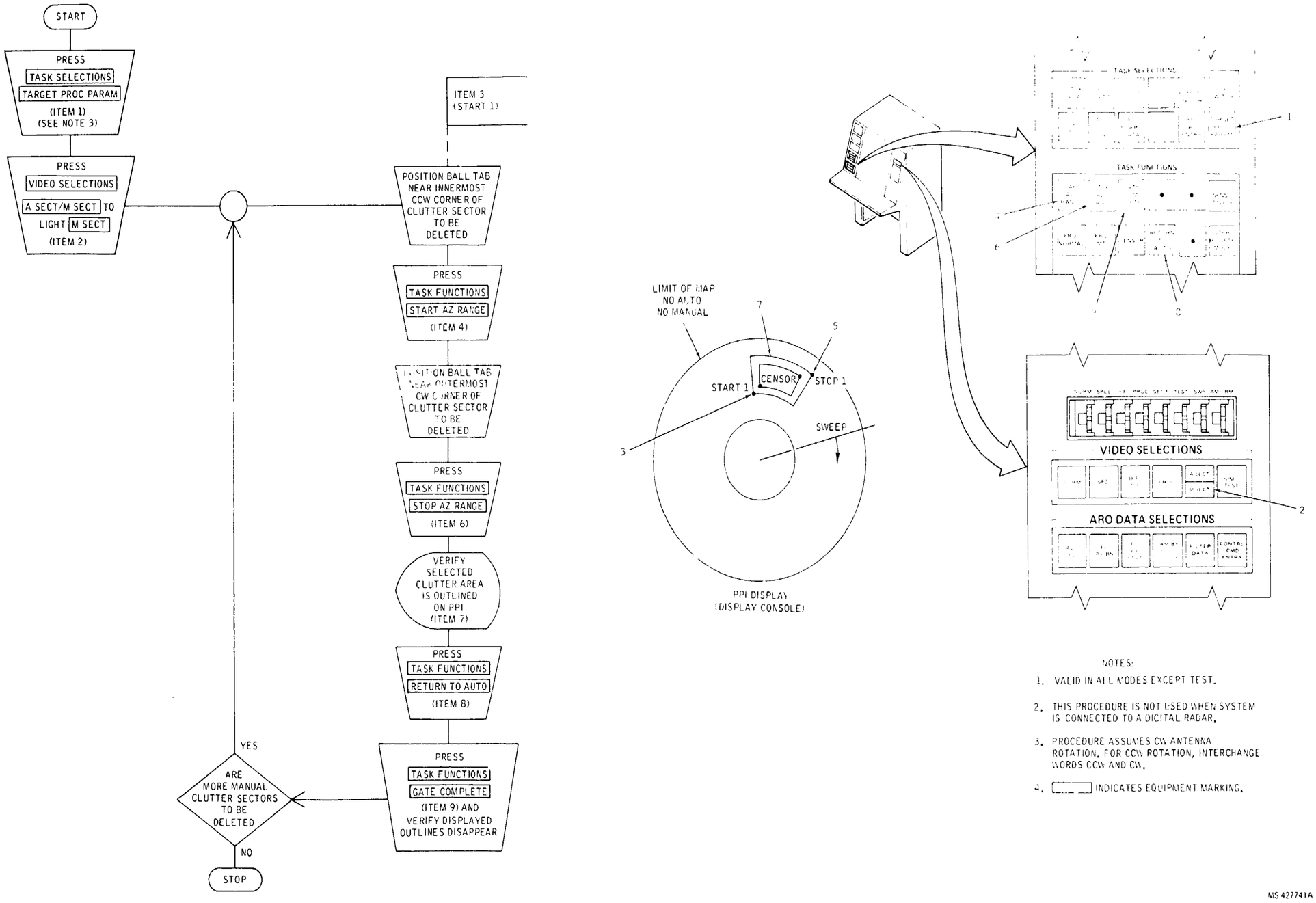

Figure 4-55.4. Delete Manual Clutter Areas

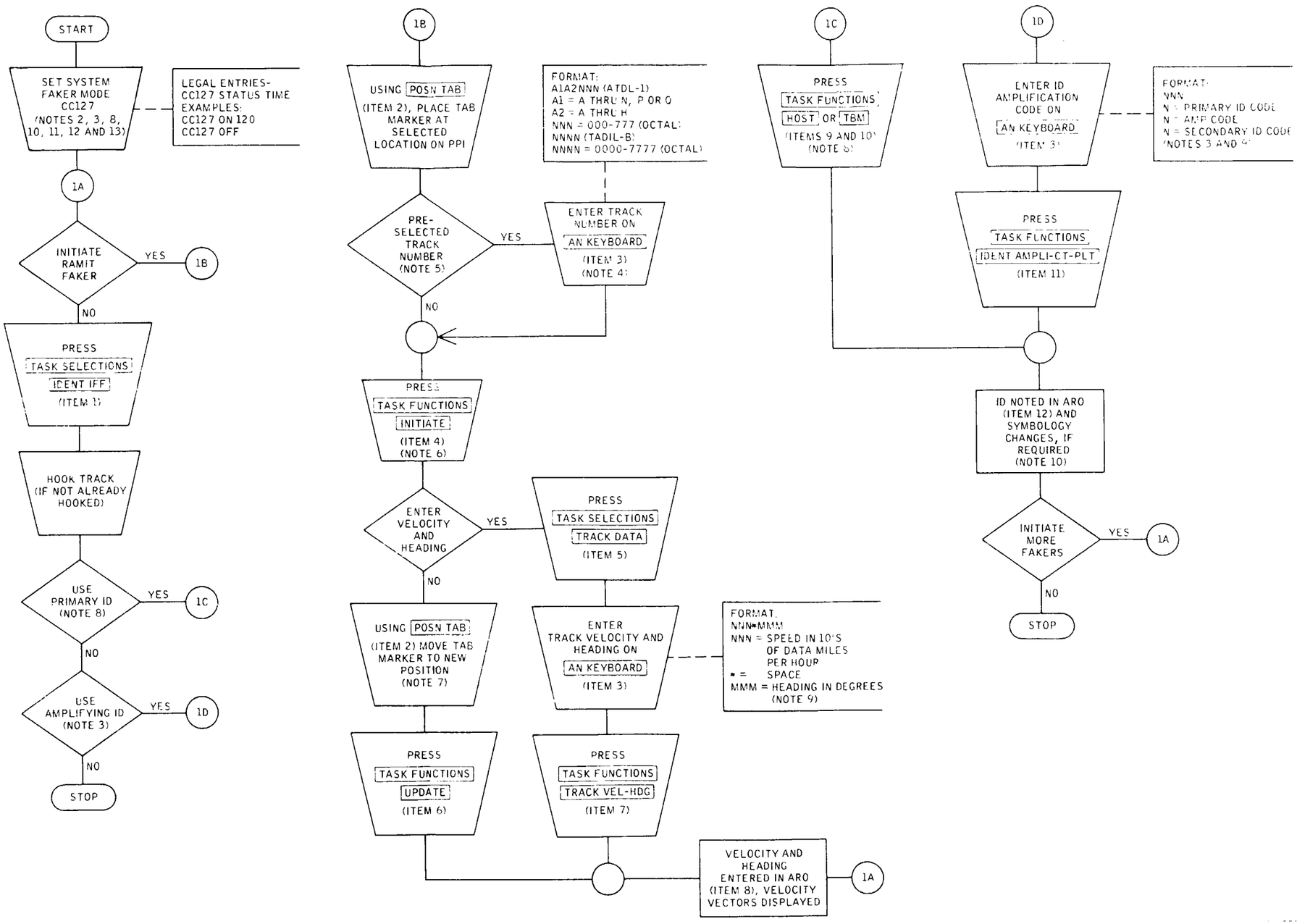

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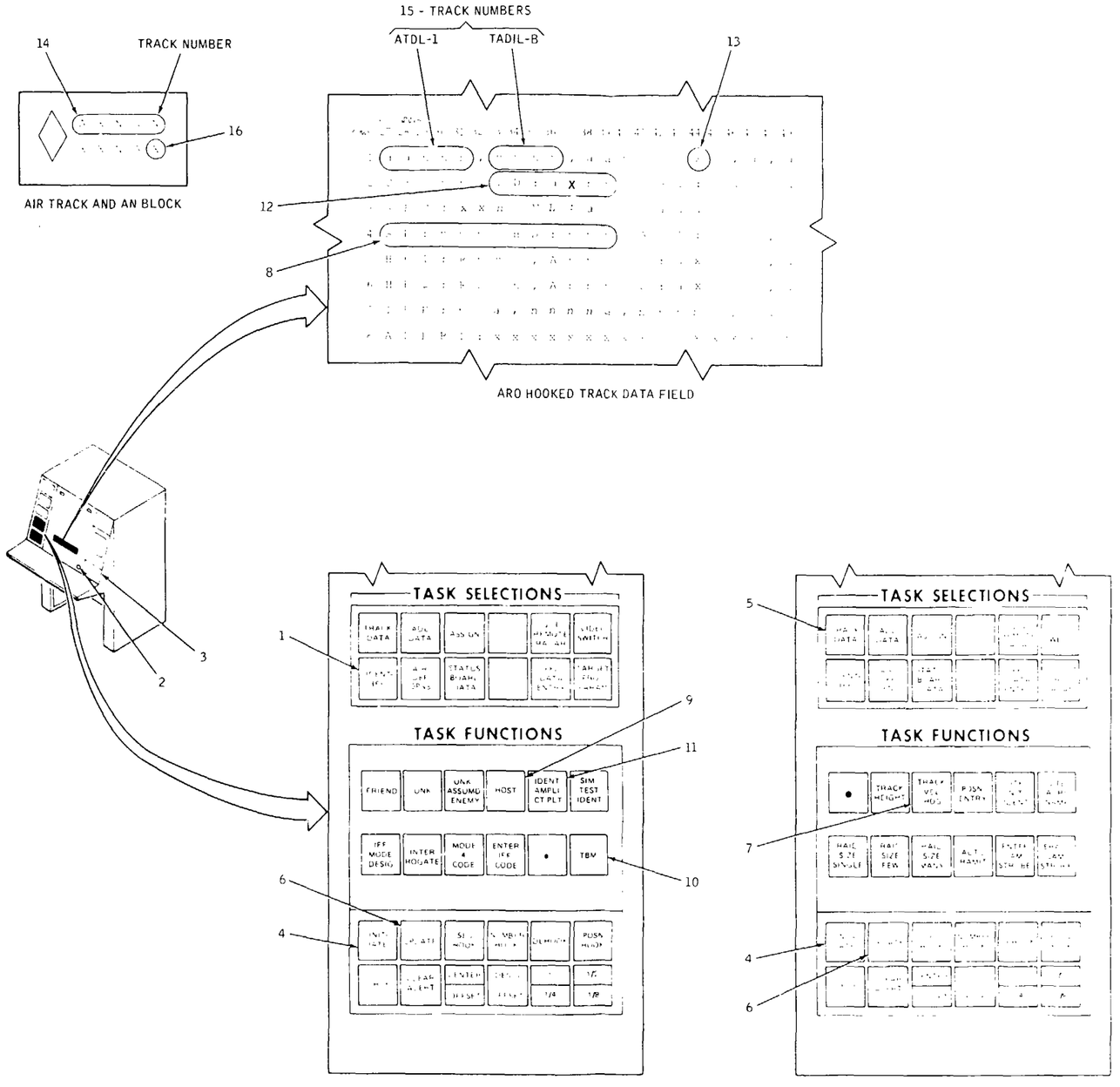
Figure 4-55.5. System Faker Operations (Sheet 1 of 2)



NOTES

1. VALID ONLY IN TRACKING OR TRACKING TACTICAL MODE.
2. REFER TO TABLE 12-1 IN TM 9-1430-652-10-6
3. FAKER ENTERED USING ID AMPLIFICATION CODE WILL PRODUCE FAKERS OVER ATDL-1 LINK REGARDLESS OF WHETHER FAKER MODE IS ON OR OFF (NOTE 10).
4. PREASSIGNED TRACK NUMBERS MUST NOT BE THE SAME AS A CURRENT NUMBER IN THE CENTRAL FILE.
5. IF E IS ENTERED ON THE [AN KEYBOARD], AN EW FAKER HOSTILE TRACK IS INITIATED AND AN E IS DISPLAYED IN ROW 1, COLUMN 44 (ITEM 13) IN THE ARO HOOKED TRACK DATA FIELD.
6. TRACK NUMBER IS ASSIGNED AND DISPLAYED ON AIR TRACK SYMBOL (ITEM 14) AND IN ROW 1 (ITEM 15) OF ARO HOOKED TRACK DATA FIELD.
7. UPDATE POSITION MUST BE WITHIN 64 DATA MILES OF PREVIOUS POSITION.
8. USE OF [HOST] OR [TBM] WITH FAKER MODE ON CHANGES TRACK TO FAKER HOSTILE ID.
9. CLASSIFIED ENTRIES (REFER TO TM 9-1430-652-10-7).
10. TRACK WITH ANY FAKER ID WILL ALWAYS HAVE AN F (ITEM 16) IN ROW 2 COLUMN 5 OF AIR TRACK AN BLOCK.
11. ANY HOSTILE TRACK RECEIVED OVER ATDL-1 FU DATA LINKS WILL BE CONVERTED AND TRANSMITTED OVER ATDL-1 IN THE EQUIVALENT FAKER CATEGORY.
12. UPON TERMINATION OF FAKER EXERCISE, CLEAR ALL FAKER TRACKS AND RESOLVE ALL ID CONFLICTS.
13. IT MAY BE DESIRABLE TO ENTER CC136 OR OFF TO TURN OFF AUTOMATIC CORRELATION. FAKER IDs ARE NOT CONSIDERED IN CORRELATION AND COULD RESULT IN DROPPING FAKER TRACKS.
14. [ ] INDICATES EQUIPMENT MARKING.

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Figure 4-55.5. System Faker Operations (Sheet 2 of 2)

Section II. OPERATION UNDER UNUSUAL CONDITIONS

4-9. General. Unusual operating conditions are defined as degraded mode (partial equipment failure), adverse weather conditions, and CBR environments. The following paragraphs and illustrations describe the methods of determining when the conditions exist, and any special procedures or operation necessary to maintain system operation.

4-10. Determination of Operational Status. Although the system is capable of operating in a degraded condition, certain minimum standards must be met in order to ensure competent air defense. If these minimums cannot be met, repair or replacement must be made in order to bring the system back to operating standards. The system may be considered operational as long as one display console is operational, and able to perform tracking and tactical functions, the automatic data processor is operational to the extent that online fault detection is performed and the display console may perform its functions, an operational data link exists to surviving missile batteries; operational voice links exist to surviving missile batteries, and radar integration equipment is operational to the extent that video is present and radar sweep is available on the display console.

4-11. Determination of System Fault Status. In order to make a competent decision as to whether or riot the system can remain operational with partial equipment failure, the operator must first determine the importance and extent of the indicated fault. The following subparagraphs describe how to recognize a fault and what to do about it.

a. System Fault Indications. Since the system may develop several types of faults, including hardware malfunctions, software malfunctions, or maladjustment of external inputs or internal controls, several types of fault indications are provided: fault indicators; KPU message outputs; DIAGNOSE CODE readouts; equipment misalignment indicators; operator observations; and system functions inoperative. Any system fault may be indicated by one or more of the listed indications. For example: a voice comm station with power off, or set offline, will cause that station LINK QUALITY FAULT STATUS indicator on the VCC panel to light, the VOICE COMM CENTRAL FAULT LOCATION indicator on the DDG to light, and a TMON message (700760) to be printed on the KPU and displayed on the ADP Status and Control Panel DIAGNOSE CODE LED's. By observing all of the fault indications, the operator or maintenance personnel may more easily determine the source of and reason for the indications.

b. Determination of Fault Status. Before initiating maintenance procedures, it must first be determined if the indicated fault is transient or an actual failure. The system outputs status messages to provide amplifying data for those hardware and software problems sensed by the automatic fault detection program. The condition-related message, printed on the KPU, should indicate whether the problem appears to be transient as in the case of momentary data overloads or timing conflicts or is an actual equipment or software failure. Transient conditions should be noted and used for information only, while actual failures will be investigated according to procedures provided by TM 9-1430-655-20-1. Another indication as to the existence of a true system fault is the combination of existing fault indications. For example: if voice communications to a FU are intermittent, the DDG DATA COMM FAULT LOCATION indicator is lit, and a system status message or display console indicates the data from the same FU is unsatisfactory; then the circuits external to the system would be suspect. Similarly, if radar video(s) is abnormal in conjunction with abnormal target processing, the radar equipment, rather than the system, would be suspect. All fault indicators should be observed prior to initiating any fault isolation procedure.

c. System Status Message Outputs. System status is monitored by the system status program function which interfaces with the executive function of the operational program. The system status function generates the various system status messages output when triggered by the fault detection function. Five types of system status messages are output:

(1) *Test monitor message*. TMON messages are output when a definite hardware fault exists. Maintenance action may or may not be required, depending on the fault severity code. The system status program function outputs the TMON message on the KPU and posts the appropriate code in the DIAGNOSE CODE indicators on the ADP status and control panel. The TMON message format and field definitions are shown in figure 4-56. Table 4-1 lists possible system TMON fault numbers and equipment logical device numbers.

(2) *Error message*. The system status function outputs an error message when the equipment status table (EST) indicates a software-related problem. Maintenance action may or may not be called for depending on the program level (11) field of the output message. If the 11 field varies with each message output, a true hardware fault probably exists and maintenance action should be initiated. However, if the 11 field remains constant, software problems are indicated and a record of the message data should be kept to aid in analysis of the software problem. Error message format and field definitions are shown in figure 4-56.

(3) *Overload messages*. An overload system status message is output when the CPU is overloaded to

the extent that processing of low priority tasks, such as fault detection, is inhibited. Normally this is a temporary condition and occurs only during peak processing periods. The overload message should be noted but ignored as far as maintenance action is concerned. However, if overload messages are repeatedly output (approximately three within a 30-second period), and input signals and internal switch settings are correct, maintenance action is indicated and should be initiated. Overload message format and field definitions are shown in figure 4-56.

(4) *Device status messages*. Each device has an interim and total error count maintained by the monitoring software. When an error is detected, these counters are incremented and the appropriate error bit in the equipment status table is set. The device status message is printed for one or all devices via the CC11 command, for all devices at midnight (GMT), or for any device whose total count reaches 256. See figure 4-56 for the format of the message. The logical device numbers are listed in table 4-1

(5) *Radar Interface Equipment (RIE) messages.* RIE loop test messages are printed for errors detected by software when unexpected results are obtained from RIE performance monitoring functions. RIE loop test message format and field definitions are shown in figure 4-56.

4-12. Operator Reaction to Fault Condition. When fault indications exist, the operator must perform certain functions in order to clear the indication, operate in a degraded mode, or initiate maintenance action. When a system status message (TMON, ERROR, or overload) is output and/or DDG fault indicators specify a subsystem equipment failure, the operator should first consult figure 4-56 to determine which subsystem failed and proceed to the type of failure indicated. Refer to figure 4-55 for operator reaction and table 4-2 for system configurations.

4-13. One-Minute Reconfiguration. Procedures are provided in figure 4-55 in order to allow the operator to reestablish system operation after an equipment failure within one minute. The procedures are intended for use by proficient operators that can perform basic TSQ-73 operations through the use of prompts rather than step-by-step reference data.

4-14. Power Turn-Off.

NOTE

Refer to TB 9-380-101-18 for proper security procedures for a display console CRT that has become "etched" with classified information.

a. Normal Turn-Off Procedure.

(1) Turn all subsystem power switches off.

(2) On dc power panel set EMERGENCY POWER BATTERY OUTPUT circuit breaker to off (down).

(3) On ac power panel, set AC/DC CONVERSION NO. 1 and AC/DC CONVERSION NO. 2 circuit breakers to off (down); remaining circuit breakers may be left on (up).

(4) On power transfer unit set SHELTER and AIR CONDITIONER circuit breakers to off (down), press and hold SYSTEM POWER OFF switch until SYSTEM POWER ON indicator goes off; release SYSTEM POWER OFF switch; set POWER SOURCE SELECT switch to OFF, (RELAY COILS SERVICE BREAKER circuit breaker should remain in the ON (position), and turn off external primary power source.

NOTE

The backup control card ON/OFF switch for each operational memory should be left in the ON position, except for an extended period of shutdown or when the system is in storage.

b. Emergency Shut-Down Procedure. System power will be removed by pressing SYSTEM POWER OFF switch, or by setting POWER SOURCE SELECT switch or RELAY COILS SERVICE BREAKER circuit breaker to off. Operating any of these controls in any sequence will remove system power.

CAUTION

Emergency lighting, voice communications, and CMOS memories are automatically supplied by the emergency battery on loss of power or emergency shutdown.

The IBDL supplies backup power to the CMOS Memories (permitting data retention for up to 30 minutes). If power restart is attempted to clear power loss, ensure that EMERGENCY POWER BATTERY OUTPUT circuit breaker is kept in the ON (up) position so that IBDL can maintain data in the CMOS memories until main power is reestablished.

If total power shutdown is required, EMERGENCY POWER BATTERY OUTPUT circuit breaker on dc power panel must be set to OFF.

4-15. Auxiliary Equipment Failure. Failure of Auxiliary Subsystems that give no System Status Message include Voice Comm Station failures and KPU failure. The procedures for operation with these failures are given in figures 4-57 and 4-58.

4-16. Operation In Adverse Weather Conditions. Adverse weather conditions require the operator to perform certain tasks necessary to maintain an operational environment. These tasks are as follows:

a. Rain, Blowing Sand, Dust, or Snow.

(1) Ensure entrance door is properly closed to seal shelter against water leaks from wind.

(2) Close all external vent covers. (May or may not be necessary depending on violence of wind conditions.)

(3) Place shelter environment in air-conditioned mode. (Recirculating of internal air prevents rain from being sucked in through ambient air intake vents.)

b. High Wind.

(1) Notify maintenance personnel to perform tiedown procedures (TM 9-1430-651-12).

(2) Perform procedure in paragraph 4-16a above.

4-17. Operation In CBR Environment. In the event operation takes place in a CBR environment, refer to TM 9-1430-651-12 for installation instructions for the Modular Collective Protection Equipment (MCPE).

a. Shelter Preparation. Close all doors, windows, vents, etc. that would prevent pressurization of the shelter or compartment.

b. Starting Procedures.

WARNING

The filter unit will not protect against the carbon monoxide exhaust of an internal combustion engine.

CAUTION

If a protective entrance is employed, one of the two outlet caps on the protective entrance must be removed before the filter unit is operated.

(1) Pull the POWER toggle switch outward and move it upward to the ON position. The warning horn will sound for 30 seconds or less, and the MASK indicator light will flash for 30 seconds or less.

WARNING

If MASK light flashes and warning horn sounds for more than 30 seconds, don individual protective mask.

NOTE

Allow the warning horn to sound until it shuts off automatically, indicating proper shelter pressurization.

When a protective entrance is installed as part of the modular collective protection equipment and is setup for use, the LOW PRESSURE indicator light will also come on for 30 seconds or less.

NOTE

Depressing the HORN OFF button to silence the warning horn will cause the flashing MASK light to come on steady, indicating that the warning has been acknowledged.

(2) Determine that all circuit breakers on the compartment control module remain set.

CAUTION

Do not hold any circuit breaker in its set position. Damage from overheating may occur.

(3) Determine that the CHANGE FILTER and DUST FAN DEFECT indicator lights are off.

c. Filter Change Criteria.

WARNING

For maximum safety, it is vital that the gas and particulate filters of the MCPE be fully serviceable. As an operator you are responsible for notifying organizational maintenance when any one of the following conditions exist:

(1) Conditions for replacing the gas filter element.

(a) Physical or water damage.

(b) At beginning of combat.

(c) After each attack with blood agent.

(d) After 3 months of operation when chemical agents are used.

(2) Conditions for replacing the particulate filter.

(a) Whenever CHANGE FILTER indicator lights on the Compartment Control Module.

(b) Physical damage.

(c) Whenever the gas filter is changed.

d. Shutdown Procedure.

(1) Pull the POWER toggle switch out and move it down to the OFF position.

(2) Strike (collapse) the protective entrance if required.

4-18. Memory Protect Reinitialization. In the event of a power failure, the system may be reinitialized without loss of data in memory by performing the procedure outlined in figure 4-59.

4-19. Legal Entries. Legal entries are provided in table 4-3. These system variables are entered into the system using the display console AN Keyboard. Refer to TM 9-1430-652-10-7 for classified entries.

TMON MESSAGE

```
hh:mm:ss        TMON - FAULT 7ØSDDØ : tttt : PPP TTT
```

ERROR MESSAGE

```
hh:mm:ss        ERROR - CPU D : tttt : ll : iiii
```

OVERLOAD MESSAGE

```
hh:mm:ss        OVERLOAD - - CPU D : tttt
```

DEVICE STATUS MESSAGE

```
hh:mm:ss        DEVICE  STATUS  ERROR COUNT
                  DD      tttt      TTT
```

FIELD DEFINITIONS:

hh:mm:ss	=	TIME OF DAY IN HOURS:MINUTES:SECONDS OF EVENT OCCURRENCE.
DD	=	TWO DIGIT LOGICAL DEVICE NUMBER.
S	=	FAULT SEVERITY
D	=	1 OR 2 TO INDICATE PRIMARY OR SECONDARY CPU RESPECTIVELY
tttt	=	EQUIPMENT STATUS TABLE BITS (TRIGGERING EVENT) IN HEXADECIMAL.
ll	=	PROGRAM LEVEL AT WHICH ERROR OCCURRED (CPU ONLY).
iiii	=	INSTRUCTION LOCATION REGISTER (ILR) OF PROGRAM LEVEL WHERE ERROR OCCURRED (CPU ONLY)
PPP	=	INTERIM ERROR COUNT FOR DEVICE.
TTT	=	TOTAL ERROR COUNT FOR DEVICE.

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Figure 4-56. System Status Messages-Format and Field Definitions (Sheet 1 of 2)

RIE LOOP MESSAGE

```
hh:mm:ss        <RIE LOOP>  CCCC MN 'AMPLIFYING MESSAGE'
                                    HHHHHHHH
```

FIELD DEFINITIONS:

hh:mm:ss = TIME OF DAY IN HOURS:MINUTES:SECONDS OF EVENT OCCURRENCE.

CCCC = THIS FOUR CHARACTER FIELD REPRESENTS THE ERROR SEVERITY CODE AS FOLLOWS:

INFO = INFORMATION
WARN = WARNING
ERR = ERROR
SEV = SEVERE ERROR

NOTE:
REFERENCE TM 9-1430-655-20-1 (TABLE 4-2)

MN = THIS FIELD IS THE MESSAGE NUMBER USED FOR REFERENCE PURPOSES.

AMPLIFYING MESSAGE AND CORRESPONDING MESSAGE NUMBER AS FOLLOWS:

01	RADAR TARGET MISSING
02	IFF TARGET MISSING
04	RADAR/IFF CORRELATION FAILURE
05	AZIMUTH DATA ERROR
06	RANGE DATA ERROR
07	IFF DATA ERROR
08	MODE C DATA ERROR
09	TPS-43 HEIGHT ERROR
10	TPS-43 AZIMUTH ERROR
11	TPS-43 RANGE ERROR
12	RIE DEVICE TIMEOUT
13	TPS-43 HEIGHT REPORT MISSING
14	SPURIOUS RADAR REPORTS
15	SPURIOUS IFF REPORTS
16	SPURIOUS HEIGHT REPORTS
20	VSU DEVICE TIMEOUT
21	VSU INTERNAL FAILURE
22	VSU INTERFACE FAILURE
23	VSU I/O ERROR
24	VSU AUTO OUTPUT INCOMPLETE
30	NO ANTENNA ROTATION
31	SLOW ANTENNA ROTATION
32	NO RADAR TRIGGER
33	NO IFF TRIGGER
34	RIE SWITCHES INCORRECT
40	COMMAND INHIBIT
41	TEST INHIBITED
42	VSU SWITCHES INCORRECT

HHHHHHHH = THIS FIELD REPRESENTS AN EIGHT-DIGIT NUMBER GIVING A SCAN BY SCAN ERROR HISTORY; THE LEAST SIGNIFICANT DIGIT (RIGHTMOST) IS THE ONE WHICH OCCURRED ON THE MOST RECENT SCAN; THE ALPHA 'X' OCCURRING IN ANY COLUMN INDICATES THAT THERE ARE MORE THAN NINE ERRORS IN THE SCAN.

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Figure 4-56. System Status Messages-Format and Field Definition (Sheet 2 of 2)

Table 4-1. System TMON and Logical Device Numbers

TMON fault code[1]	Logical device number[2]	Functional device identification[3]
700000	00	Link 0
700001		IOE no. 1
700002		Upper modem power supply no. 1
700003		Modem clock
700004		IOM
700010	01	Link 1
700020	02	Link 2
700030	03	Link 3
700040	04	Link 4
700041		IOE no. 2
700042		Upper modem power supply no. 2
700043		Modem clock
700050	05	Link 5
700060	06	Link 6
700070	07	Link 7
700100	10	Link 10
700101		IOE no. 3
700102		Upper modem power supply no. 3
700103		Modem clock
700110	11	Link 11
700120	12	Link 12
700130	13	Link 13
700140	14	Link 14
700141		IOE no. 4
700142		Upper modem power supply no. 4
700143		Modem clock
700150	15	Link 15
700160	16	Link 16
700170	17	Link 17
700200	20	Link 20
700201		IOE no. 5
700202		Lower modem power supply no. 1
700210	21	Link 21
700220	22	Link 22
700230	23	Link 23
700240	24	Link 24

See footnotes at end of table.

Table 4-1. System TMON and Logical Device Numbers-Continued

TMON fault code[1]	Logical device number[2]	Functional device identification[3]
700241		IOE no. 6
700242		Lower modem power supply no. 2
700250	25	Link 25
700260	26	Link 26
700270	27	Link 27
700300	30	Link 30
700301		IOE no. 7
700302		Lower modem power supply no. 3
700310	31	Link 31
700320	32	Link 32
700330	33	Link 33
700340	34	Link 34
700341		IOE no. 8
700342		Lower modem power supply no. 4
700350	35	Link 35
700360	36	Link 36
700370	37	Link 37
700400	40	Display console no. 0 (left)
700410	41	Display console no. 1 (right)
700420	42	Display console no. 2 (remote)
thru	thru	thru
700470	47	Display console no. 7 (remote)
700500/ 701500	50	RIE
700510	51	VSU
700520	52	DDG no. 1
701530	53	KPU
700540	54	MTU (address 0)
700550	55	MTU (address 1)
701560	56	DOU
702570	57	IOU
700571		IOC
700572		IOX no. 1
700573		IOX no. 2
702600	60	CPU (prime)

See footnotes at end of table.

Table 4-1. System TMON and Logical Device Numbers-Continued

TMON fault code[1]	Logical device number[2]	Functional device identification[3]
702610	61	CPU (secondary)
702620	62	Memory bank 0
702630	63	Memory bank 1
702640	64	Memory bank 2
702650	65	Memory bank 3
701660	66	Memory bank 4 (nonfunctional)
701670	67	Memory bank 5 (nonfunctional)
701700	70	Memory bank 6 (nonfunctional)
701710	71	Memory bank 7 (nonfunctional)
700720	72	DDG no. 2
700740		Power cabinet
700750	75	ECU
700760	76	VCC
700770	77	MPU
770002[4]		Base memory

[1]A number other than zero in the third position indicates the severity of the fault. This indication does not vary except in the case of the RIE which can be 700500 or 701500. Codes are weighted as follows:

2 = operation cannot continue without reconfiguration or troubleshooting

1 = a degraded system mode will result unless troubleshooting is performed

[2]Blank indicates no logical device number assigned.

[3]Physical modem number assigned to link during initialization. CC102 mm nn, where mm = logical device number (link) and nn = physical modem number.

[4]Appears in DIAGNOSE CODE readout on ADP status and control panel only. If error occurs, system shuts down. Attempt CPU RESTART; if unsuccessful, proceed to ADP FI flow chart in TM 9-1430-655-20-6.

Table 4-2. Operational Configuration Definitions

CC command	Definition
CC20	Brigade Army Air Defense Mission, normal operations, single or dual CPU, and one auxiliary function available (refer to table 3-9.1) (Raid Data Generation [CC31], Field Utilities [CC34], Map Generation [CC36], Site Adaption [CC37], or any one fault isolation program [CC50-56].)
CC21	Brigade Army Air Defense Mission, single or dual CPU, one memory down, normal operations, but no auxiliary function available. (Some auxiliary functions available if fourth memory bank is on line. Refer to table 3-9.1.)
CC22	Brigade Army Air Defense Mission, single or dual CPU, one memory down, reduced track capacity, and one auxiliary function available (refer to table 3-9.1) (Field Utilities [CC34], Map Generation [CC36], Site Adaption [CC37], or any one fault isolation program [CC50-56].)
CC23	Nonfunctional.
CC24	Battalion Army Air Defense Mission, normal operations, dual CPU only, and one auxiliary function available (refer to table 3-9.1) (Simulation [CC30], Simulation Playback [CC33], Field Utilities [CC34], Map Generation [CC36], Site Adaption [CC37], or any one fault isolation program [CC50-56].) (Raid Data Generation [CC31] is not available.)
CC25	Battalion Army Air Defense Mission, dual CPU only, one memory down, normal operations, but no auxiliary function available. (Some auxiliary functions available if fourth memory bank is on line. Refer to table 3-9.1.)
CC26	Battalion Army Air Defense Mission, single or dual CPU, one memory down, reduced track capacity, and one auxiliary function available (refer to table 3-9.1) (Simulation [CC30], Simulation Playback [CC33], Field Utilities [CC34], Map Generation [CC36], Site Adaption [CC37] or any one fault isolation program [CC50-56].)
CC27	Nonfunctional.

NOTES:

1. Entering master battalion (CC143) will enhance battalion (CC24-CC26) capabilities by including brigade functions. Refer to table 12-1 and Unit SOP.

2. A new bootload is required before entering a site adaptation configuration.

3. If the system is operating in CC24 or CC25 configuration upon receipt of TMON 702610 (secondary CPU), the system must be configured to CC26 if operations are to continue.

4. When reconfiguring from a single CPU to a dual CPU operational configuration, a CC100 61 must be entered prior to loading operational configuration. When reconfiguring from a dual CPU to a single CPU operational configuration, a CC101 61 must be entered prior to loading operational configuration.

5. If reconfiguring because of loss of logical memory bank 0 or 1, a new bootload is required before reconfiguration.

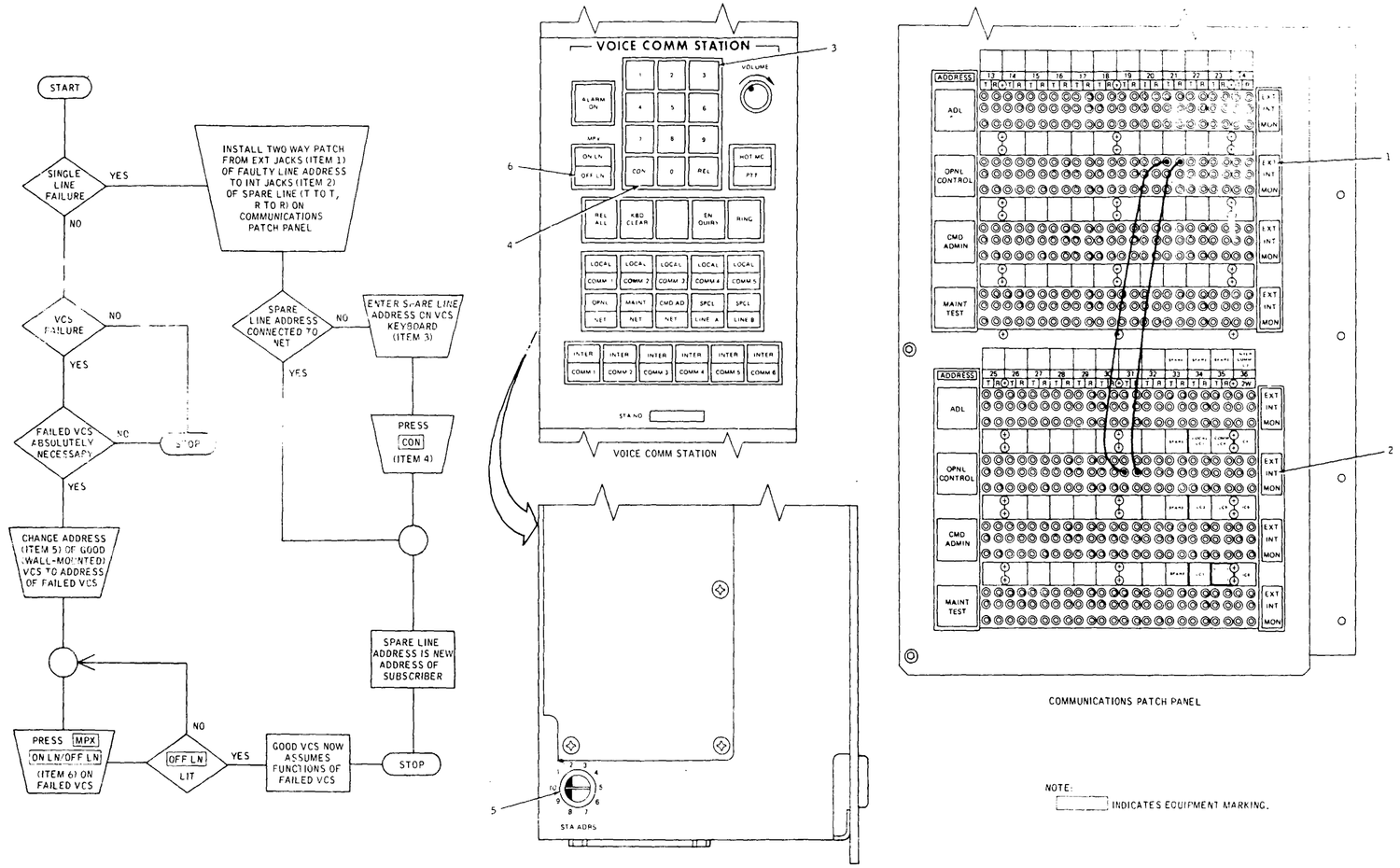

Figure 4-57. Voice Comm Station Failure

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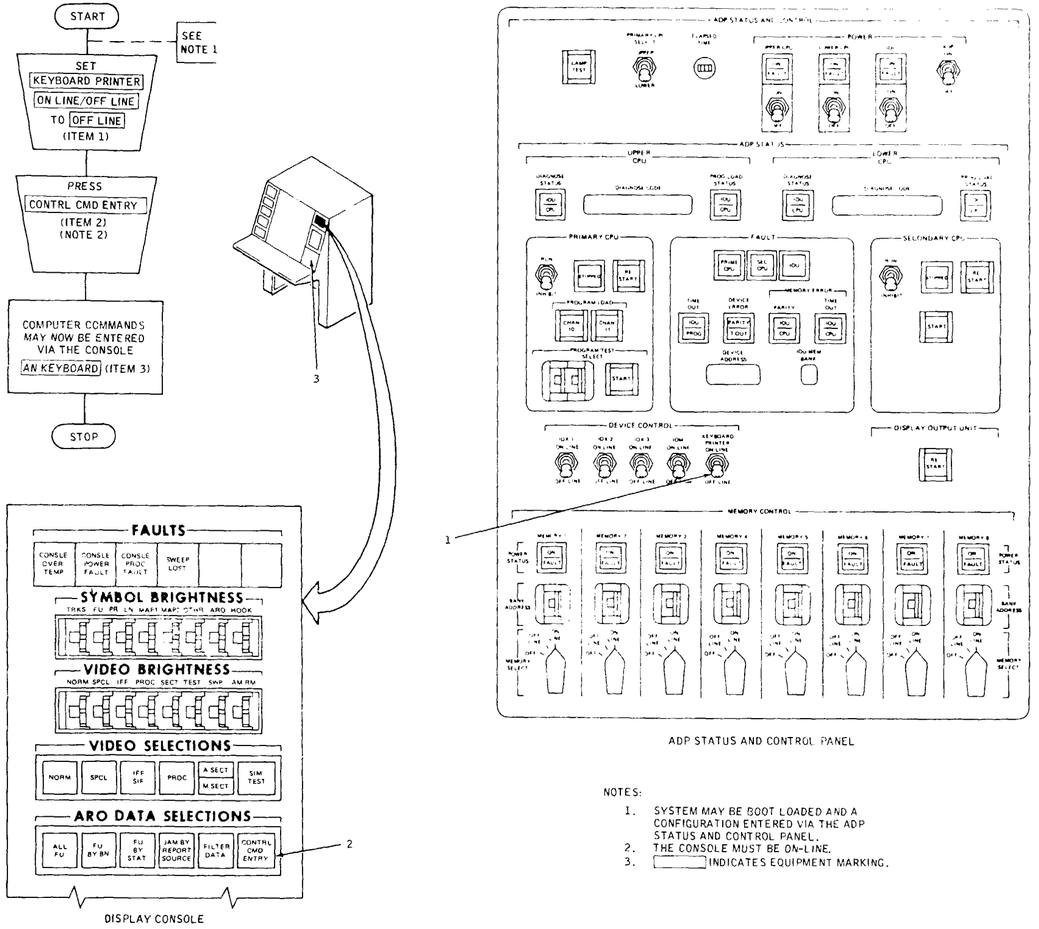

ADP STATUS AND CONTROL PANEL

NOTES:

1. SYSTEM MAY BE BOOT LOADED AND A CONFIGURATION ENTERED VIA THE ADP STATUS AND CONTROL PANEL.
2. THE CONSOLE MUST BE ON-LINE.
3. [ ] INDICATES EQUIPMENT MARKING.

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Figure 4-58. KPU Failure

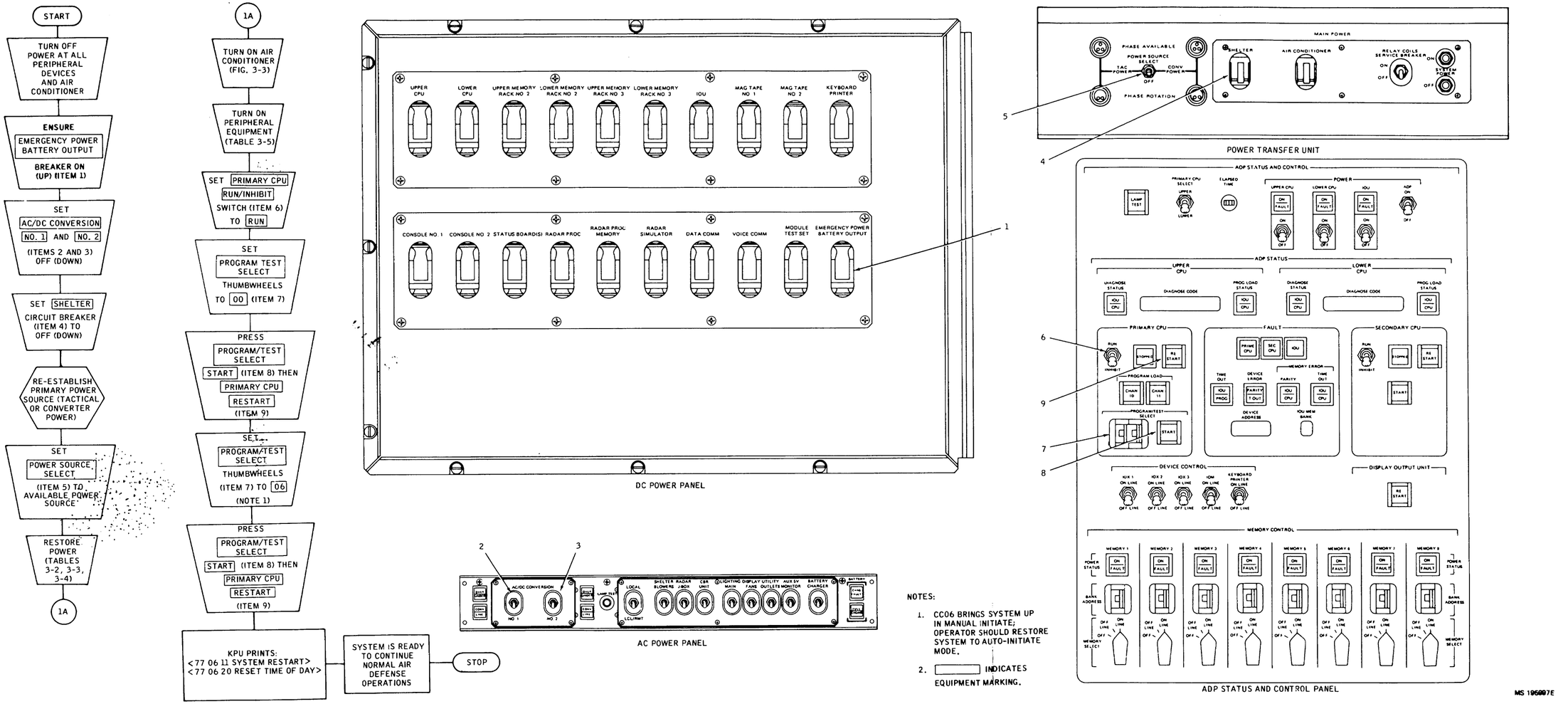

Figure 4-59. Memory Protect Reinitialization

Table 4-3. ANITSQ-73 Legal Entries - Continued

Parameter	Format	Legal entries
Track number		
ATDL-1	A1A2NNN	A1 = A thru N, P or Q
TADIL-B	NNNN	A2 = A thru H
NATO	A3A4A4NNN	A3 = N (N means NATO) A4 = A, E, G, H, J thru M N = 0 thru 7 (General address codes not valid)
Track height		Valid combinations: U-Alone, AA; IA; RH, R1, R2; EA (For source of U, type and height are not entered.)
	AX+NNN	A = A, E, R, U or I (Source) A = Aircraft E = Estimated R = Radar U = Unknown I = IFF X = A, H, 1 or 2 (type) A = Altitude (above or below MSL) H = Height above own site tangent plane 1 = Height above height finder I tangent plane 2 = Height above height finder 2 tangent plane ± = Height sign NNN = Height, Classified (refer to TM 9-1430-652-10-7)
Track velocity and heading	NNN#MMM	NNN = Classified (refer to TM 9-1430-652-10-7) # = space MMM = 000-359 (heading in degrees)
Position entry (GEOREF)	A1A2A3A3NNNN	A1 = A thru Z except I and O A2 A thru M except I A3 = A thru Q except I and O NN = 00 thru 59 (two groups)
Site initialization/ identification	A	A = C, T, O, P, A, R, or E C = Command Post T = Truck Park O = Ordnance Storage P = POL Storage A = Airfield

Table 4-3. AN/TSQ-73 Legal Entries Continued
-Continued

Parameter	Format	Legal entries
Site initialization/ identification (cont)		R = Radar E = ECM Fix
Site address/name	XXXXYYYY	XXXX = Site address 0 thru 9 and/or A thru Z YYYY = Site name 0 thru 9 and/or A thru Z
Enter jam strobe	NNN	NNN = 000 thru 359 degrees
Weapon type	N	N = 0, 2 or 3 0 = Not specified (all) 2 = Missile 3 = Conventional (No entry, 0 is assumed)
ADL address		
ATDL-1	A1A2	Al = A thru N, P or Q A2 = A thru H
ATDL-1 FU	A1A2NNN	N = 0 thru 7
ATDL-1 general address	AA	AA = QH
TADIL-B PU/RU address	NNN track number)	N = 0 thru 7 (last three digits of TADIL-B
TADIL-B FU address	NNNN	N = 0 thru 7
TADIL-B general address	NNN	177
Send pointer		
ATDL-1 address	A1A2	A1 = A thru N, P or Q A2 = A thru H
ATDL-1 FU address	A1A2NNN	N = 0 thru 7
ATDL-1 general address	AA	AA = QH
TADIL-B site address	NNN	N = 0 thru 7
TADIL-B FU address	NNNN	N = 0 thru 7
Compliance code	AA	AA = WC, HC, or CC WC = Will comply HC = Have complied CC = Can't comply
Action-management code	A	A = D, C, U, F, E, T, R, S, P, L, or I D = Information difference C = Change data order (ID) U = Data update request F = Force tell request

Table 4-3. AN/TSQ-73 Legal Entries Continued
-Continued

Parameter	Format	Legal entries
Action-management code (Cont)		E = Emergency tell
		T = Terminate force tell
		R =Cease reporting
		S = Special points processing update
		P = Pair track number request
		L =Terminate emergency
		I = IFF update request
	Ax	A=Z
		Z = IFF Clear Message
		x = Code to be Cleared
		1 = Mode 1
		2 = Mode 2
		3 = Mode 3A
		A = All (Modes 1, 2, and 3A)
Command code	AA	AA = WT, WF, EN, CE, HF, CF, CX, SA, IN, or ER
		WT =Weapons tight
		WF = Weapons free
		EN = Engage
		CE = Cease engage
		HF = Hold fire
		CF = Cease fire
		CX = Cover
		SA = Salvo
		IN = Investigate/assign
		R = Engage ripple

Table 4-3. AN/TSQ-73 Legal Entries - Continued

Parameter	Format	Legal entries
Designate Map 1 and/or Map 2	A	A = A thru J
IFF mode designate or interrogate mode (battalion only)	X or XX	X = 1, 2, 3 or C
ID amplification code	C#NNN	C = change data order # = space NNN = Classified (refer to TM 9-1430-652-10-7)
Enter IFF code		
Mode 1	1 NN	NN = 01 thru 73 (LSD not greater than 3)
Mode 2	2 NNNN	NNNN = 0001 thru 7777
Mode 3A	3 NNNN	
Mode 4	4 AA	AA = NI, NR, NF, IR, IF, TF NI = Not interrogated NR = No response NF = No response to a previously reported true friend IR = Invalid response IF = Invalid response to a previously reported true friend TF = True friend
Assign row number[1]	AXX#NN	AXX = FU designator A = A thru Z X = A thru Z or O thru 9 # = Space NN = 01-48 00 = Erase hooked FU data (with no designator)
Fire unit alert	AA, NH, or NN	AA = RL or SM RL = released SM = simulated NH = OH thru 9H (hours) NN = 00 thru 99 (minutes) (additional two character combinations may be used to define alert status)

See footnotes at end of table.

Table 4-3. AN/TSQ-73 Legal Entries - Continued

Parameter	Format	Legal entries
Fire unit/site status	A	A = R, T, S, F, E, U, B, O, N, P, or W For non-PATRIOT FU R = Ready T = Tracking S = Silent tracking F = Firing E = Effective U = Heads up B = Broken engagement O = Out of action N = Not effective P = Partially effective W = Weapons assigned For PATRIOT FU or Site R = Ready O = Out of action (valid only for subordinate FUs and sites. Entry of status other than U, B, N, or P is invalid if link is operational)
Missile count hot (PATRIOT)	NNN	NNN = 000 thru 511 (total long-range missiles reported by FUs known to be subordinate to the site)
Missile count hot (HAWK)	NN	NN = 00 thru 99 (total unknown, short- and medium-range missiles reported by FUs known to be subordinate to the site)
Missile count code	NN	NN = 00 thru 31 (total missile count)
Enter altitude limits	NNN MMM	Classified (refer to TM 9-1430-652-10-7)
Enter threat limit	A	A = H, L, or N H = High L = Low N =No threat
Enter speed limits	NNN MMM	Classified (refer to TM 9-1430-652-10-7)

Table 4-3. AN/TSQ-73 Legal Entries - Continued

Parameter	Format	Legal entries
Designate FU by battalion or PATRIOT ICC, FU alphanumerics by battalion or PATRIOT ICC, or FU engagement markers by battalion or PATRIOT ICC	A1A2	A1 = A thru N, P or Q
G-Sensitivity	N	N = 1 thru 8
Initiate track		
ATDL-1	A1A2NNN	A1 = A thru N, P or Q A2 = A thru H N = 0 thru 7
TADIL B	NNNN	N = 0 thru 7 (track number is auto assigned if no entry is made)
Simulated or EW code	S or E	S = Simulated track E = EW track (track is assumed live if S is not entered and non-EW if E is not entered)
Sequence hook	A	A = T, A, E, F, H, L, or P T = All Central File Items (default) A = Alerts (excludes SIM-TEST, PPI ONLY, and CAPACITY alerts) E = Jam strobes/EW tracks/ECM fixes/ ESM fixes/Intel Data tracks F = Fire units (excludes all non-Army FUs) H = High threat tracks L =Local tracks P = Poor tracking status tracks (Bn only) **NOTE** **Up to five of the above entries may be entered in any sequence. If no entry is made, the previously entered criterion/criteria is used; if there were none previously entered, hook all central file items is the assumed (default) entry. The order of sequence hook for those will always be in the order listed above.**
Number hook		
ATDL-1 track	A1A2NNN	A1 = A thru N, P or Q A2 = A thru H N = 0 thru 7

Table 4-3. AN/TSQ-73 Legal Entries - Continued

Parameter	Format	Legal entries
TADIL-B track NATO track	NNNN A3 A4A4NNN	N = 0 thru 7 A3 = N A4 = A,E,G,H, J thru M N = 0 thru 7
Fire Unit	A1A2NNN, AZZ or NNNN	A1A2NNN is track number of FU A1 = A thru N, P or Q A2 = A thru H N = 0 thru 7 AXX is FU designator from assign DDG row number A = A thru Z X = O thru 9 or A thru Z
Site	A1A2 or NNN	NNNN is TADIL-B FU number N = 0 thru 7 A1 = A thru N, P or Q A2 = A thru H N = 0 thru 7 (PU/RU address.Last 3 numbers or TADIL-B track number.)
Volume/Line WCZ	V A3A4NNN	V = Volume/Line indicator A3 = W A4 = H,T, or F N = 0-9
MEZ	V A5A4N	V = Volume/Line indicator A5 = M A4 = H, T or F N = 1 or 2
FSCL	V A6A7N	V = Volume/Line indicator A6 = F A7 = S N = 1 or2
Transmission Zone data link number	NN	00 thru 37 (TADIL-B or ATDL-1 data link.)
Control command entry	CCnn(n)#RS	Refer to table 12-1 in TM 9-1430-652-10-6.

[1]When information is to be erased for a hooked fire unit, row entry 00 is used and FU designator is not used.

Section III. SYSTEM INTEGRATION CHECKOUT

4-20. General. This section provides the information necessary to verify that the system can fulfill its assigned mission and perform accurately at its fullest capability. These procedures should be performed immediately after system initialization is complete or anytime the operating capability of the system is in doubt. The procedures contained in this section verify the operation of the system with its external interfaces only. If a malfunction occurs, or a procedure cannot be accomplished, the system repairman should be notified. He will determine whether the problem is internal or external to the system and take appropriate action to correct it.

4-21. ATDL-1 Hawk Fire Unit Integration. Fire unit integration procedure verifies operations between the system and its assigned fire units. A fire unit integration check should be performed each day as a part of the daily operator checks. Procedures are provided for integration with ATDL-1 Hawk battery and AFU platoon.

a. Pre-Integration Checks. The following conditions should be verified prior to performing abbreviated fire unit integration.

(1) Ensure that AN/TSQ-73 initialization has been performed.

(2) Ensure that daily checks have been completed by the FU.

(3) Ensure that communication checks of all nets have been accomplished.

(4) Ensure that initial switch settings for FU integration check have been accomplished at the FU. Table 4-3.2 provides the initial settings at ATDL-1 Hawk battery and table 4-3.3 at AFU platoon.

b. Fire Unit Integration. Procedures are provided in flow chart form for integrating the AN/TSQ-73 with ATDL-1 Hawk battery and AFU platoon.

NOTE

All tracks should be initiated within 120 kilometers.

(1) Figure 4-61.1 outlines the procedures to be used for ATDL-1 Hawk battery.

(2) Figure 4-61.2 outlines the procedures to be used for ATDL-1 Hawk AFU platoon.

4-22. Deleted.

4-23. Deleted.

4-23.1. Deleted.

4-24. Deleted.

4-25. Remote Source Data Link Operation Verification. Figure 4-63 provides the procedures necessary to verify the operation of the remote source (ATDL-1, TADIL-B) data links of the system. All initialization procedures described in chapter 3, including loading of operational program tape and initialization of remote source data links, must be accomplished prior to these procedures. The console should be in TRACK/TAC mode.

4-26. Radar/IFF Operation Verification. Figure 4-64 provides the procedure necessary to verify the operation of the local radar and IFF equipment with the system. All initialization procedures described in chapter 3, including loading of operational program tape, must be accomplished prior to this procedure.

4-27. Multiple AN/TSQ-73 Alignment Requirements. The following paragraphs provide multiple AN/TSQ-73 alignment information.

NOTE

Establish track file using radar and IFF data (if tactical situation permits).

Before the alignment of the battalion AN/TSQ-73 is checked using the following procedure, be sure radars are aligned to true north or grid north.

a. Local/Remote Symbology Correlation. Observe the correlation between the local and remote symbology that is present on targets being tracked by each battalion AN/TSQ-73. The local/remote symbology should be superimposed or very nearly so. The check should be made in each quadrant on at least one track.

b. Height Finder Entries. Input a height finder radar (CC126) at the location of each battalion. This action is accomplished at each battalion. After this, it is necessary to hook both the local and remote track at each system and record the range and azimuth to each from the data available in the auxiliary readout (ARO).

c. Range/Azimuth Error Corrections. At each battalion, the range and azimuth to the local and remote tracks will be the same if the systems are properly aligned. Deviations of 1 mile and/or 1 degree are acceptable and may be explained by the update cycle of the system. If range and/or azimuth errors exist, perform the following procedure.

(1) If range and azimuth errors exist on one battalion, but only range errors exist on any other, any battalion with only the range error should check the adjustment of the radar at its location.

(2) If range and azimuth errors exist at one battalion, but only azimuth errors exist at any other,

any battalion with the azimuth errors should check the radar alignment and orientation.

(3) If range and azimuth errors exist at various sites, alignment/orientation errors may also be present. The battalions should check initialization data, site location and system alignment. If azimuth errors persist, a check should be made of azimuth correction switches on RIE Panel I. If a battalion is required to realign the system with the radar, the fire units must be reintegrated.

Pages 4-120.1/(4-120.2 blank), Including figures 4-60, 4-60.1, 4-61 and table 4-3.1, deleted

Table 4-3.2. Initial Switch Settings at ATDL-1 Hawk Battery for FU Integration

1. Momentarily set FIRE MODE switch on TCO panel to NORMAL.
2. Press RESUME FIRE/CEASE FIRE A and B switches on TCO panel to RESUME FIRE.
3. Press NO KILL pushbutton switch on FCA and FCB.
4. Verify that HIPAR A and B are in remote full radiate.
5. Set test switch on FCG display generators A and B to position 3 (missile count).
6. Press FIRE UNIT on FCA and FCB to ACTIVE.
7. Set MODE switch on FCG firing interlock Assembly A and B to TEST.
8. Direct ICC personnel to:
    a. Load operational program.
    b. Press CWAR INHIBIT and PAR INHIBIT switches to on.
    c. Set ADP inhibit switch to PROCESS & REPORT.
    d. Set battery configuration to BATTERY FULL (both sections operational), BATTERY MINUS FSA (B section only operational), or BATTERY MINUS FSB (A section only operational).
    e. Verify BATTERY and DLRP LONGITUDE and LATITUDE coordinate switches are properly set.
9. Verify the following:
    a. At BCC, ADCP DATA LINK FAIL label is off.
    b. At ICC, MODEM XMIT and RCV lamps are off.

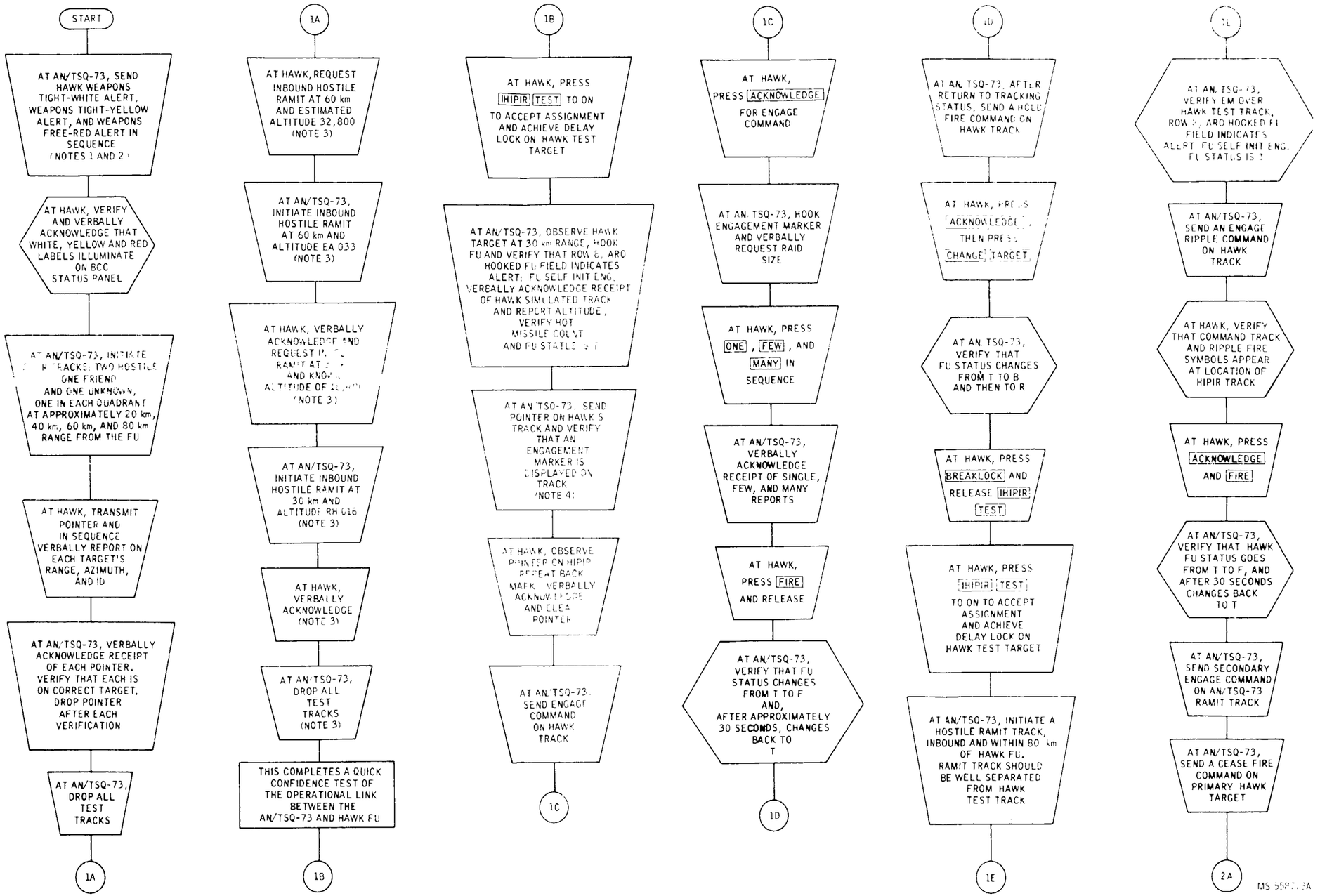

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Figure 4-61.1. ATDL-1 Fire Unit Integration with Hawk Battery (Sheet 1 of 3)

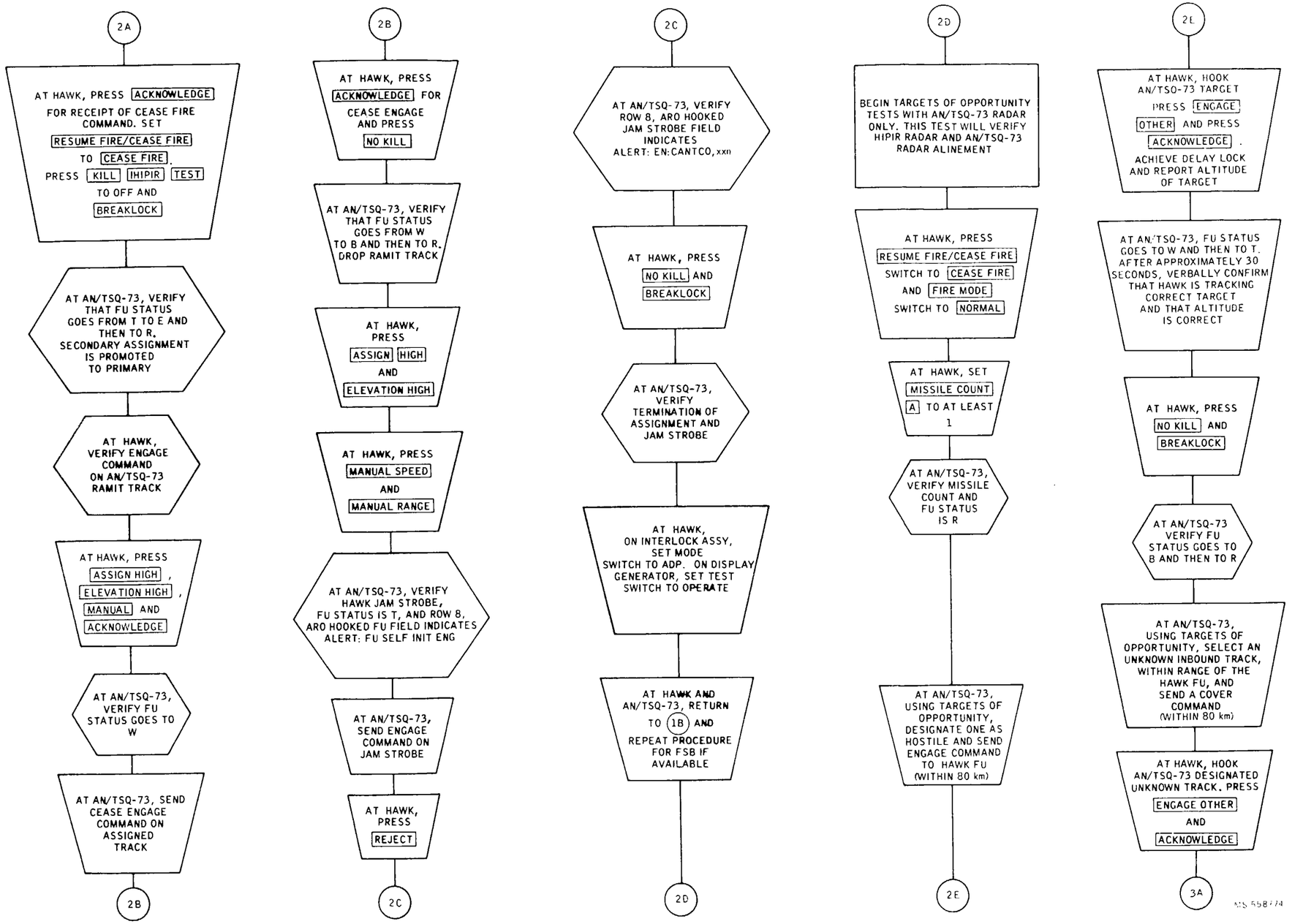

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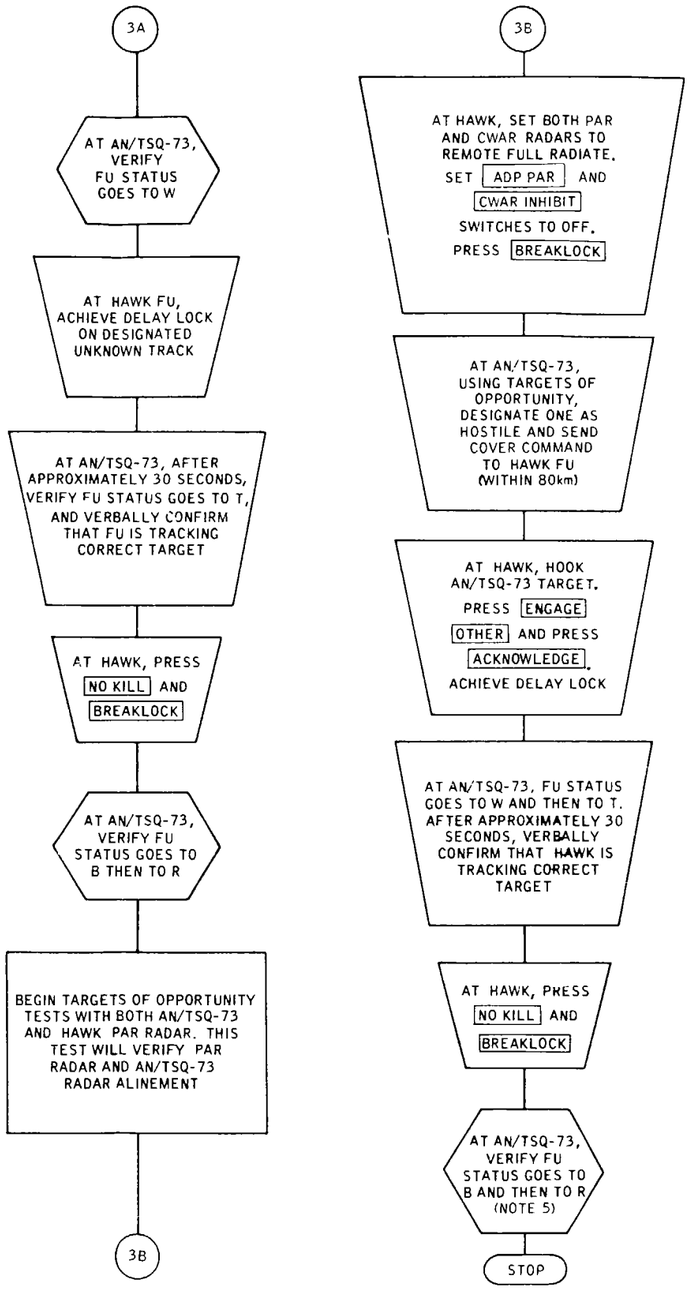
Figure 4-61.1. ATDL-I Fire Unit Integration with Hawk Battery (Sheet 2 of 3)



NOTES:

1. HAWK BATTERY INTEGRATION CHECK WITH AN/TSQ-73 IS LOCATED IN TABLE 10-10.1 IN TM 9-1430-1526-12-1 FOR HAWK BCC.

2. WHEN CHANGING STATE OF ALERT WITH CC117 COMMAND, ALLOW MINIMUM 70 SECONDS BEFORE CHANGING FROM WEAPONS TIGHT (WT) TO WEAPONS FREE (WF). AIR DEFENSE WARNING AND WEAPON STATUS IS SENT GENERAL ADDRESS AS FOLLOWS:

   A. PRESS CONTRL CMD ENTRY .
   B. ENTER CC117, W, Y, OR R AND RS AT AN KEYBOARD .
   C. PRESS CONTRL CMD ENTRY .
   D. PRESS ADL DATA OR AIR DEF OPNS TASK SELECTIONS.
   E. ENTER WT OR WF AT AN KEYBOARD .
   F. PRESS CMD CODE TASK FUNCTIONS .

   AIR DEFENSE WARNING AND WEAPONS STATUS CAN BE SENT SPECIFIC ADDRESS AS FOLLOWS:

   A. PRESS CONTRL CMD ENTRY .
   B. ENTER CC117, W, Y, OR R AND RS AT AN KEYBOARD .
   C. PRESS CONTRL CMD ENTRY .
   D. ENTER FU ADDRESS AT AN KEYBOARD (I.E., AC001).
   E. PRESS NUMBER HOOK .
   F. PRESS ADL DATA OR AIR DEF OPNS TASK SELECTIONS.
   G. ENTER WT OR WF AT AN KEYBOARD .
   H. PRESS CMD CODE TASK FUNCTIONS .

3. PROCEDURE REQUIRED FOR HAWK BCC 275002 THRU 680220 PROVIDED MWO 9-1425-1525-50-16 HAS BEEN APPLIED AND 680221 UP.

4. POINTER MESSAGES ARE SENT ONE TIME ONLY AND ARE VERBALLY ACKNOWLEDGED AT FIRE UNITS. UNDER MARGINAL COMMUNICATION CONDITIONS, THE POINTER MESSAGE COULD BE LOST AND MAY HAVE TO BE REPEATED FOR SATISFACTORY RESULTS. SEND POINTER AS FOLLOWS:

   A. ENTER FU ADDRESS AT AN KEYBOARD (I.E., AC001).
   B. PRESS NUMBER HOOK .
   C. PRESS ADL DATA OR AIR DEF OPNS TASK SELECTIONS.
   D. POSITION BALL TAB ON ITEM TO POINT TO.
   E. PRESS SEND PTR TASK FUNCTIONS .

5. RETURN TARGETS TO PROPER IDS.
6. [ ] INDICATES EQUIPMENT MARKING.

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Figure 4-61.1. ATDL-1 Fire Unit Integration with Hawk Battery (Sheet 3 of 3)

Table 4-3.3. Initial Switch Settings at ATDL-1 Hawk AFU Platoon for FU Integration

1. Press NORMAL MODE on TDECC to on.
2. Press NO KILL.
3. Press RESUME FIRE/CEASE FIRE switch to RESUME FIRE.

4 Verify HIPIR is in remote full radiate.

5. Press OUT OF ACTION/READY switch to READY.
6. Set missile count switch on TDECC panel to position A.
7. At the ADP:
    a. Load operational program.
    b. Press CWAR INHIBIT switch to on.
    c. Set ADP inhibit switch to PROCESS & REPORT.
    d. Verify BATTERY and DLRP LONGITUDE and LATITUDE coordinate switches are properly set.
8. Verify the following:
    a. At TDECC, ADCP DATA LINK FAILURE label is off.
    b. At ADP, MODEM XMIT and RCV lamps are off.

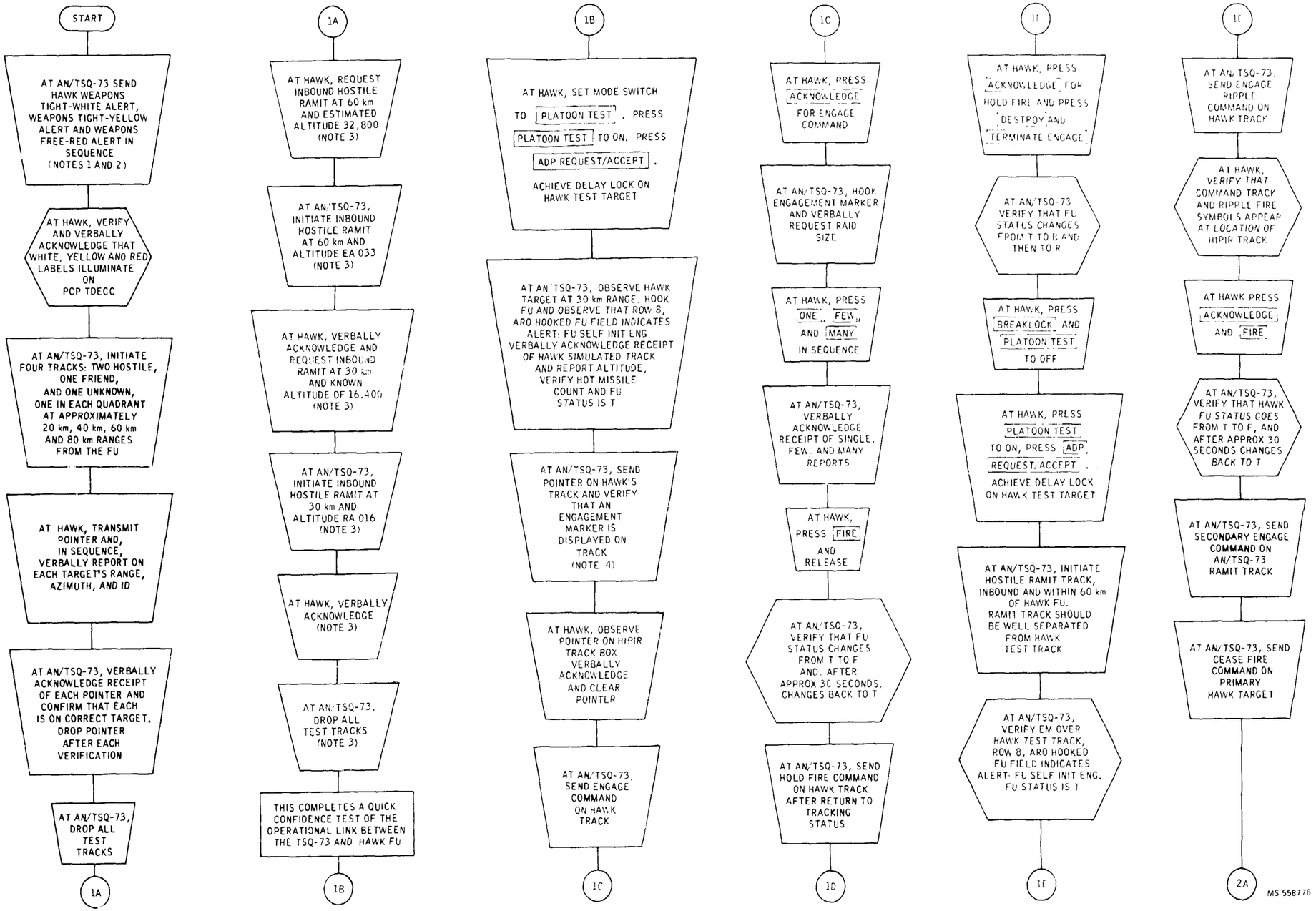

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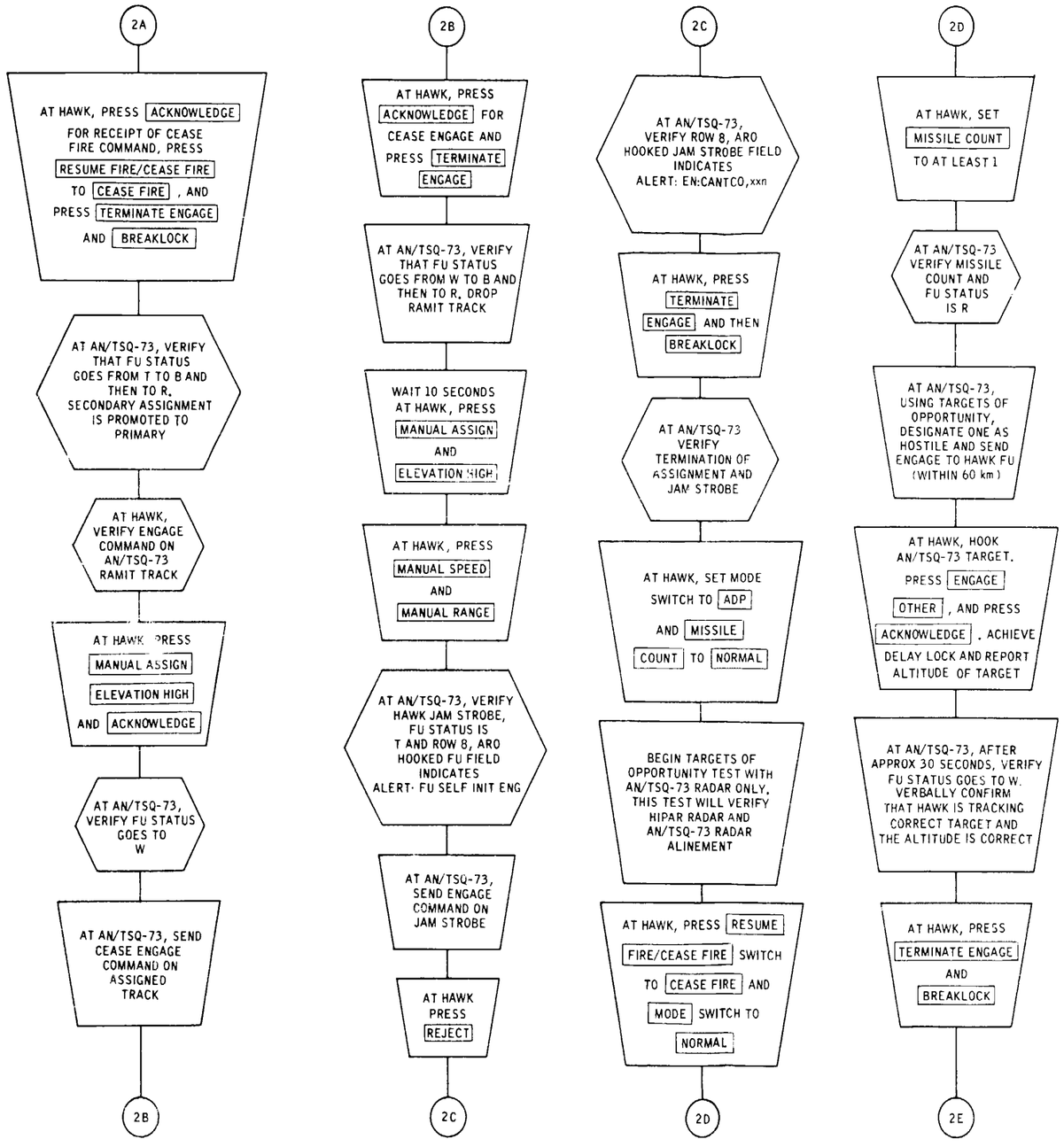
Figure 4-61.2. ATDL-1 Fire Unit Integration with AFU Platoon (Sheet 1 of 2).



NOTES:

1. HAWK AFU PLATOON INTEGRATION CHECK WITH AN/TSQ-73 IS LOCATED IN TABLE 11-8.1 IN TM 9-1430-1535-12-1 FOR AFU PCP.

2. WHEN CHANGING STATE OF ALERT WITH CC117 COMMAND, ALLOW MINIMUM 70 SECONDS BEFORE CHANGING FROM WEAPONS TIGHT (WT) TO WEAPONS FREE (WF). AIR DEFENSE WARNING AND WEAPON STATUS IS SENT GENERAL ADDRESS AS FOLLOWS:

   A. PRESS CONTRL CMD ENTRY.
   B. ENTER CC117, W, Y, OR R AND RS AT AN KEYBOARD.
   C. PRESS CONTRL CMD ENTRY.
   D. PRESS ADL DATA OR AIR DEF OPNS TASK SELECTIONS.
   E. ENTER WT OR WF AT AN KEYBOARD.
   F. PRESS CMD CODE TASK FUNCTIONS

   AIR DEFENSE WARNING AND WEAPONS STATUS CAN BE SENT SPECIFIC ADDRESS AS FOLLOWS:

   A. PRESS CONTRL CMD ENTRY.
   B. ENTER CC117, W, Y, OR R AND RS AT AN KEYBOARD.
   C. PRESS CONTRL CMD ENTRY.
   D. ENTER FU ADDRESS AT AN KEYBOARD (I.E., AC001).
   E. PRESS NUMBER HOOK.
   F. PRESS ADL DATA OR AIR DEF OPNS TASK SELECTIONS.
   G. ENTER WT OR WF AT AN KEYBOARD.
   H. PRESS CMD CODE TASK FUNCTIONS

3. PROCEDURES REQUIRED FOR HAWK PCP 275001 THRU 680220 PROVIDED MWO 9-1425-1525-50-16 HAS BEEN APPLIED AND 680221 UP.

4. POINTER MESSAGES ARE SENT ONE TIME ONLY AND ARE VERBALLY ACKNOWLEDGED AT FIRE UNITS. UNDER MARGINAL COMMUNICATION CONDITIONS, THE POINTER MESSAGE COULD BE LOST AND MAY HAVE TO BE REPEATED FOR SATISFACTORY RESULTS. SEND POINTER AS FOLLOWS:

   A. ENTER FU ADDRESS AT AN KEYBOARD (I.E., AC001).
   B. PRESS NUMBER HOOK.
   C. PRESS ADL DATA OR AIR DEF OPNS TEST SELECTIONS.
   D. POSITION BALL TAB ON ITEM TO POINT TO.
   E. PRESS SEND PTR TASK FUNCTIONS

5. RETURN TARGETS TO PROPER IDs.

6. [ ] INDICATES EQUIPMENT MARKING.

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Figure 4-61.2. ATDL-1 Fire Unit Integration with AFU Platoon (Sheet 2 of 2)

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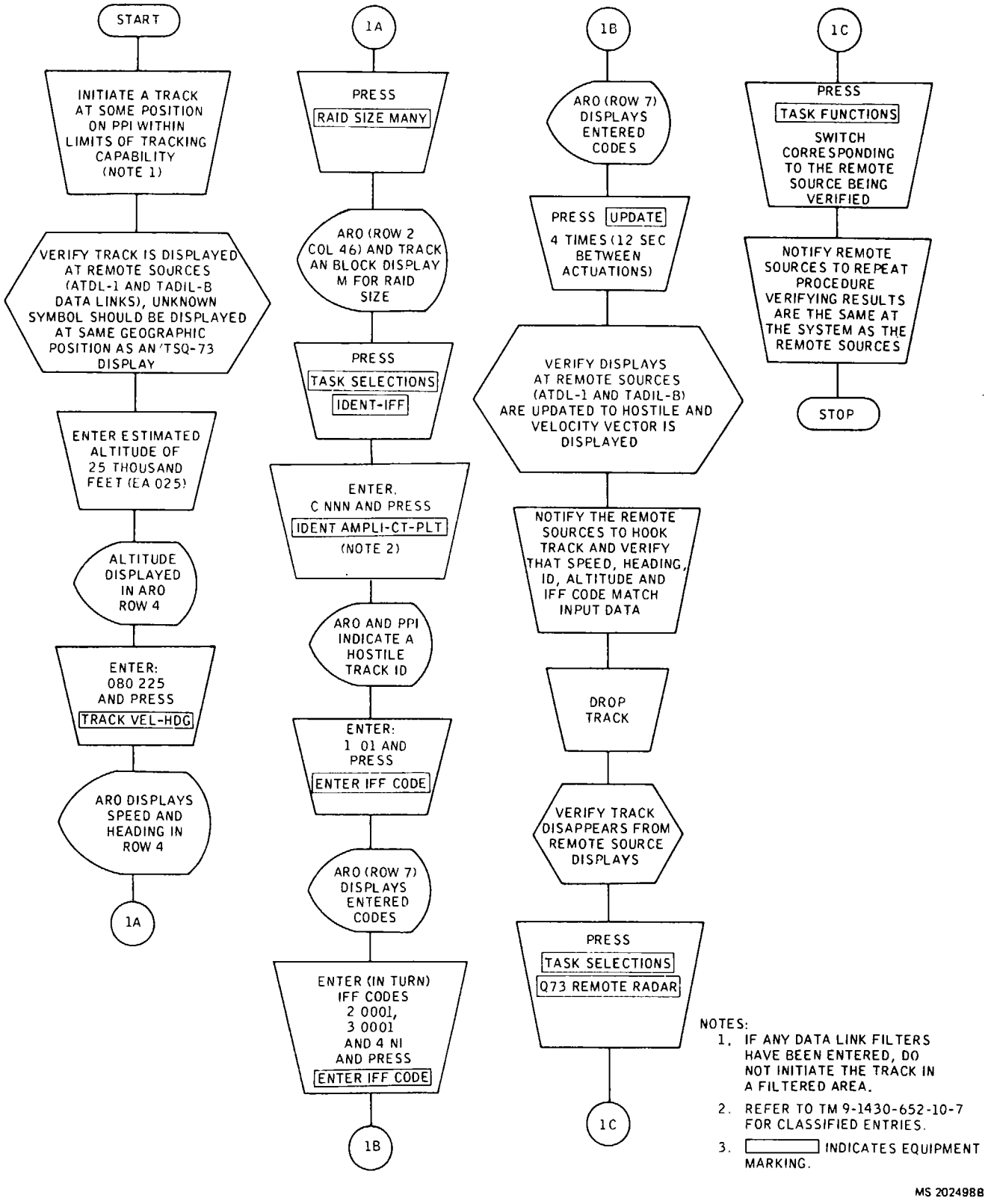

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Figure 4-63. Remote Sources Data Link Operation Verification

Figure 4-62 deleted

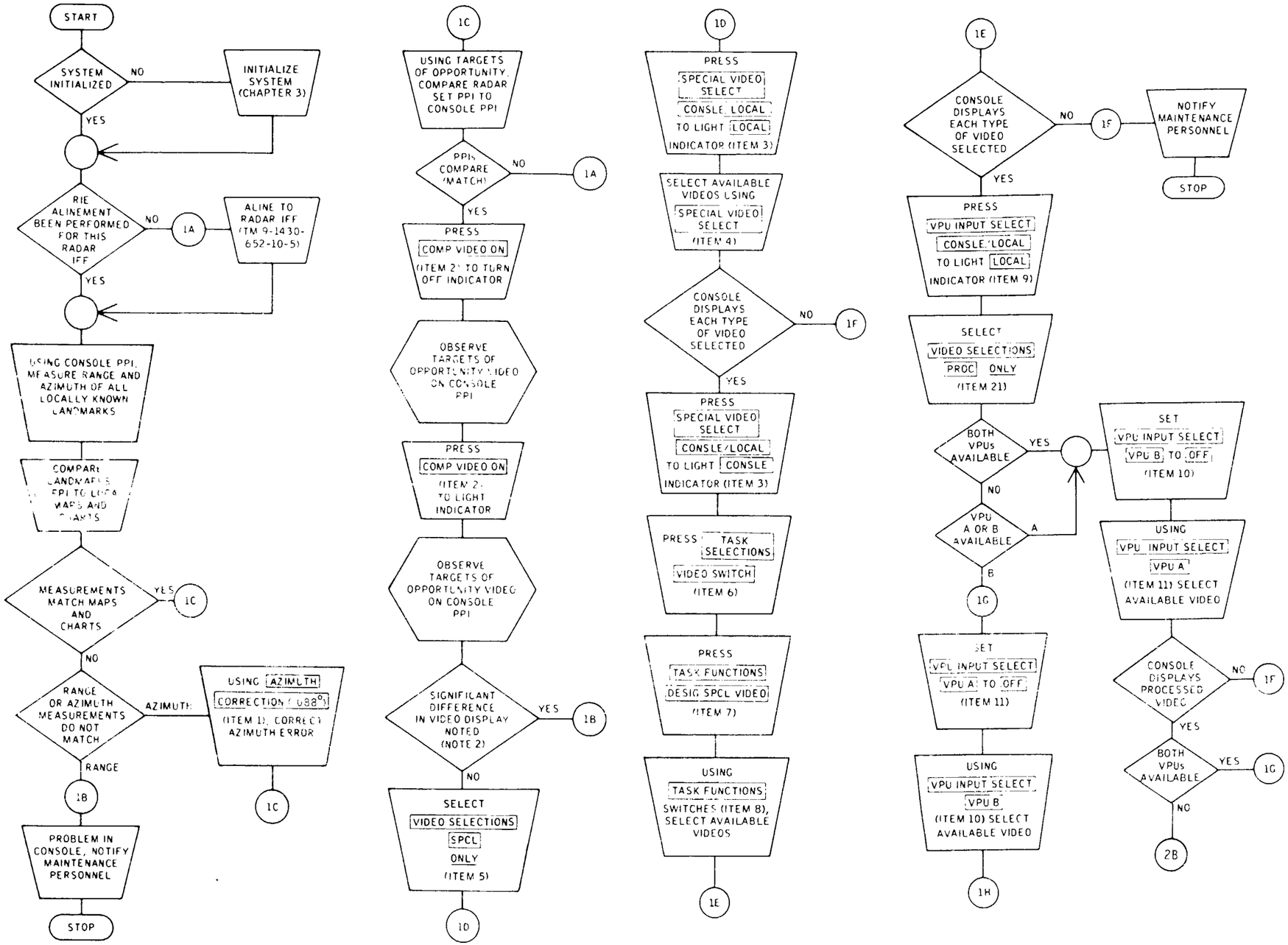

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Figure 4-64. Radar/IFF Operation Verification (Sheet 1 of 3)

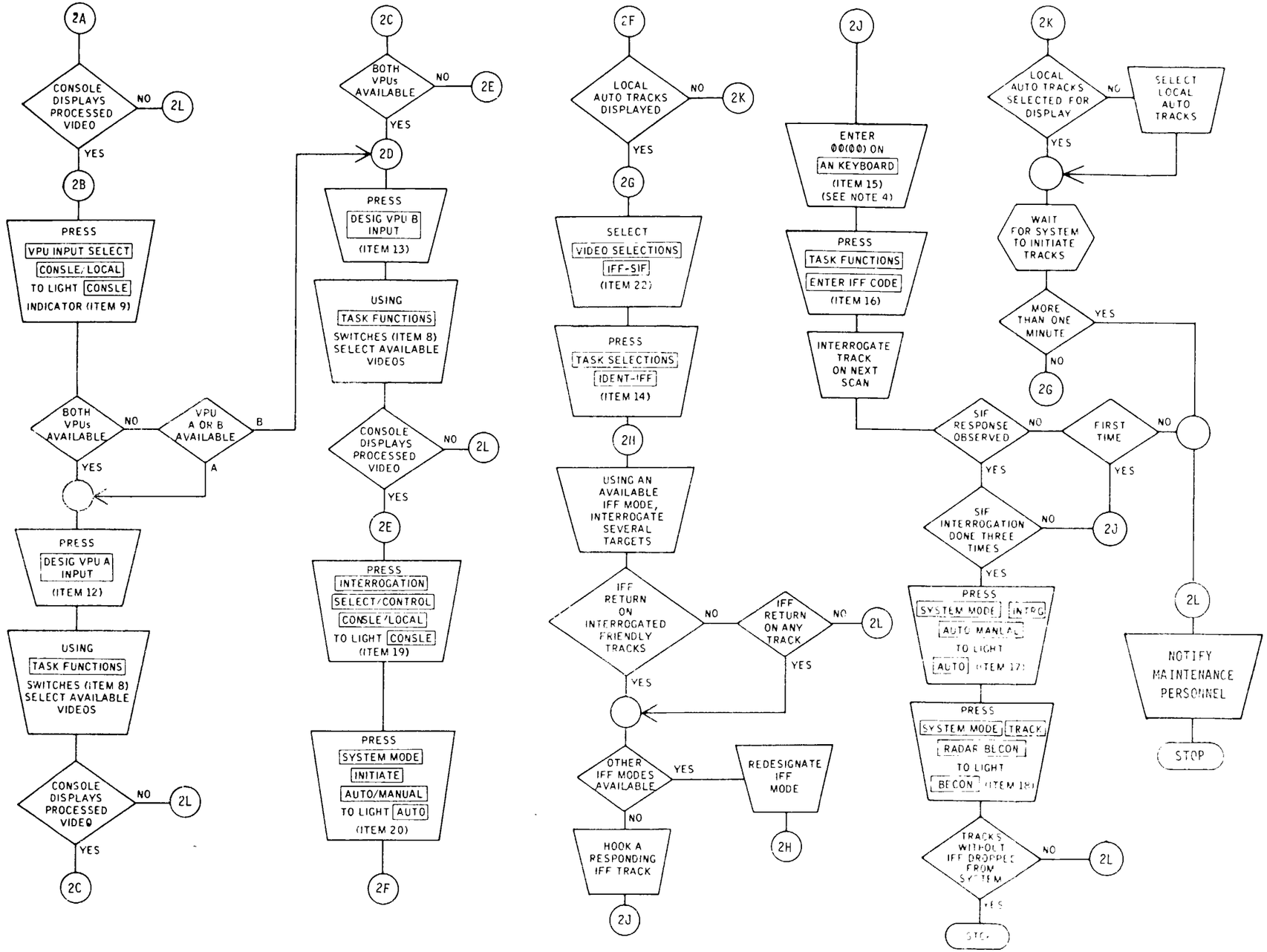

Figure 4-64. Radar/IFF Operation Verification (Sheet 2 of 3)

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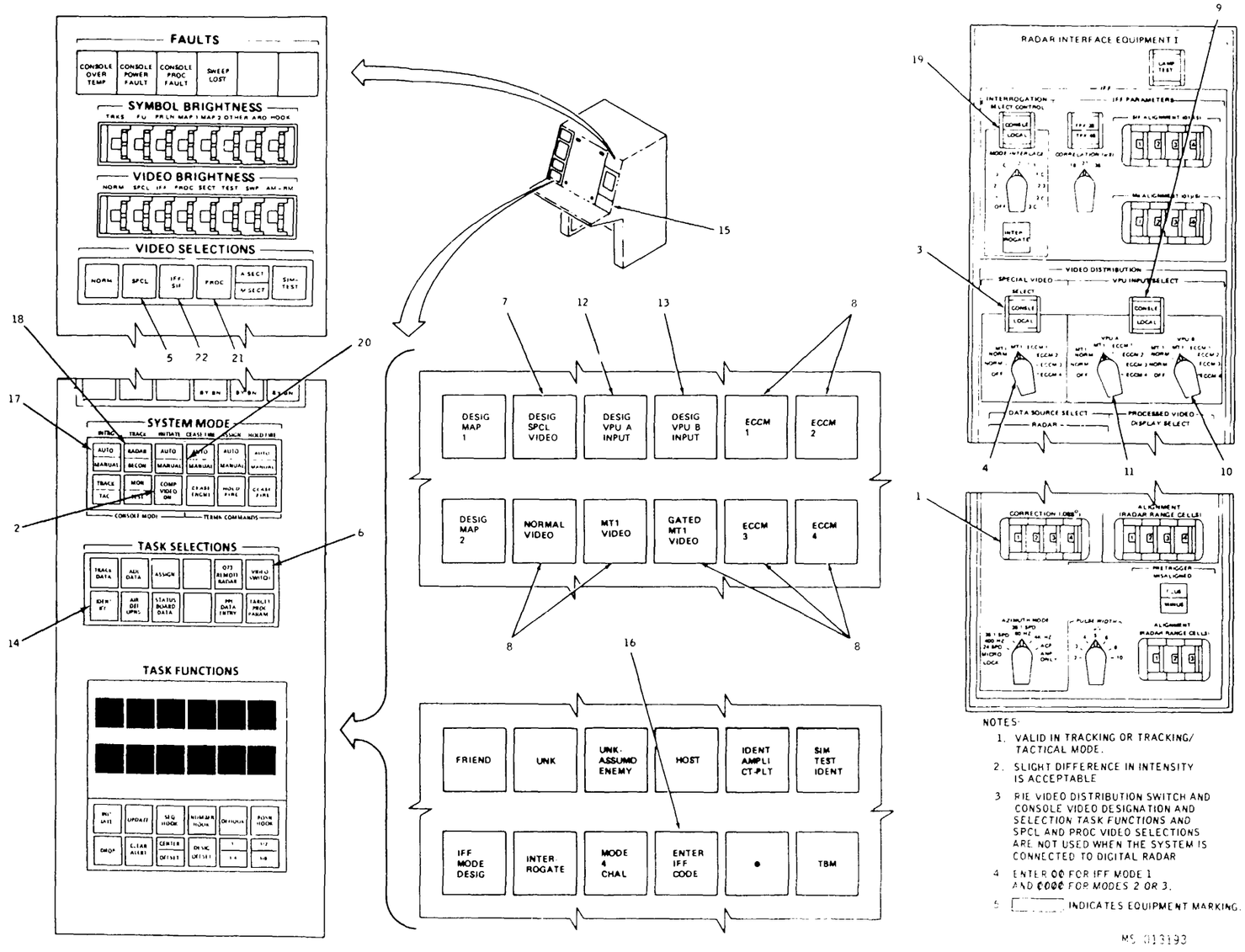

NOTES:

1. VALID IN TRACKING OR TRACKING/TACTICAL MODE.
2. SLIGHT DIFFERENCE IN INTENSITY IS ACCEPTABLE
3. RIE VIDEO DISTRIBUTION SWITCH AND CONSOLE VIDEO DESIGNATION AND SELECTION TASK FUNCTIONS AND SPCL AND PROC VIDEO SELECTIONS ARE NOT USED WHEN THE SYSTEM IS CONNECTED TO DIGITAL RADAR
4. ENTER 00 FOR IFF MODE 1 AND CODE FOR MODES 2 OR 3.
5. [ ] INDICATES EQUIPMENT MARKING.

MS 013193

Figure 4-64. Radar/IFF Operation Verification (Sheet 3 of 3) ■

Section IV. OPERATOR DAILY PREVENTIVE MAINTENANCE CHECKS AND SERVICES

4-28. General. Operator Daily Preventive Maintenance Checks and Services are performed daily. Other scheduled maintenance is described in TM 9-1430-655-20-1.

4-29. Procedure. Table 4-4 describes the procedures performed during Operator Daily Preventive Maintenance Checks and Services.

Table 4-4. Operator Daily Preventive Maintenance Checks and Services

Item No.	Item to be inspected	Procedures: Check for and have repaired or adjusted as necessary	Lamp test indication	Corrective action:
1	Tactical generator/ motor generator	Perform required daily checks on tactical generator and/or motor generator.		Refer to tactical generator technical manual (TM 5-6115-465-12) and/or motor generator manual (TM 9-1430-656-14-2) for applicable procedures.
2	Air conditioner	Perform required daily checks on air conditioner.		Refer to TM 5-4120-361-14. Replace air conditioner, if necessary.
3	Emergency power	Check emergency power.		
		a. On power cabinet ac power panel, check BATTERY CHARGER circuit breaker and set to ON.		
		b. On power cabinet ac power panel, press LAMP TEST switch. All indicators light.		Replace lamps.
		NOTE **AUX 5V MONITOR circuit breaker must be set to ON to supply + 5V for lamps.**		
		c. On power cabinet ac power panel, check CHRG FAULT indicator is not lit.		Notify maintenance personnel if CHRG FAULT indicator lit.
4	ADP indicators	On ADP status and control panel, press LAMP TEST switch and observe the following indications.		Replace lamps.
		NOTE **Due to noise in lamp test circuit one or more LED readouts may be distorted. This does not negate the test and is considered normal.**		
		ADP STATUS AND CONTROL **POWER**		
		UPPER CPU ON/FAULT	Both lit.	
		LOWER CPU ON/FAULT	Both lit.	
		IOU ON/FAULT	Both lit.	

Table 4-4. Operator Daily Preventive Maintenance Checks and Services-Continued

Item No.	Item to be inspected	Procedures Check for and have repaired or adjusted as necessary	Lamp test indication	Corrective action:
4 (Cont)		**ADP STATUS**		
		UPPER CPU		
		DIAGNOSE STATUS IOU/CPU	Both lit.	
		DIAGNOSE CODE	777777	
		PROG LOAD STATUS IOU/CPU	Both lit.	
		LOWER CPU		
		DIAGNOSE STATUS IOU/CPU	Both lit	
		DIAGNOSE CODE	777777	
		PROG LOAD STATUS IOU/CPU	Both lit	
		PRIMARY CPU		
		STOPPED	Lit	
		RESTART	Not lit	
		PROGRAM LOAD		
		CHAN 10	Lit	
		CHAN 11	Lit	
		PROGRAM/TEST		
		START	Lit	
		FAULT		
		PRIME CPU	Lit	
		SEC CPU	Lit	
		IOU	Lit	
		TIME OUT IOU/PROG	Both lit	
		DEVICE ERROR PARITY/T-OUT	Both lit	
		MEMORY ERROR		
		PARITY IOU/CPU	Both lit	
		TIME OUT IOU/CPU	Both lit	
		DEVICE ADDRESS	177	
		IOU MEM BANK	7	
		SECONDARY CPU		
		STOPPED	Lit	
		RESTART	Not lit	
		START	Lit	
		DISPLAY OUTPUT UNIT		
		RESTART	Not lit	

Table 4-4. Operator Daily Preventive Maintenance Checks and Services -Continued

Item No.	Item to be inspected	Procedures Check for and have repaired or adjusted as necessary	Lamp test indication	Corrective action:
4 (Cont)		**MEMORY CONTROL**		
		POWER STATUS		
		MEMORY I ON/FAULT	Both lit	
		MEMORY 2 ON/FAULT	Both lit	
		MEMORY 3 ON/FAULT	Both lit	
		MEMORY 4 ON/FAULT	Both lit	
		RACK 3		
		POWER SLPPLIES		
		1A1A3PSI		
		INT	Lit	
		EXT	Lit	
		1A1A3PS2		
		INT	Lit	
		EXT	Lit	
		1A1A3PS3		
		INT	Lit	
		EXT	Lit	
		1A1A3PS4		
		INT	Lit	
		EXT	Lit	
		1A1A3PS5		
		INT	Lit	
		EXT	Lit	
		1A1A3PS6		
		INT	Lit	
		EXT	Lit	
		32K CMOS MEMORY		
		MEMORY 1 (1127) FAULT	Lit	
		1A1A3A5PS1		
		INT	Lit	
		EXT	Lit	
		MEMORY 2 (J1127) FAULT	Lit	
		1A1A3A6PS 1		
		INT	Lit	
		EXT	Lit	

Table 4-4. Operator Daily Preventive Maintenance Checks and Services -Continued

Item No.	Item to be inspected	Procedures Check for and have repaired or adjusted as necessary	Lamp test indication	Corrective action:
4 (Cont)		**32K CMOS Memory**		
		MEMORY 3 (J1227) FAULT	Lit	
		1A1A3A7PS		
		INT	Lit	
		EXT	Lit	
		MEMORY 4 (J1227) FAULT	Lit	
		1A1A3A8PSI		
		INT	Lit	
		EXT	Lit	
5	MTU indicators	On each MTU, press LAMP TEST switch and observe the following indications.		Replace lamps.
		POWER	Lit	
		READY	Lit	
		ON LINE	Lit	
		WRITE ENABLE	Lit	
		FAULT RESET	Lit	
		FORWARD	Lit	
		REWIND	Lit	
		TEST Lit		
		BOT Lit		
		EOT Lit		
		Dc/dc Converter PSI		
		INT	Lit	
		EXT	Lit	
6	Display console indicators	On each display console, rotate LAMP BRT fully clockwise and press LAMP TEST switch.		Replace lamps.
		Left-hand control panel.		
		All indicators	Lit	
		Right-hand control panel		
		All indicators	Lit	
		except FAULTS spare (right one)		

Table 4-4. Operator Daily Preventive Maintenance Checks and Services -Continued

Item No.	Item to be inspected	Procedures Check for and have repaired or adjusted as necessary	Lamp test indication	Corrective action:
7	DDG indicators	On DDG, press LAMP TEST switch and observe the following indications:		Replace lamps.
		FAULT		
		SERIES REGULATOR	Lit	
		LEFT POWER SUPPLY	Lit	
		SYSTEM STATUS AND TIME		
		OPERATIONAL STATUS		
		WPNS TIGHT	Lit	
		WPNS FREE	Lit	
		STATE OF ALERT		
		WHITE ALERT	Lit	
		YELLOW ALERT	Lit	
		RED ALERT	Lit	
		FAULT LOCATION		
		ADP	Lit	
		MAG TAPE	Lit	
		KBD PRNTR	Lit	
		CONSLE	Lit	
		STATUS BOARD	Lit	
		DATA COMM	Lit	
		MAIN POWER	Lit	
		ENVIR	Lit	
		RADAR PROC	Lit	
		RADAR MISALIGNED	Lit	
		RADAR SIM	Lit	
		VOICE COMM CENTRL	LIT	
		TIME		
		LED DISPLAY	Not lit	
		ALARM OVERRIDE	Lit	
		STATUS BOARD		
		FAULT		
		LOGIC/TEMP	Both lit	
		POWER ON	Lit	
		FAULT		
		RIGHT POWER SUPPLY	Lit	
		INDICATOR (UNMARKED)	Lit	

Table 4-4. Operator Daily Preventive Maintenance Checks and Services -Continued

Item No.	Item to be inspected	Procedures Check for and have repaired or adjusted as necessary	Lamp test indication	Corrective action:
8	Data communications panel indicators	On data communications panel, press LAMP TEST switch and observe the following indications:		Replace lamps.
		DATA COMMUNICATION		
		CLOCK FAULT	Lit	
		IBDL ON	Lit	
		POWER SUPPLIES		
		LOWER		
		1 (CLOCK) ON/FAULT	Both lit	
		2 ON/FAULT (Not lit for brigade)	Not lit	
		3 ON/FAULT	Both lit	
		4 ON/FAULT	Not lit	
		UPPER		
		1 ON/FAULT	Both lit	
		2 ON/FAULT	Both lit	
		3 ON/FAULT	Both lit	
		4 ON/FAULT (Not lit for brigade)	Both lit	
		POWER SUPPLIES		
		1A1A2ASPSI		
		INT	Lit	
		EXT	Lit	
		1A1A2A5PS2		
		INT	Lit	
		EXT	Lit	
		1AIA2ASPS3		
		INT	Lit	
		EXT	Lit	
		1A1A2A5PS4		
		INT	Lit	
		EXT	Lit	
		1A1A2A7PS I1		
		INT	Lit	
		EXT	Lit	
		1A1A2A7APS2		
		INT	Lit	
		EXT	Lit	

Table 4-4. Operator Daily Preventive Maintenance Checks and Services -Continued

Item No.	Item to be inspected	Procedures Check for and have repaired or adjusted as necessary	Lamp test indication	Corrective action:
9	VCC indicators	On VCC panel, press LAMP TEST switch and observe the following indications:		Replace lamps.
		VOICE COMM CENTRAL		
		LINK QUALITY		
		STA 1 thru STA 10	Lit	
		POWER		
		ON/FAULT	Both lit	
		FREQ MONITOR		
		20 Hz RING	Lit	
		1600 Hz RING	Lit	
		5 kHz MPX	Lit	
		16 MHz OSC	Lit	
		LOOP TEST		
		GO/NO GO	Both lit	
		POWER SUPPLIES		
		PS1 INT/EXT	Lit	
		PS2 INT/'EXT	Lit	
10	VCS indicators	On VCS, check all indicators lit when pressed on.	Replace lamps.	
11	RIE I indicators	On RIE I panel, press LAMP TEST switch and observe the following indications:	Replace lamps.	
		RADAR INTERFACE EQUIPMENT I		
		IFF		
		CONSLE/LOCAL	Both lit	
		INTERROGATE	Lit	
		TPX 28/TPX 46	Both lit	
		VIDEO DISTRIBUTION		
		CONSLE/LOCAL	Both lit	
		CONSLE/LOCAL	Both lit	
		PROCESSED VIDEO		
		NORMAL/MANUAL	Both lit	
		Q73/RADAR	Both lit	
		AUTOMATIC CLUTTER MAPPER		
		ON/OFF	Both lit	
		RADAR MISALIGNED	Lit	
		ALARM RESET	Lit	
		AUTO/MANUAL	Both lit	
		MAPPER RESET	Lit	

Table 44. Operator Daily Preventive Maintenance Checks and Services -Continued

Item No.	Item to be inspected	Procedures Check for and have repaired or adjusted as necessary	Lamp test indication	Corrective action:
11 (Cont)		**RADAR INTEGRATION**		
		MISALIGNED	Lit	
		PLUS/MINUS	Both lit	
12	RIE II indicators	On RIE II panel, press LAMP TEST switch and observe the following indications:		Replace lamps.
		RADAR INTERFACE EQUIPMENT II		
		INTEGRATE MODE ON/OFF	Both lit	
		POWER ON/FAULT	Both lit	
		SUBSYSTEM RESET	Lit	
		RADAR PROCESSING		
		MEMORY LIMIT	Lit	
		CLOCK FAULT	Lit	
		MEMORY ON/FAULT	Both lit	
		QUANTIZERS AND CFAR		
		VPU A AUTO/MANUAL	Both lit	
		VPU B AUTO/MANUAL	Both lit	
		TARGET PROCESSOR		
		GO/NO GO	Both lit	
		SINGLE/CONT	Both lit	
		START	Lit	
		BITE ON/OFF	Both lit	
		JAM DETECTOR ONIOFF	Both lit	
		RESET	Lit	
13	Radar simulator indicators	On radar simulation panel, press LAMP TEST switch and observe the following indications:		Replace lamps.
		RADAR SIMULATOR		
		I/O PARITY ERROR	Lit	
		ON/FAULT	Both lit	
		RESET	Lit	
14	Blackout curtain	Check blackout curtain for holes and tears.		Repair with tape or replace.
15	MTU tape transport tape heads and capstan motor	Clean transport tape heads and capstan motor.		Refer to chapter 4, TM 9-1430-655-20-5, for procedure.

Table 4-4. Operator Daily Preventive Maintenance Checks and Services -Continued

Item No.	Item to be inspected	Procedures Check for and have repaired or adjusted as necessary	Lamp test indication	Corrective action:
16	Shelter cleaning	1. Clean shelter interior with vacuum cleaner, if available, or broom. 2. Dust external equipment surfaces with clean, dry, soft cloth. 3. Be sure maintenance area is clean and orderly. Put tools in tool box and spares in prescribed storage areas.		
17	Keyboard printer	Perform required daily checks.		Refer to keyboard printer manual, TM 9-1430-656-14-1, for procedure.

CHAPTER 5

MAP GENERATION

5-1. General. The AN/TSQ-73 system has an online capability of generating both geographic reference (GEOREF) and geographic maps and storing up to 10 such maps on the site adapted tape (see figure 5-1). The maps are generated at either the KPU or the console via inputs of map coordinates. Any two of these maps may be extracted from the tape to active memory for display. When one of these two maps is erased from active memory (replaced by another map), it is still on the tape and may be recalled at any time. The displayed maps are range-expandable, can be offset, and are independent of the display at other consoles. These are two basic types of maps which the system is capable of displaying: GEOREF and Geographic. These two maps are very versatile and the ability of displaying them together makes possible a very detailed and tactically valuable display.

a. GEOREF Map. This map, illustrated in figure 5-2, consists of crosses at the secondary division corners. The crosses are labeled with the secondary division letters. Major grid square letters must be determined from area maps and their boundaries may be interpolated from the displayed secondary grid references.

b. Geographic Map. Commonly referred to as a line map, this map is illustrated in figure 5-3. Because each line and point on this map is operator entered, this is one of the most flexible displays. With the dual map display, it is possible to display very complex and detailed maps.

5-2. Preparation. Before attempting to generate a geographic map, data must be gathered and arranged to speed the input process. There are several things which must be taken into consideration when preparing a map. GEOREF maps require only a center point, but geographic maps must have line coordinates and fixed point site coordinates determined also.

a. The first step in preparation is to determine map center: what are the coordinates of the map that will be centered on the PPI? This is usually the same point as your own system coordinates; however, if the map is being stored on tape for a later use, the system coordinates at that time may be used. The center of the map will always be displayed at the center of the PPI (unless designated offset is used, when the map center will be the designated offset point).

b. Next, map line coordinates must be determined. Every line must have a start point and at least one continuing point. As each continuing point is entered, the system will draw a straight line from the previously entered point to the point entered. For this reason map lines that follow natural features (rivers, coast lines, etc.) will probably require many continuing points. The last point in a line will be a continuing point also, with the next entry a start point for a new line or, a site entry. Map coordinates may be entered in geographic, UTM or GEOREF format. It is also necessary to determine if each line will be a solid line, a blinking line or a dashed line.

NOTE

If long straight line segments greater than 100 mi are drawn, they may not be displayed on expanded display scale if the end points of the line segments are off the display area. This can be prevented by adding intermediate points in the line segments.

c. Geographic (line) maps may have fixed point sites. The symbols used are illustrated in figure 5-4. Each symbol may have up to two letters or numbers as a designator accompanying it. While the symbols are usually used to represent the types of sites listed in figure 5-4, it is not necessary to use them in this way; for example, a GEOREF marker may be used to show major coordinate intersections or the DLRP. It must be remembered that map sites, while similar in appearance to transmittable sites, are not hookable and not transmittable. They may be distinguished by their two alpha-numeric field while transmittable and hookable sites have more alpha-numerics in their fields.

d. Mode 4 (update) may be used to correct KPU keyboard errors d(luring the input of data for a geographic map. Update may also be used to modify entries of a completed map.

e. The map center of' a completed map may be optionally relocated using Mode 3.

f. Another optional-use facility, Mode 5, may be employed to print on the KPU the latitude and longitude of line points and fixed points of a completed map. Because of the precision of' trigonometric routines used by the print-out procedure, inaccuracies of up to a minute of latitude and longitude may occur.

q. The map generation system will read a complete map into memory from tape, if the needed map is not already available in memory.

5-3. Map Generation Procedure. Refer to figure 5-5.

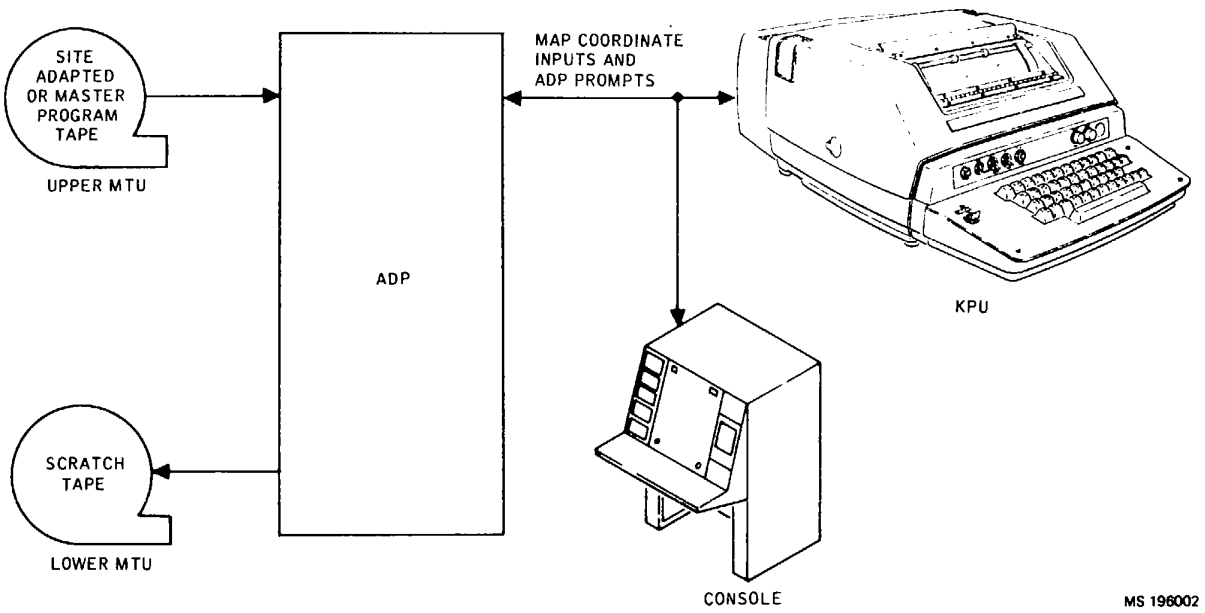

Figure 5-1. Map Generation

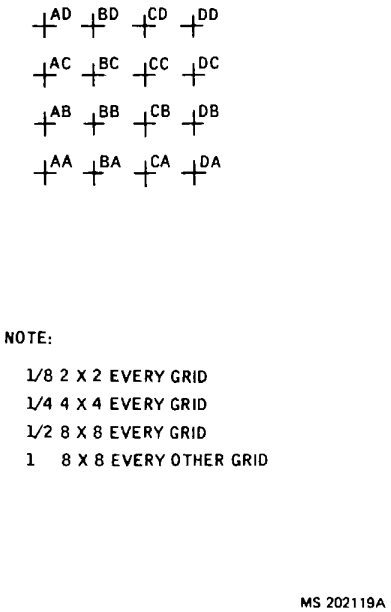

Figure 5-2. GEOREF Map Example

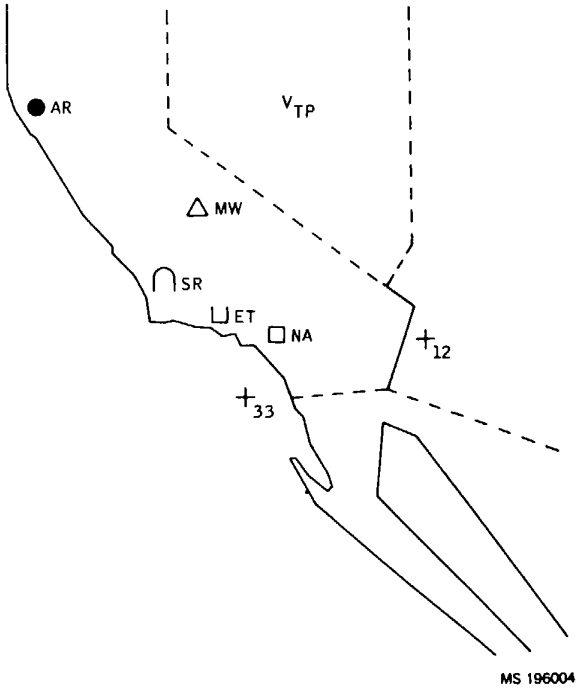

Figure 5-3. Geographic Map Example

NUMBER USED TO SPECIFY SYMBOL	MEANING	SYMBOL
1	GEOREF MARKER	
2	DEFENDED POINT	
3	FIRE UNIT	
4	COMMAND POST	
5	POL STORAGE	
6	AIR FIELD	
7	ORDNANCE STORAGE	
8	TRUCK PARK	
9	RADAR	
10	ECM FIXES	

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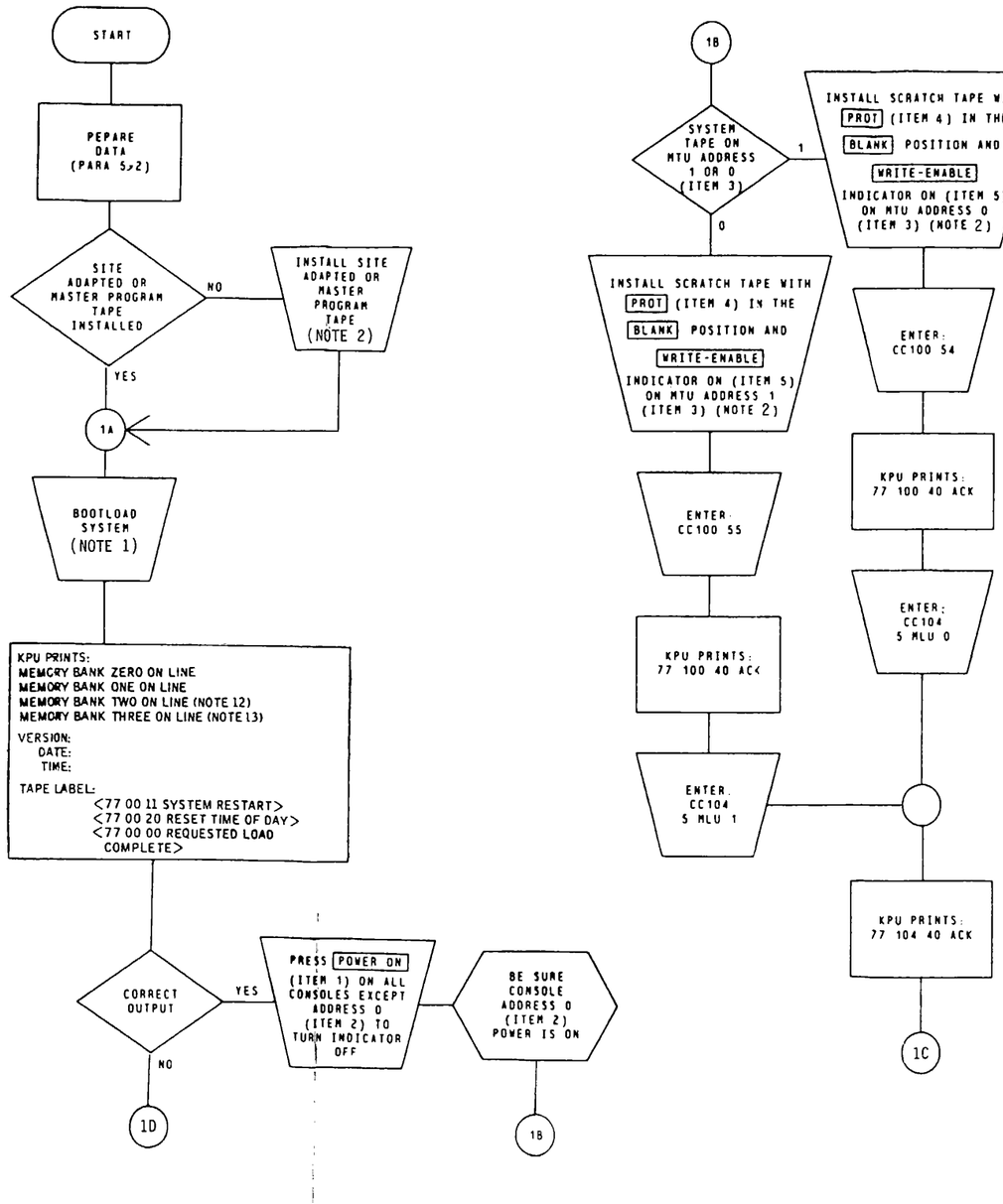
Figure 5-4. Map Generation Fixed Point Symbols



NOTES:

1. ENTRIES ARE NORMALLY MADE AT THE KPU AS THE CONSOLE IS OFF-LINE SO THIS PROCEDURE WILL COVER KPU ENTRIES ONLY. CONSOLE ENTRIES ARE MADE IDENTICALLY EXCEPT THAT THE SYSTEM MUST BE IN AN OPERATIONAL CONFIGURATION ALLOWING MAP GENERATION (SEE TABLE 3-9.1) AND ALL CONSOLES POWERED OFF EXCEPT CONSOLE BEING USED. (REFER TO FIG. 3-5 FOR CONSOLE CONTROL COMMAND ENTRY PROCEDURE.)
2. REFER TO FIGURE 3-7 FOR INSTALLATION OF MAGNETIC TAPE CARTRIDGE.
3. THIS REFERENCE NUMBER IS THE PERMANENT REFERENCE NUMBER FOR THIS POINT. EACH MAP ON THE SYSTEM IS DIVIDED INTO TWO MAP RECORDS OF 512 REFERENCE NUMBERS. REFERENCE NUMBER 512 IS USED BY THE EQUIPMENT AS A BRIDGING POINT BETWEEN RECORDS AND REFERENCE NUMBER 1024 IS USED AS A STOP POINT. ONLY THE EVEN NUMBER REFERENCE POINTS ARE LISTS IN MODE 5, THEREFORE, WHEN THE REFERENCE NUMBER 510 IS ENTERED, THE NEXT USABLE REFERENCE NUMBER IS 514 WHICH WILL ALLOW CONTINUAL REFERENCE ENTRIES UP TO 1022.
4. MODES 3, 4 AND 5 SEARCH THE MASTER TAPE FOR THE NEEDED MAP, IF THE MAP IS NOT FOUND IN MEMORY.
5. ALL MAP POINTS LISTED WILL BE FOLLOWED BY POINT ID (TWO ALPHA CHARACTERS). THESE ARE SPURIOUS IN THE CASE OF ENTRIES AND ARE TO BE IGNORED.
6. IF REFERENCE NUMBER IS UNKNOWN, IT MAY BE DETERMINED WITH MODE 5.
7. DESIGNATION (S, C, P) MAY NOT BE CHANGED FROM ORIGINAL.
8. THIS MAY BE DONE AT ANY TIME IN MODE 2.
9. KPU MEANS KEYBOARD PRINTER UNIT; CRD MEANS CARD READER; DSP MEANS DISPLAY; AND TPG MEANS TAPE GENERATION PROGRAM.
10. IF CONSOLE ENTRY IS USED, DO NOT INCLUDE DSP.
11. SELECTING AN EXISTING MAP NUMBER IN MODES 1 OR 2 ERASES CURRENT MAP ON TAPE.
12. IF MEMORY BANK TWO IS OFFLINE, THE KPU WILL PRINT: <ERROR CODE 027770 BANK TWO OFFLINE>.
13. IF MEMORY BANK THREE IS OFFLINE, THE KPU WILL PRINT: <ERROR CODE 037770 BANK THREE OFFLINE>.
14. DO NOT PRESS REQ SEND (ITEM 6) TWICE UNTIL DISPLAY IS CHECKED AND FLOW CHART STEP INDICATES.
15. RANGE SCALE 1/2 IS AUTOMATICALLY SELECTED. SELECT DESIRED RANGE SCALE.
16. IF NO MAP IS MADE KPU PRINTS: NEW MASTER TAPE NOT GENERATED
17. EACH NEW ENTRY DRAWS A LINE FROM THE PREVIOUS ENTRY TO THE NEW ENTRY.
18. [ ] INDICATES EQUIPMENT MARKING

MS 196006F

Figure 5-5. Map Generation Procedure (Sheet 1 of 4)

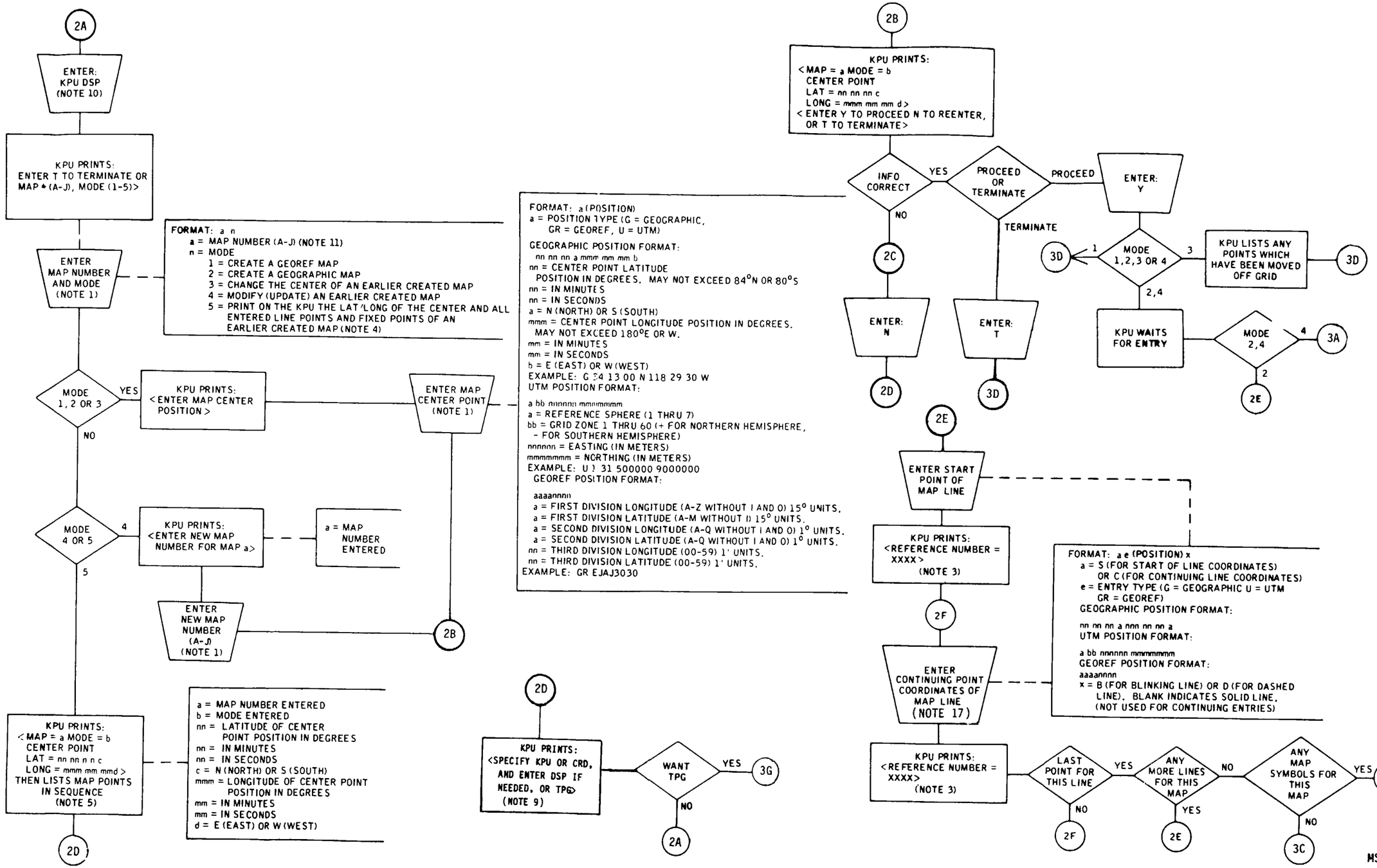


Figure 5-5. Map Generation Procedure (Sheet 2 of 4)

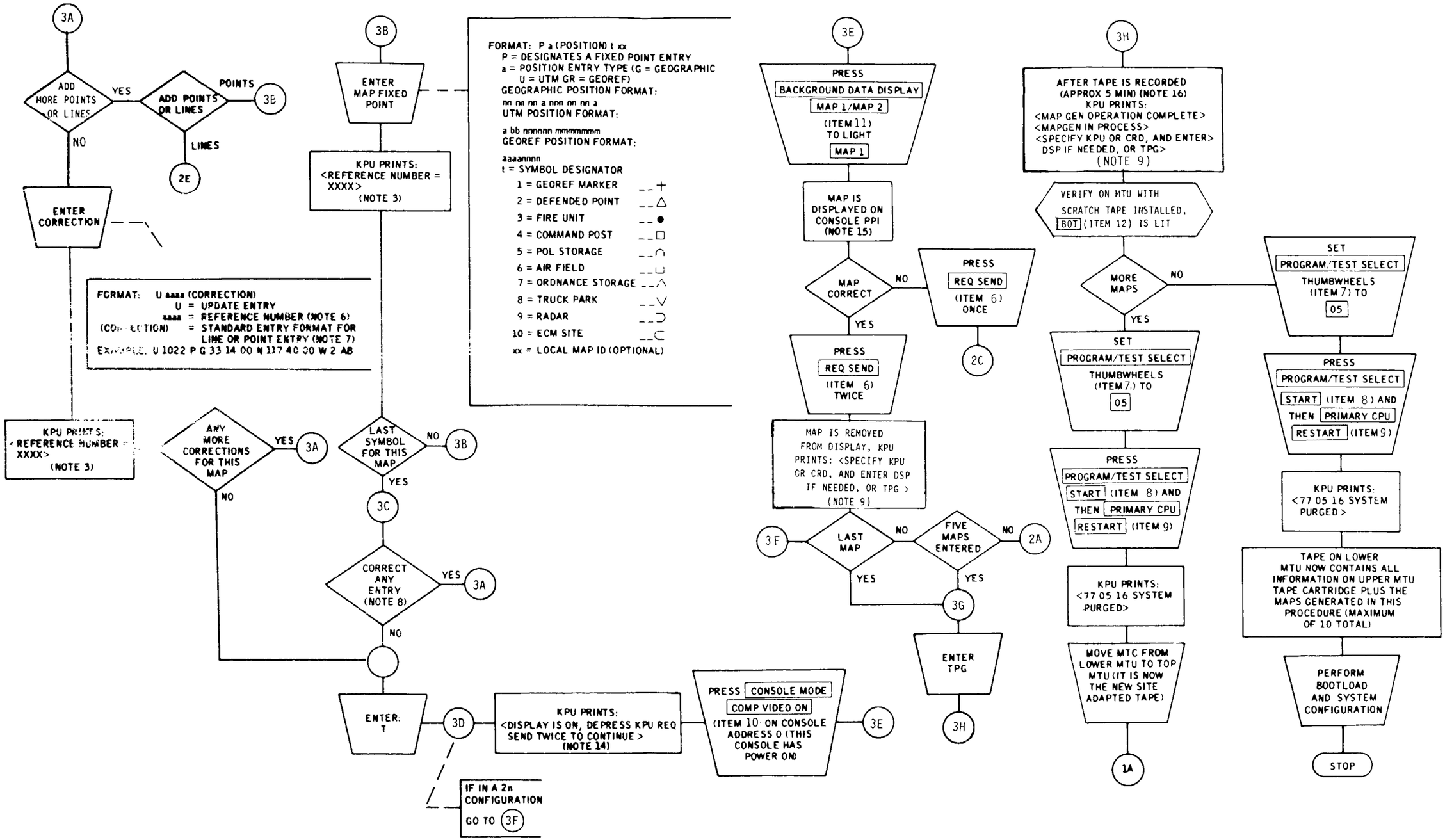


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Figure 5-5. Map Generation Procedure (Sheet 3 of 4)

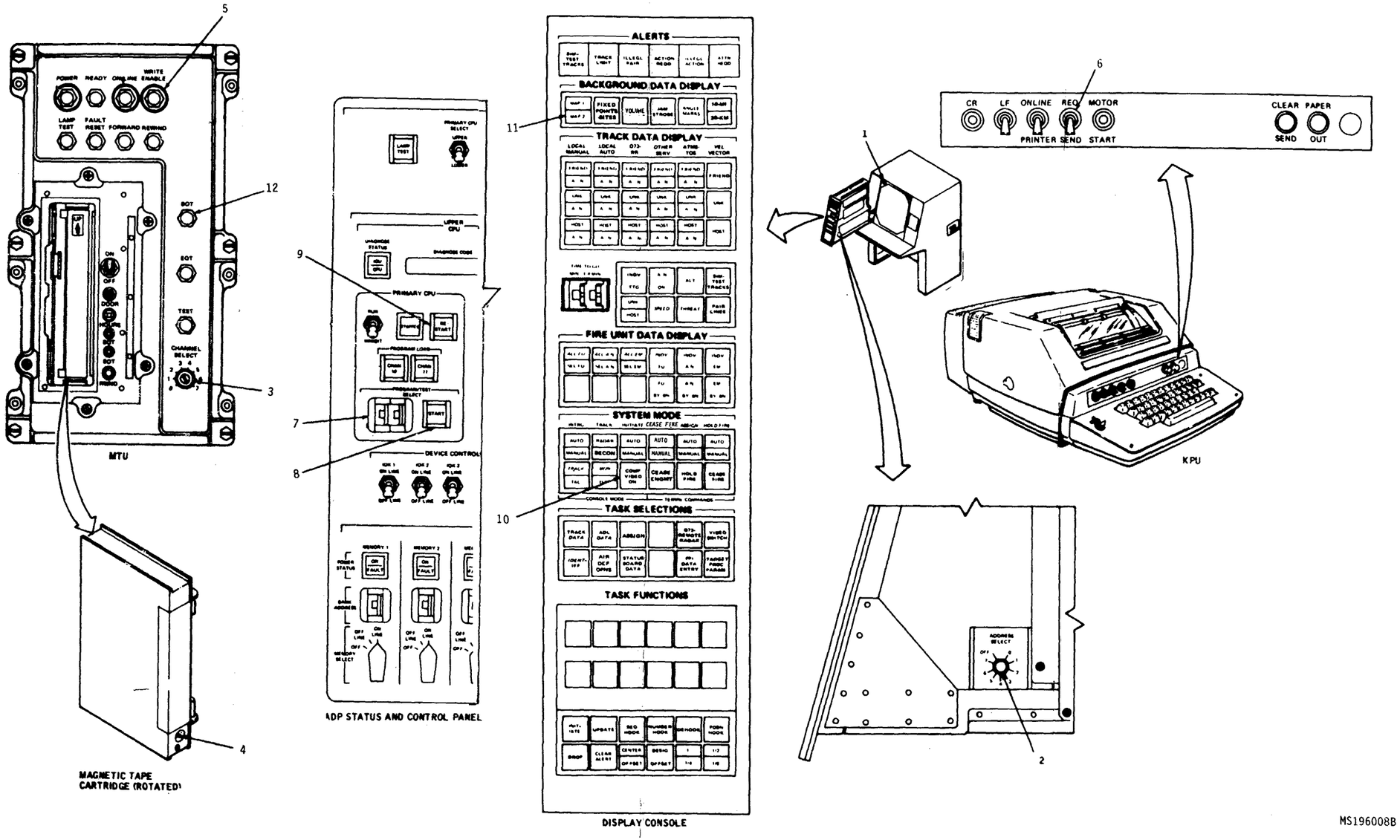


Figure 5-5. Map Generation Procedure (Sheet 4 of 4) ■

CHAPTER 6

RAID GENERATION

Section I. INTRODUCTION

6-1. General. This chapter contains the necessary information to generate and use program tapes containing simulated raid data for use in training exercises. The main goal is to provide a simplified description of how to construct a simulated exercise of an enemy attack (raid tape), including both aircraft and ballistic missiles, in the most realistic manner possible to familiarize personnel with attack situations.

6-2. Generation Flow Diagrams. The range of techniques for raid-tape generation incorporates three major methods: scripted, console-initiated, and live recording (see fig. 6-1). Combinations of these methods are also described to allow the user the flexibility necessary for any given situation. Simplified flow diagrams and a step by step flow diagram describing the generation of a raid tape (by any one of the methods) are provided as guides for use during the generation process. Also included are procedures for editing the entries while making the raid tape. Where necessary, the generation flow diagrams are keyed to a following set of paragraphs containing amplifying data.

6-3. Raid Tape Target Limits. A maximum of 98 aircraft/missiles can be simulated and displayed at any one time during a one-hour exercise. The raid-tape designer can safely predict that most, if not all, simulated targets will be destroyed before reaching their terminal position and turning to leave the area. However, nondestroyed targets can be a minor problem in the fact that they occupy a central track file, which is maintained as long as the track is carried. To avoid complications and the considerable amount of time necessary to fly the target out of the system, it is recommended that simulated targets (raid-type flights) be faded or dropped after flying through the defended area.

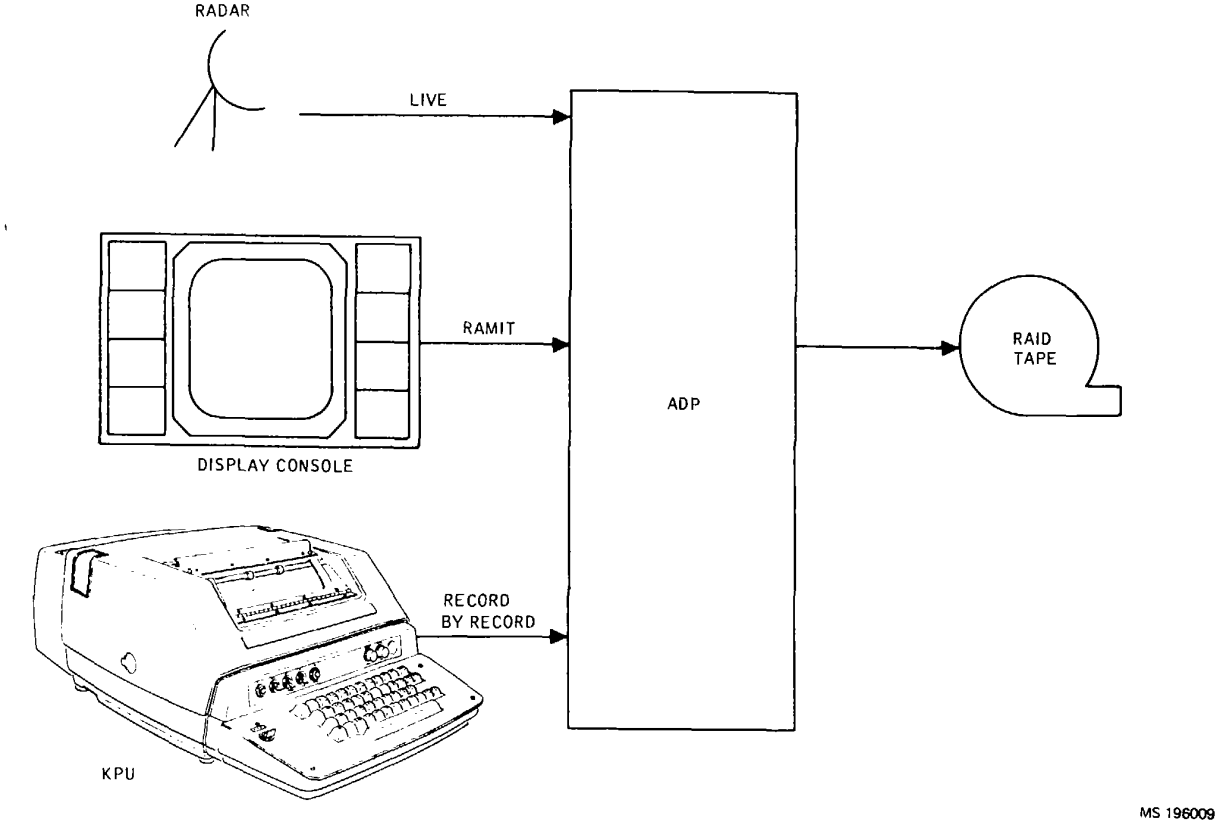


Figure 6-1. Raid Tape Generation

Section II. GENERATION OF SIMULATED RAIDS

6-4. Scripted Raid Tape Generation. Scripted tracks are literally tracks that have been created or manuscripted by the tape designer who arbitrarily programs the particular flight and all changes that will occur during the flight. The scripted input provides the tape designer with the greatest range of variations with respect to a particular track, therefore making this method of raid-tape generation the most common technique for use in a field situation. In addition, ECM data will be most likely associated with scripted tracks.

6-5. Generating a Scripted Track Raid Tape Input. Each of the tasks required to prepare a scripted input is identified in the scripted generation task flow chart (fig. 6-2). Amplifying data are described in the following subparagraphs and keyed on the flow chart.

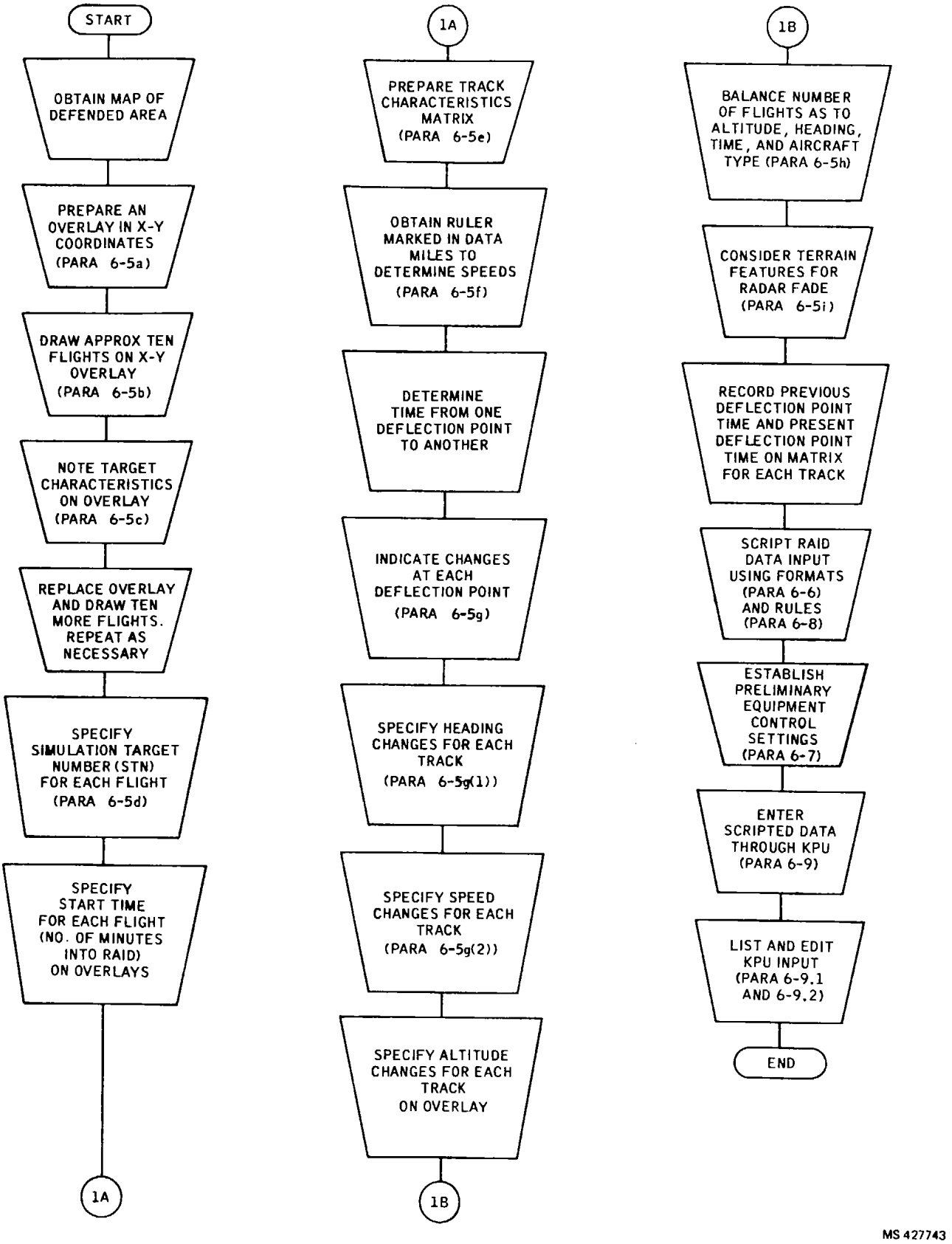


Figure 6-2. Scripted Raid Tape Input Generation Flow Chart

a. *Prepare an X-Y Overlay.* The X-Y overlay (of defended area map) (figure 6-10) may be relatively coarse without serious degradation, even though the system resolution is in the several-hundred-foot range. For example, a grid with ten miles to a square is perfectly adequate (maximum display area is 1024 miles in diameter).

b. *Draw Ten Flights on XY Overlay*. To avoid possible confusion, draw a maximum of ten flights on a single overlay. The flight patterns are left to the designer's discretion: however, keep in mind the achievement of realism in track actions. Draw each flight to its conclusion, Bomb Release Line (BRL), or splashdown. A BRL may be calculated for each track (excluding missiles, helicopters, etc.) according to its speed and altitude. However; an experienced designer can usually estimate an approximate BRL without degrading raid realism. Figure 6-3 shows the formula used to calculate the BRL.

c. *Note Target Characteristics on Overlay*. Details such as flight direction, altitude, and target number, are required. The purpose is to aid the designer in grasping the overall air picture that will be created. Figure 6-4 illustrates the required data, each X in the flight path represents a deflection (event) point of the target.

d. *Simulation Target Number.* In a raid tape that consists entirely of manuscripted targets, any number from 1 to 98 may be arbitrarily assigned during a one-hour exercise. A selected number for a target should not be repeated for any other target during the same exercise. Note the simulation target number (STN) on the overlay(s) next to the start of the track.

e. *Prepare Matrix for Track Characteristics.* An example of a track characteristics matrix is shown in figure 6-5 and will be similar to entries on the hardcopy printout when raid data is entered into the ADP. It is designed to associate a set of aircraft characteristics with a given target type to ensure the simulated target does not perform unrealistically. When inputting data into the ADP, if a requested maneuver is excessive for the stated aircraft type (refer to TM 9-1430-652-10-7), the ADP informs the designer to input valid data. Therefore, during manuscripting, exceeding limitations of a particular target need not cause undue concern as corrections will be made during input. As flight parameters for each target are determined, record them on the matrix for reference when making up KPU inputs.

f. *Speed Ruler.* In order to calculate speed of targets, a ruler incremented in data miles for various speed ranges must be obtained. The specific increments for the speed ruler are determined by the particular map scale used. However, for illustrative purposes, a scale of one inch = 100 miles will be used. On this basis an aircraft traveling at 900 mph will move nine inches in

STEP 1: COMPUTE COEFFICIENTS

$a_0 = 15.6445V - .162232$

$a_1 = .051235V + .0046167$

$a_2 = -.00002924V - .000001453$

STEP 2a: IF $h \leq 656.00$

$BRL = a_2h^2 + a_1h + a_0$

STEP 2b: IF $h > 656.00$

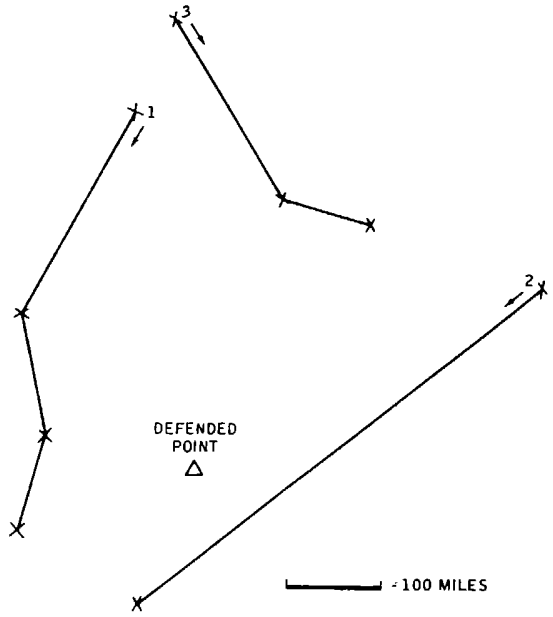
$BRL = 1312.40\ a_2\ (h - 328.10) + a_1h + a_0$

V = VELOCITY OF TARGET (DATA MILES/SECOND)
h = ALTITUDE OF TARGET (HUNDREDS OF FEET)
BRL = BOMB RELEASE LINE (DATA MILES)

NOTE:
FIT TO CURVES IN FM 44-1-1.

MS 196011

Figure 6-3. Bomb Release Line Calculation and Formula



MS 196012

Figure 6-4. Sample Overlay Target Characteristics Data

PREVIOUS EVENT TIME	PRESENT EVENT TIME	STN	X-COORD	Y-COORD	ALT	SPEED	TYPE
0745		1	-70	+400	140	900	6
0745	2700	1	-200	+170	65	900	6
3000		2	+400	+200	300	600	5

MS 196013

Figure 6-5. Sample Track Characteristics Matrix

one hour while an aircraft traveling 600 mph will travel six inches. A simple speed ruler for a range of speeds can thus be constructed as shown in figure 6-6. The speed ruler makes it possible to translate the distance between deflection points into time increments. The ADP then translates this basic data (time) into speed, heading, etc., for recording on tape.

g. *Indicate Each Deflection Point.* Deflection points are defined as any position where an event occurs with respect to a track. Deflection points are indicated to the ADP on the basis of the time since the start of the exercise (para 6-8). Note the changes on overlays and the track characteristics matrix.

(1) *Heading changes.* Heading changes are indicated by specifying a new X-Y coordinate position for the track.

(2) *Speed Changes*. Speed changes are introduced by changing the time required for a track to be at a given X-Y coordinate. Speed changes are instantaneous.

h. *Balance Raid.* Ensure that the raid created has a good balance of different events: different aircraft types, speeds, maneuvers, etc. TM 9-1430-652-10-7 (Characteristics of Target Types table) lists the types of aircraft and their maximum characteristics.

i. *Consider Terrain Features for Radar Fade.* This item is important to make the simulated raid appear realistic. The tape designer must obtain a map of the area with respect to the local radar to determine the masked areas where targets disappear and return. Once the masked areas are known, the scripted tracks should be made to disappear or appear (as a real track would) by inserting the correct code in the input message (para 6-6).

6-6. Message Formats for Raid Data Input. Five message types are used in the generation of a raid tape. Each message type, format, and definition is listed in tables 6-1 thru 6-5.

6-7. Preliminary Equipment Control Settings. Before actual generation of a raid tape can begin, certain system equipment controls must be preset including some RIE and radar simulator controls. The radar simulator provides the generation procedure with the simulated radar inputs. Table 6-6 lists the controls to be set and their settings.

6-8. Rules Governing Message Inputs. The rules listed below must be followed when entering raid-data messages. Also, it is recommended that the operator enter all entries for an STN before proceeding to the next one. It does not matter which STN is entered first. The rules governing raid-data inputs are as follows:

a. A comma (,) indicates that the data is complete for a given field (of message input); the data for the field is entered, followed by a comma to indicate sequencing to the next field. If no data (change) is required in a field, a comma serves to sequence the successive field.

b. A semicolon (;) is used to indicate that all data fields are complete and all following data is a comment to appear on the hard-copy printout but ignored by the ADP.

c. Leading zeroes need not be input.

d. Decimal points are explicit and must be input to express fractions.

e. To be valid, begin target (type 1) message must be followed by at least one operational change (type 2) message for each STN.

f. Data is input by time (all raids start at Midnight 00,00,00). The operational change message has two time fields: previous event time and present event time. The previous time field governs the sequence of these messages. The operational change messages for an STN must be entered in time sequence.

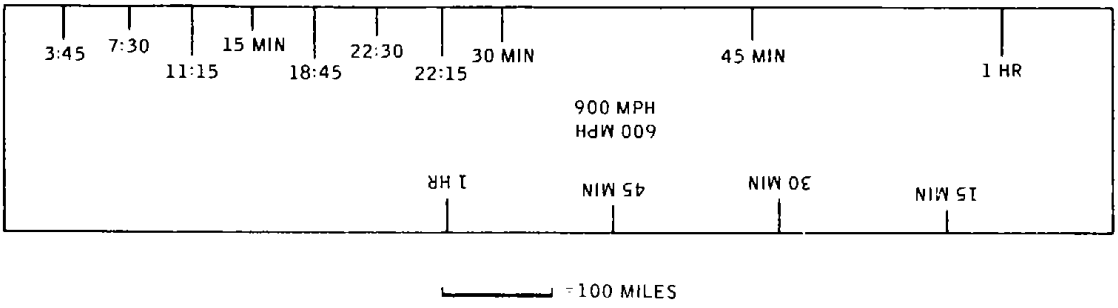


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Figure 6-6. Sample Speed Ruler

Table 6-1. Begin Target Message

Field	Description	Contents[1]
A	Message type.	
B	Event time in minutes and seconds. The time this target initially enters the system at the specified coordinates.	nnnn
C	*Simulation target number.* A number that uniquely identifies the target.	nn
D	*X coordinate.* A positional value stated in data miles to initially locate an object.	± nnn.nn
E	*Y coordinate.* A positional value stated in data miles to initially locate an object.	± nnn.nn
F	*Target altitude.* Defines the initial altitude of an object above sea level in increments of 100 ft; if no valve entered, ADP will automatically set altitude to 20,000 ft.	nnnn
G	*Target type.* A data base reference number to associate a set of characteristics with the object (i.e., minimum and maximum speed and turn rates, and maximum altitude for each reference number). Refer to TM 9-1430-652-10-7.	n

Message format: A,B,C,D,E,F,G;(comments)[2]

[1]Character n indicates a numerical entry.
[2]Parentheses ( ) indicate optional entries.

Table 6-2. Operational Change Message

Field	Description	Contents[1]
A	Message type.	2
B	Previous event time for this target in minutes and seconds. The time the preceding "begin target" or "operational change" for this STN was effective.	nnnn
C	*Event time in minutes and seconds.* Specifies the time the target is to be positioned at the specified coordinates.	nnnn
D	*Simulation target number (STN).* Associates this operational change with a predefined target (begin target message).	nn
E	*X coordinate.* The positional value (in data miles) of the target at the time specified.	± nnn.nn
F	*Y coordinate.* Same as X coordinate.	± nnn.nn
(G)[2]	*Target altitude.* The altitude the target is to attain at this reference point stated in 100 foot increments. Blank = No altitude change.	nnnn
(H)[2]	*Target inactive indicator:* Blank or 0 = Active target. I = Deactivated target.	n
(I)[2]	*1 = Fade indicator.* Aircraft progresses through the coordinate system but radar returns are suppressed. This affects the period from the previous target time to the current target time. (1 = fade, 0 = reappear).	n

Message format: A,B,C,D,E,F,(G),(H),(I) (comments)[2]

[1]Character n indicates a numerical entry.
[21]Parentheses ( ) indicate an optional entry.

Table 6-3. ECM Control Message

Field	Description	Contents[1]
A	Message type.	3
B	Event time: the time the status of this jammer is to be initiated or changed.	nnnn
C	Simulation ECM number: the identity of the ECM data to be added or changed (number unique to this ECM).	nn
D	Associated STN: associates the ECM data with the positional data of the jamming target.	nn
E	ECM type: 0 = FM jamming 60 Hz 1 = FM jamming 300 Hz 2 = AM jamming 910 Hz 3 = AM jamming 2000 Hz 4 = Barrage/spot jamming 5 = Random pulse jamming 6 = Sync pulse jamming 7 = Spare	n
F	ECM intensity: specifies the jamming intensity at the distance of the related jammer with respect to the radar.	0-7
G	ECM azimuth width: an angular value to specify the area effected by the jammer.	nnn.n (0-360°)
(H)[2]	ECM deactivated indicator: Blank or 0 = active; 1 = deactivated.	n

Message format: A,B,C,D,E,F,G, (H); (comments)[2]

[1]Character n indicates a numerical entry.
[2]Parentheses ( ) indicate optional entries.

Table 6-4. Chaff Control Message

Field	Description	Contents[1]
A	Message type.	4
B	Event time: the time the chaff enters the system or changes characteristics.	nnnn
C	Simulation chaff number (SCN): specifies identity of this set of chaff data (number unique to this chaff).	nn
D	Chaff intensity: specifies chaff intensity (0-7).	n
E	Start range: specifies in data miles the nearest edge of the chaff with respect to the radar.	nnn.nn
F	End range: specifies in data miles the most distant edge of the chaff with respect to the radar.	nnn.nn
G	Start azimuth: specifies the left most azimuth, in degrees, of the effected area with respect to the center of the coordinate system.	nnn.nn

See footnotes at end of table.

Table 6-4. Chaff Control Message -Continued

Field	Description	Contents[1]
H	End of azimuth: specifies the right most azimuth, in degrees, of the effected area with respect to the center of the coordinate system.	nnn.nn
I	Chaff altitude: specifies chaff altitude in 100-ft increments.	nnnn
(J)[2]	Range jitter control: 0 = 1 data mile depth of variable edges 1 = 2 data miles depth of variable edges	n
(K)[2]	Azimuth feather control: 0 = no control; 1 = 0.7° variable edges; 2 = 1.4° variable edges; 3 = 2.8° variable edges.	n
(L)[2]	Chaff deactivated indicator:	0 or Blank = ON 1 = OFF
Message format: A,B,C,D,E,F,G,H,I, (J), (K), (L); (comments) 2		

[1]Character n indicates a numerical entry.
[2]Parentheses ( ) indicate an optional entry.

Table 6-5. Data Link Messages

Field		Description	Contents[1]
1		Action/Management Message	
	A	Message type	5
	B	Event time: time of message initiation (minutes: seconds)	nnnn
	C	Transmitting agency	1-7
	D	Label	9
	E	Station address--PU/RU address	0
	F	STN	1-98
	G	Action code	2
	H	Category/platform 0 = No statement 1 = Air	0 or 1
	I	ID/primary ID amplifier (TM 9-1430-652-10-7)	0-15
	J	ID-amplifier (TM 9-1430-652-10-7)	0-7
	K	Special processing indicator	0
		Message format: A,B,C,D,E,F,G,H,I,J,K; (comments)	
2		Command message	
	A	Message type	5
	B	Event time: time of message initiation (minutes: seconds)	nnnn
	C	Transmitting agency	1-7

See footnotes at end of table.

Table 6-5. Data Link Messages-Continued

Field		Description	Contents[1]
2	D	Label	15
(cont)	E	Station address (sender)	0
	F	STN	1-98
	G	Command	0-8
		0 = Weapons Free	
		1 = Weapons Tight	
		2 = Engage	
		3 = Investigate/Assign	
		4 = Cease Engagement	
		5 = Hold Fire	
		6 = Cease Fire	
		7 = Cover	
		8 = Salvo	
	H	Receipt compliance code	1
	I	Weapon type	0-3
		0 = Any/All Weapon Systems	
		1 = Aircraft	
		2 = Missile	
		3 = Conventional	
J		Alert condition	0-3
		0 = No Statement	
		1 = White	
		2 = Yellow	
		3 = Red	
Message format: A,B,C,D,E,F,G,H,I,J: (comments)[2]			

[1]Character n in Contents column indicates a numerical entry.
[2]Parentheses ( ) indicates an optional entry.

Table 6-6. Preliminary Equipment Control Settings

Panel	Control	Setting
Radar interface equipment	±DATA SOURCE SELECT	
	RADAR	SIM
	IFF	SIM
Radar Simulator[1]	MODE	STD
	PRF-HZ	229
	±ANTENNA	±
	RATE - RPM	6
	DIRECTION	CW
	RCVR NOISE VOLTS PEAK	OFF

[1]Radar simulator panel control settings are optional. Normally, they are set to the parameters of the local radar in use.

g. All field inputs are assumed positive unless preceded by a minus sign (-).

h. An end-of-message (REQ SEND) activation is required for each line of input data when entering scripted data using the KPU.

6-9. Entering Scripted Data Through KPU. Entering of the prepared script, by message, into the ADP via the KPU is illustrated in figure 6-7, using input code "K" (see table 6-6.1). As data is entered on keyboard, a hard copy of the input is reproduced on the printer and provisions have been made to allow addition of comments without effecting the data entry into the ADP. Use of comments is recommended to aid in reconstructing or identifying the purpose intended by the designer. Table 6-6.1 lists other legal inputs and their uses during raid generation procedures. In addition, program checks will evaluate entered data and, for example, if the speed exceeds the limits of a particular target type, the ADP will alert the operator, via the KPU (table 6-7), and wait for new data to be inserted. Section III contains an entire scripted raid tape, including overlays used, to determine target flight paths and KPU printouts which show the input data used.

NOTE

Do not inadvertently enter "T" (terminate) while in the main KPU menu. This will automatically terminate the raid and write all entered data on the new raid tape.

An alternate method when generating a large raid is to record the raid data on a scratch tape (field utilities function KPU-to-tape operation shown in figure 9-7) and to edit input errors using figure 9-8. Then follow raid tape generation procedure using input code C.

6-9.1 Listing KPU Input. This function will list all KPU-entered data or card image (ADT) data during raid generation procedures. Designed to provide the raid designer with a useful reference tool, the list function may be utilized any time before RDGP is terminated. It is especially useful when used with the edit function. Figure 6-7 shows procedures for use of the list function.

6-9.2 Editing KPU Input. The raid generation editor will allow the raid designer to edit previously entered data on the KPU or from the ADT. Using this editor, the operator may perform the following functions during scripting of the raid tape:

Replace a field within an entry

Replace a complete entry

Insert a new entry

Delete a complete entry

Delete all data for a specific STN

The editor will prompt the operator at the KPU for all actions required during his raid and will flag any errors made during the editing process. Table 6-7.1 lists the raid generation edit error messages and their causes. Figure 6-7 shows procedures for use of the list function.

6-10. Raid Tape Generation Procedure. Before attempting to perform this procedure, be sure the system is bootloaded (Chapter 3) and operating. Figure 6-7 illustrates the Raid Tape Generation procedure.

6-11. Console Initiated Raid Tape Generation. Planning a raid tape entirely by initiating targets at a console is a simple and easy way of designing an exercise. However, this method demands a relatively higher skill level on the part of the raid tape designer. The higher skill level is required since, as in live recorded tracks, no programmed checks are made to ensure realistic parameters by target type as there are when scripted tracks are entered through KPU.

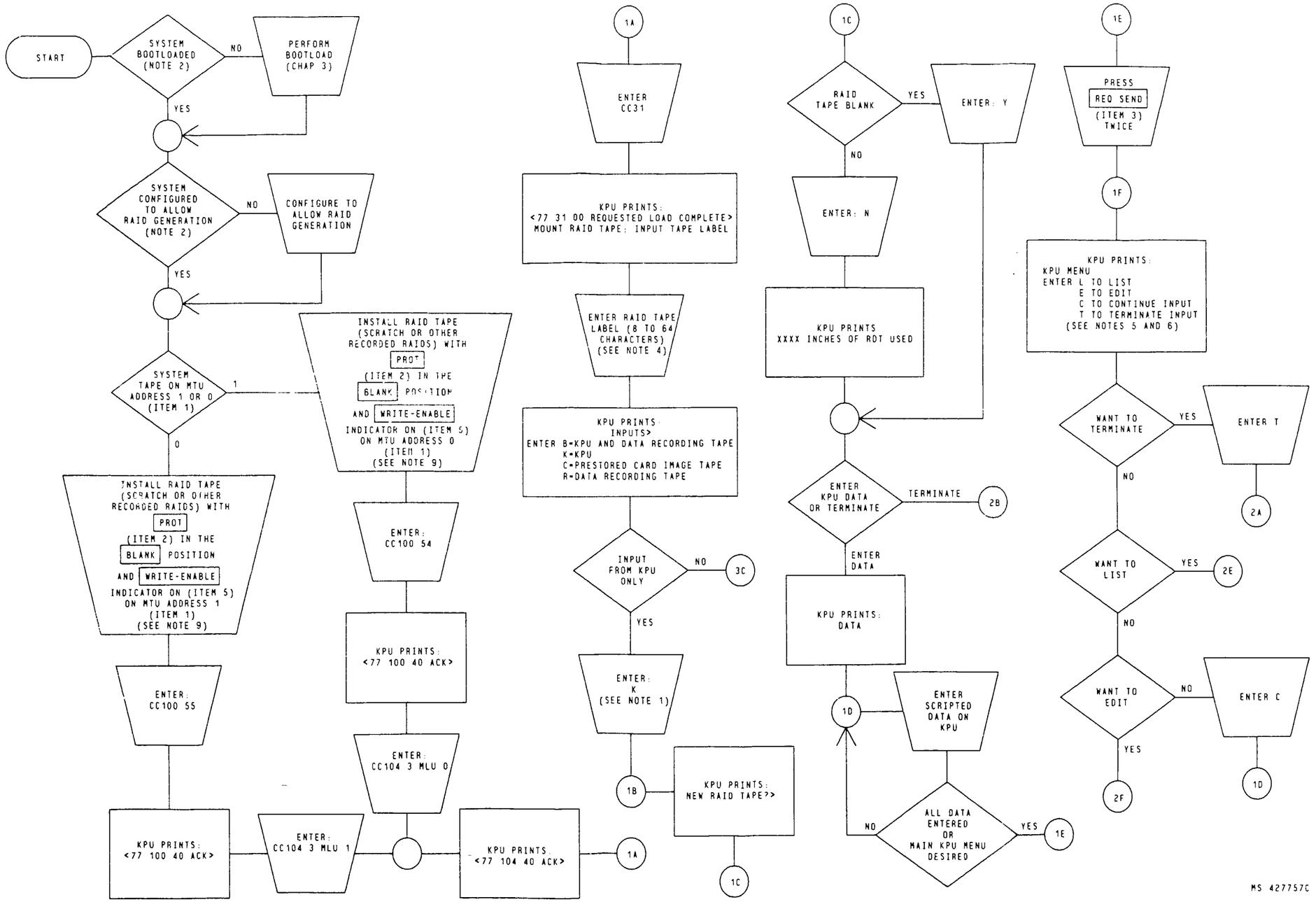


Figure 6-7. Raid Generation Procedure (Sheet 1 of 5)

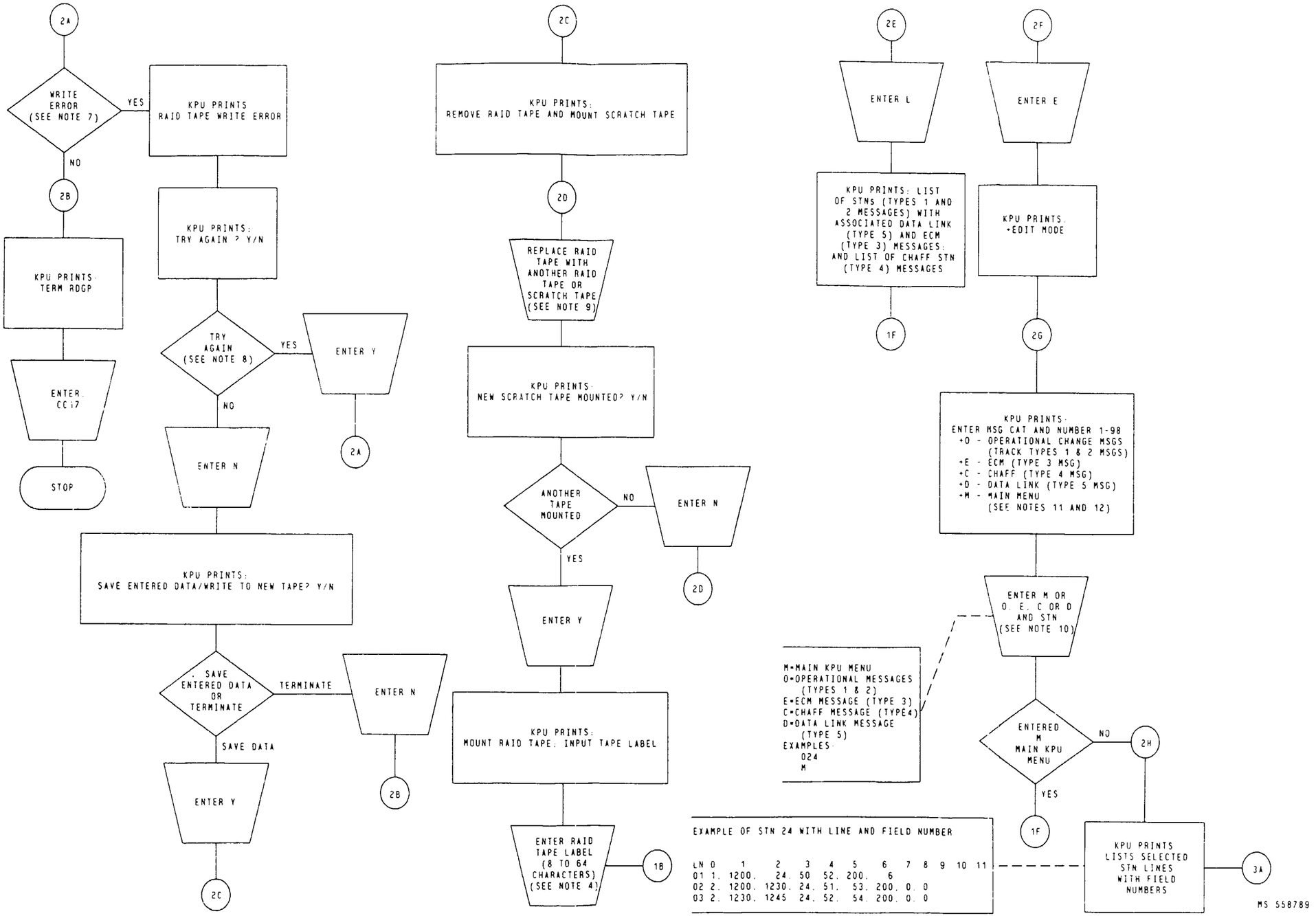


Figure 6-7. Raid Generation Procedure (Sheet 2 of 5)

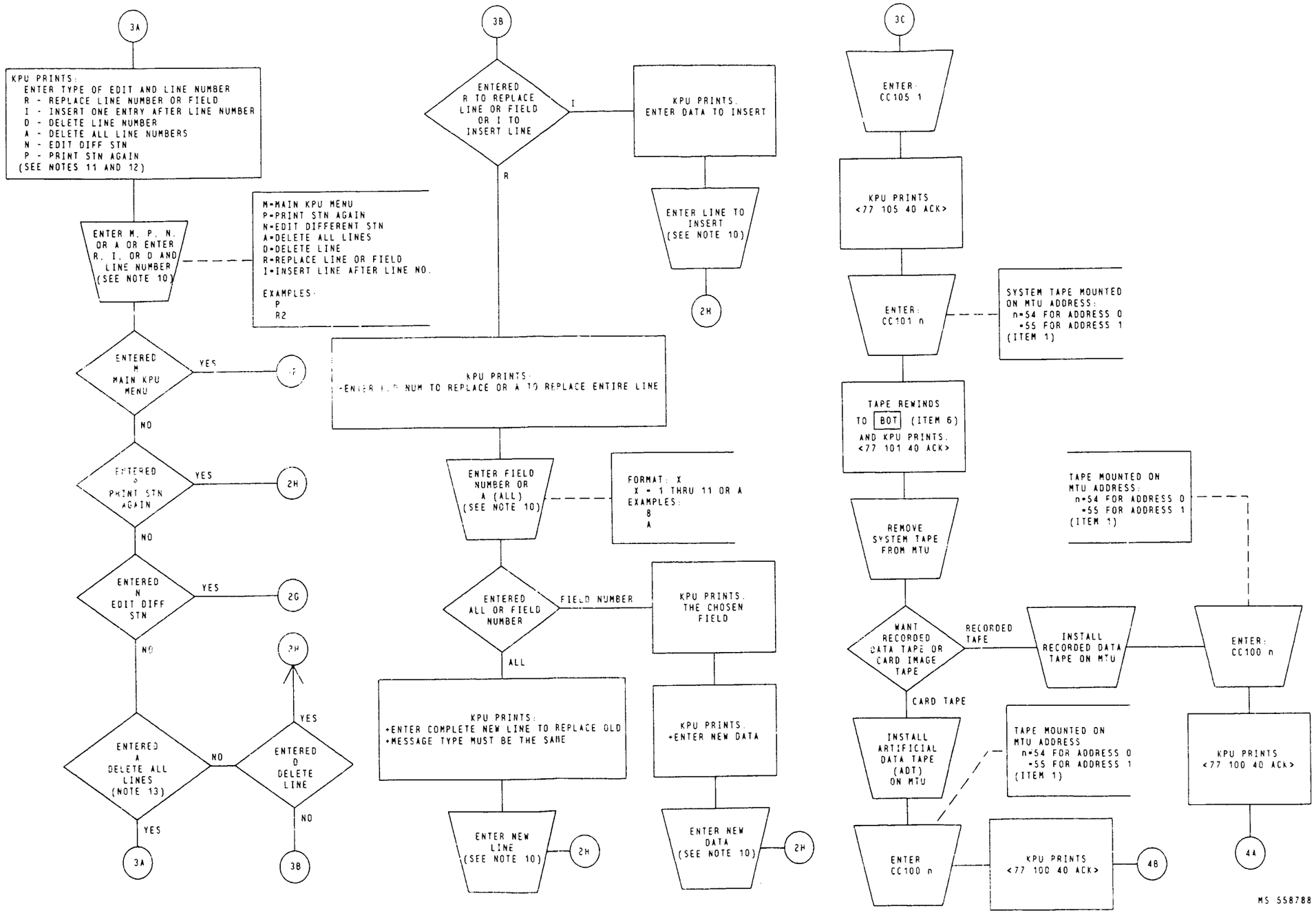


Figure 6-7. Raid Generation Procedure (Sheet 3 of 5)

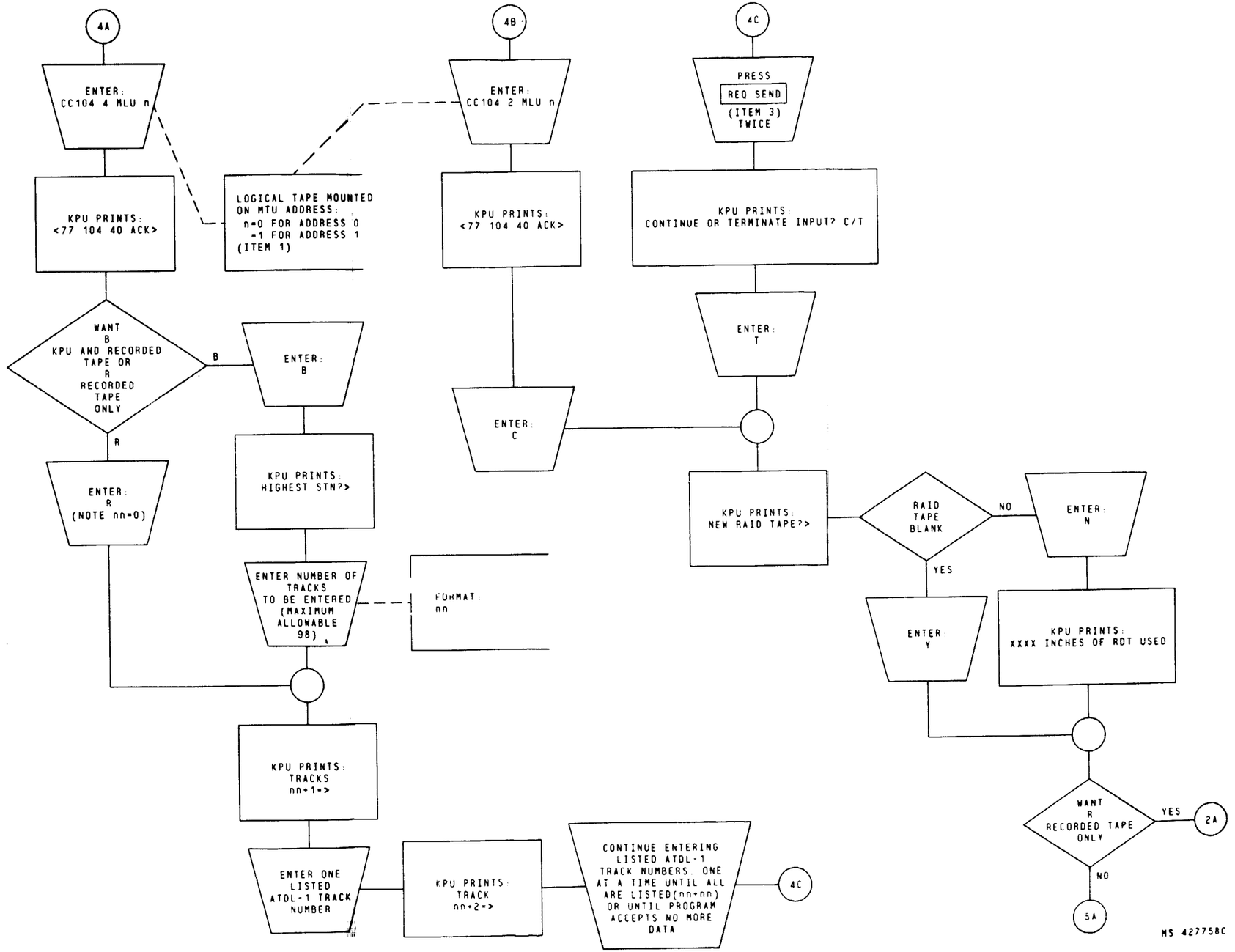
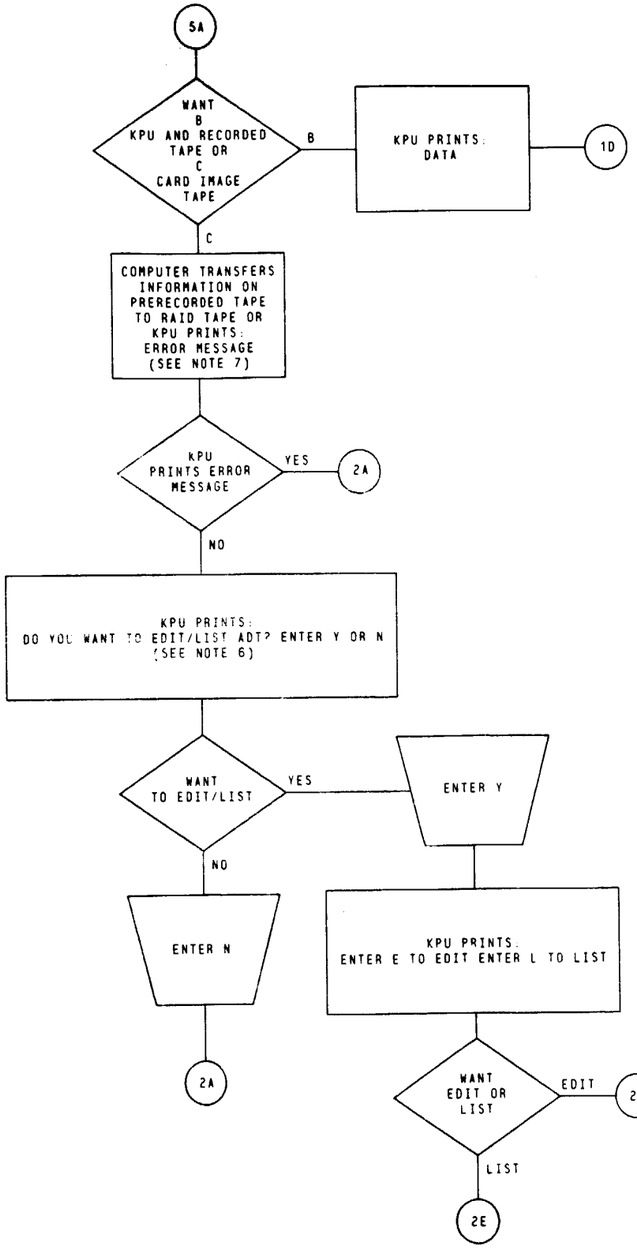
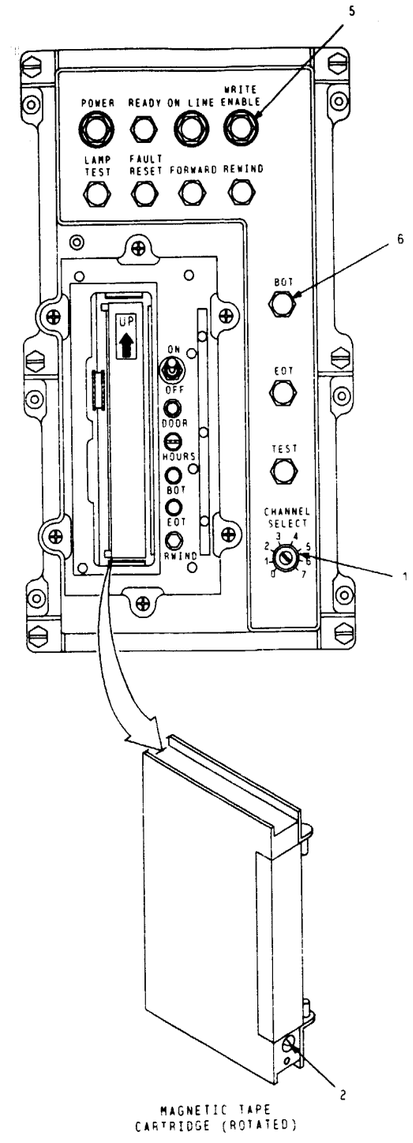
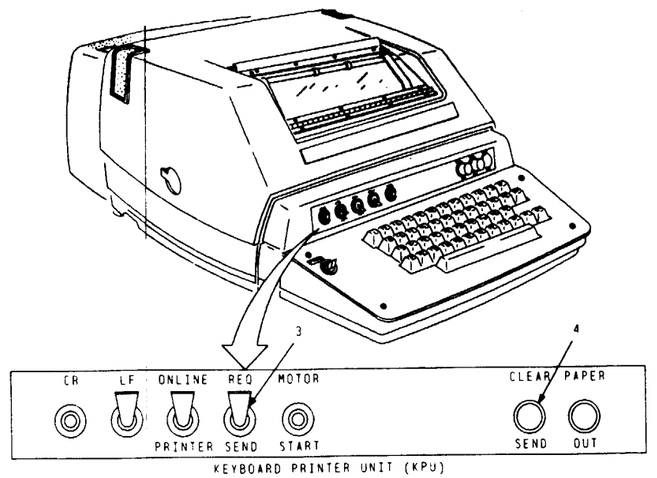


Figure 6-7. Raid Generation Procedure (Sheet 4 of 5)







KEYBOARD PRINTER UNIT (KPU)

NOTES:

1. ALL KPU ENTRIES MUST BE PRECEDED BY PRESSING REQ SEND (ITEM 3) WHEN CLEAR SEND (ITEM 4) LIGHTS. MAKE ENTRY AND THEN PRESS REQ SEND WHICH WILL CAUSE CLEAR SEND TO GO OUT
2. THE SYSTEM MAY BE IN EITHER BOOTLOAD OR OPERATIONAL CONFIGURATION (EXCEPT CC24) ALLOWING RAID DATA GENERATION (REFER TO TABLE 3-9 1)
3. REPLAY VALID AT BATTALION ONLY
4. FIRST EIGHT LETTERS MUST BE UNIQUE FROM ALL OTHER RAIDS
5. DO NOT INADVERTENTLY ENTER T (TERMINATE) WHILE IN THE MAIN KPU MENU. THIS WILL AUTOMATICALLY TERMINATE RAID GENERATION AND WRITE ALL ENTERED DATA ON THE RAID TAPE
6. ONLY KPU OP CARD IMAGE (ADT) DATA MAY BE LISTED OR EDITED
7. REFER TO TABLE 6-7 FOR RAID GENERATION ERROR MESSAGES AND MEANINGS
8. ONLY TWO ATTEMPTS TO RECORD RAID TAPE SHOULD BE MADE. IF RAID TAPE WRITE ERROR IS RECEIVED AGAIN, REPLACE THE RAID TAPE
9. REFER TO FIGURES 3-8 AND 3-7 FOR REMOVAL AND INSTALLATION OF TAPE CARTRIDGE
10. REFER TO TABLE 6-7 1 FOR EDIT ERROR MESSAGES AND MEANINGS. IF EDIT ERROR MESSAGE IS RECEIVED, REENTER INFORMATION IN PROPER FORMAT
11. THE KPU PRINTS THIS MENU ON THE FIRST PASS ONLY. ON THE FOLLOWING PASSES, THE KPU PRINTS ONLY THE COMMAND
12. THE OPERATOR MAY ENTER 'M' (MAIN KPU MENU) AT ANY TIME WHILE IN THE EDIT FUNCTION. THE SYSTEM WILL RETURN THE OPERATOR TO THE MAIN KPU MENU
13. AFTER THE KPU PRINTS ENTER TYPE OF EDIT AND LINE NUMBERS, ENTER P (PRINT STN AGAIN) TO ENSURE ALL LINES ARE DELETED
14. [ ] INDICATES EQUIPMENT MARKING

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Figure 6-7. Raid Generation Procedure (Sheet 5 of 5)

Table 6-6.1 Raid Generation Inputs by Use

Input Menu

ENTER B = KPU AND DATA RECORDING TAPE
K = KPU
C = PRESTORED CARD IMAGE TAPE
R = DATA RECORDING TAPE

Main KPU Menu

ENTER L TO LIST
E TO EDIT
C TO CONTINUE INPUT
T TO TERMINATE INPUT (Note 1)

ENTER MSG CAT AND NUMBER 1-98 (Note 2)

ENTER O - OPERATIONAL CHANGE MESSAGE (TRACK TYPE 1 AND 2 MSGS)
E - ECM (TYPE 3 MSGS)
C - CHAFF (TYPE 4 MSGS)
D - DATA LINK (TYPE 5 MSGS)
M - KPU MENU

ENTER TYPE OF EDIT AND LINE NUMBER (Note 2)

ENTER R - REPLACE LINE NUMBER OR FIELD
I - INSERT ONE ENTRY AFTER LINE NUMBER
D - DELETE LINE NUMBER
A - DELETE ALL LINE NUMBERS
N - EDIT DIFF STN
P - PRINT STN AGAIN

NEW RAID TAPE

ENTER Y = Yes
N = No

_____
See footnotes at end of table.

Table 6-6.1. Raid Generation Inputs by Use
-Continued

TRY AGAIN (Y/N)

ENTER Y = Yes

N = No

DO YOU WANT TO EDIT/LIST ADT? ENTER Y OR N

ENTER Y = Yes (See note 3)

N = No

SAVE ENTERED DATA/WRITE TO NEW TAPE? Y/N

ENTER Y = Yes

N = No

NEW SCRATCH TAPE MOUNTED? Y/N

ENTER Y = Yes

N = No

NOTES:

1. Do not inadvertently enter T (terminate) while in the main KPU menu. This will automatically terminate raid generation and write all entered data on the raid tape.

2. The KPU prints this menu on the first pass only. On the following passes, the KPU prints only the command.

3. Only KPU or card image (ADT) data may be listed or edited.

Table 6-7. Raid Generation Error Printouts

Error message	Description
1. 5 POINTS <40 SECONDS (ALL PTS NOT DISPLAYED)	More than five deflection points have been entered forone STN in less than 40 seconds. Message is printed as a warning and processing continues.
2. INSTANT TURN GENERATED	Turn angle of an STN is greater than 150° and aninstant turn is generated.
3. NO.OF DLS >10 IN 40 SECS.	More than ten messages are input in a 40second period. Message is printed as a warning and processing continues.
4. NOT A RAID TAPE	Installed tape is not a raid tape.
5. RAID TAPE WRITE PROTECTED	Tape on which raid is to be recorded is not writeenabled. Remove cartridge and verify the protect switch is in the blank position when cartridge is remounted.
6. RAID TAPE WRITE ERROR	Tape will not accept record; usually a bad tape. Replacetape cartridge with a new one.
7. RAID TAPE FULL	Mounted raid tape is full.New tape must be substitutedor old tape recorded over.
8. RAID TAPE NOT MOUNTED	Raid tape not logically mounted. Perform CC104 operation.
9. MOUNT RAID TAPE	Raid tape not logically mounted or MTU is off-line.
10. TRY AGAIN? (Y/N)	Program asks if a write function that has failed shouldbe tried again. Y = yes, N = no.
11. RDT POSITIONING ERROR	Raid tape is positioned on the wrong record; repositiontape.
12. BAD TN. TRY AGAIN	Unacceptable track number.
13. NO DATA INPUT/OUTPUT	The raid tape contains no valid data.

NOTE

The following messages are output under the input message field in error. The entire input message is rejected and must be reentered with the error corrected.

A	Previous target time equals target time.
D	Begin target message already exists for this STN.
I	The message type is not legal (i.e., a type 2 message was entered before a type 1 was entered).
L	Message field size limit exceeded.
M	A mandatory field in the message was omitted.
S	Speed of STN exceeds the characteristics of the type selected.
T	Message is out of time sequence.
X	Unusable data.
?	Previous point time is greater than current point time.

Table 6-7.1 Raid Generation Edit Error Messages

Function	Error message	Cause
STN type and number	INCORRECT STN TYPE	Entering other than O, E, C, D or M for STN type.
	NON-ACTIVE STN NUMBER	Entering number larger than 98 or attempting to edit STN number with no previous entries.
Edit type and line number	INCORRECT EDIT TYPE	Entering other than R, I, D, A, P or M for edit type.
	ATTEMPT TO EDIT NON-EXISTENT LINE	Entering a number larger than maximum number of lines for an STN.
Replace a field of a line	ATTEMPT TO REPLACE NON-EXISTENT LINE	Attempting to replace a non-existent line.
	MODIFICATION OF THIS FIELD NOT PERMITTED	Entering one of the fields listed below, all of which are invalid for the replace-a-field feature of the edit function: Begin target (type 1) message - Fields 0 and 2 Operation change (type 2) message - Fields 0 and 3 ECM control (type 3) message - Fields 0, 2, and 3 Chaff control (type 4) message - Fields 0 and 2 Data link (type 5) message - Fields 0, 3, 4, 5, 6, and 10 in the first category, and fields 0, 3, 4, 5, and 7 in the second category of type 5 messages
	ATTEMPT TO REPLACE NON-VALID FIELD	Entering field larger than number of fields in type of STN.
	FORMAT ERROR	Data entered does not meet parameters for field.
	TURN LOGIC ERROR	Points of STN violate turn parameters for aircraft type.
Replace all of a line	MESSAGE MUST BE THE SAME TYPE	Attempting to change message type with replacement. This is not permitted.
	FORMAT ERROR	Data entered does not meet parameters for field.
	TURN LOGIC ERROR	Points of STN violate turn parameters for aircraft type.
Insert a new line	INSERTION OF TYPE 1 MSG NOT PERMITTED	Attempting to insert a line with a type 1 message. All track STNs already have a type 1 on entry to edit.
	LINE ZERO VALID ONLY FOR TYPE 5	Inserting after line 0 (before first line) only valid for data link messages (type 5).

Table 6-7.1 Raid Generation Edit Error Messages --Continued

Function	Error message	Cause
	NON-EXISTENT LINE	Attempting to insert a line after a non-existent line.
	POINT TIME CONFLICT NEW DATA TO LINE INSERTING AFTER	Previous event time in new data must agree with event time of previous message.
	FORMAT ERROR	Data entered does not meet parameters for message type.
	TURN LOGIC ERROR	Points of STN violate turn parameters for aircraft type.
Delete a line of an STN	ATTEMPT TO DELETE A NON-EXISTENT LINE	Entering line number greater than maximum line numbers of STN.
	ATTEMPT TO DELETE A TYPE 1 MSG WITH A TYPE 2 PRESENT	Deleting type 1 message with a type 2 message present violates rules governing message inputs. Track message must begin with a type 1 message.
	TURN LOGIC ERROR	Deletion causes points of STN to violate turn parameters for aircraft type.

NOTE: All error messages allow the operator to reenter the information in the proper format.

6-12. Recording Console Initiated Targets. Each of the tasks required to record console-initiated raid tape inputs is identified in figure 6-8. Amplifying data to the tasks is described in the following subparagraphs and is keyed on the flow chart. It will be necessary for the operator to keep a list of ATDL-1 track numbers for those flights desired on the eventual raid tape.

a. *Assume Operational System*. The basic requirement for producing a raid tape from console inserted tracks is the capability to input RAMIT tracks from a console.

b. *Maintain a Record of Chosen Tracks*. Tracks for inclusion on the raid tape will be identified by ATDL-1 numbers.

6-13. Generating a Raid Tape from Recorded Console Inputs. Generate a raid tape from the recorded console inputs using source code R as shown in figure 6-7.

6-14. Live Data Raid Tape Generation. Generating a raid tape, using live tracks as a source, is basically identical to console-initiated tracks procedures. The operator records live operations (Chapter 8) and lists the ATDL-1 track numbers for those tracks he wishes to include as part of the simulated raid. Then, by following the procedures in figure 6-7, using input source code R (refer to table 6-6.1), a raid tape is generated from the recorded data tape. The same restrictions concerning system limits still apply regardless of the data source.

6-15. Live Data Plus Console Initiated Raid Tape Generation. When the system is operating under live conditions and data recording is being accomplished, it is possible to initiate tracks from a console position for eventual inclusion on the raid tape. This feature is normally used when a live exercise appears acceptable, except for periods when more flights need to be added in a particular area or time. Console-initiated tracks are automatically included in the data recording; a list of the ATDL-1 track numbers for the selected tracks only need be maintained. Figure 6-7 (with input source code "R") describes the procedures for generating the raid tape from this data source.

6-16. Live Data Plus Scripted Tracks Raid Tape Generation. The first major step in generating a raid tape with a combination of live data and scripted tracks is the recording of a 1-hour period of live data (Chapter 8) and listing the ATDL-1 track numbers for the selected tracks being used in the simulation. Using the procedures of paragraph 6-10 (with input source code "B", refer to table 6-1.1), the operator enters scripted tracks after the ATDL-1 numbers and the ADP performs the task of integrating the two. For scripted tracks, the operator must enter the begin target (type 1) message followed by at least one operational change (type 2) message for each STN. After this initial entry, the operator may enter other change messages for that particular STN, enter a new STN, or continue entering data on previously entered STNs. The operational change messages for an STN must be entered in time sequence. ECM and data link messages may be entered any time following, or entered in time sequence during, entry of the associated track. Chaff entries may be entered at any time during scripting of a raid. The ADP will read the recorded data tape, following entry of scripted tracks, to accomplish proper time-sequencing of scripted and ATDL-1 tracks on the final tape.

6-17. Simulated ECM, Chaff, and Data Link Message Generation. ECM and chaff video may be generated for a raid tape exercise, under control of the ADP, via the simulation hardware. The simulator is capable of activating up to 32 ECM sources and two chaff corridors at any one time during a raid. Figure 6-9 illustrates the chaff and types of ECM available for simulated exercises.

6-18. ECM Generation for Raid Exercises. ECM data is associated with a particular track and ECM location is determined by location of the jamming track when jamming is initiated. ECM data seems to emanate from the center of the jamming target along the azimuth of the jamming track. When and if a jamming track is eliminated during an exercise, the associated ECM is also eliminated. ECM may be included in a raid tape regardless of the source of target data. ECM sources may be reassigned to different aircraft as necessary to provide jams throughout an exercise. ECM is input through the KPU as described in table 6-3.

NOTE

When the raid tape designer specifies a given intensity level (1 thru 7) at a specified range, the program will automatically adjust the intensity up or down as the distance increases or decreases from the initial position.

6-19. Chaff Generation for Raid Exercises. Chaff data is not associated with any particular track. It is therefore necessary for the raid designer to insert chaff within a reasonable relationship to several potential dropping aircraft. Like ECM, chaff's effects are independent of the method used to specify targets for the raid tape; chaff may be included regardless of the source or target data. Chaff is input through the KPU as described in table 6-4. The two chaff entries may be started and stopped in different positions as often as needed.

6-20. Simulated Data Link Information for Raid Tapes. Provisions have been made to include simulated data link incoming command and target identification messages in raid tapes to increase the realism of simulation exercises. Simulated data link messages are input through the KPIJ as described in table 6-5. Again, as in the case of ECM and chaff, simulated data link messages may be included on a raid regardless of the source of target data.

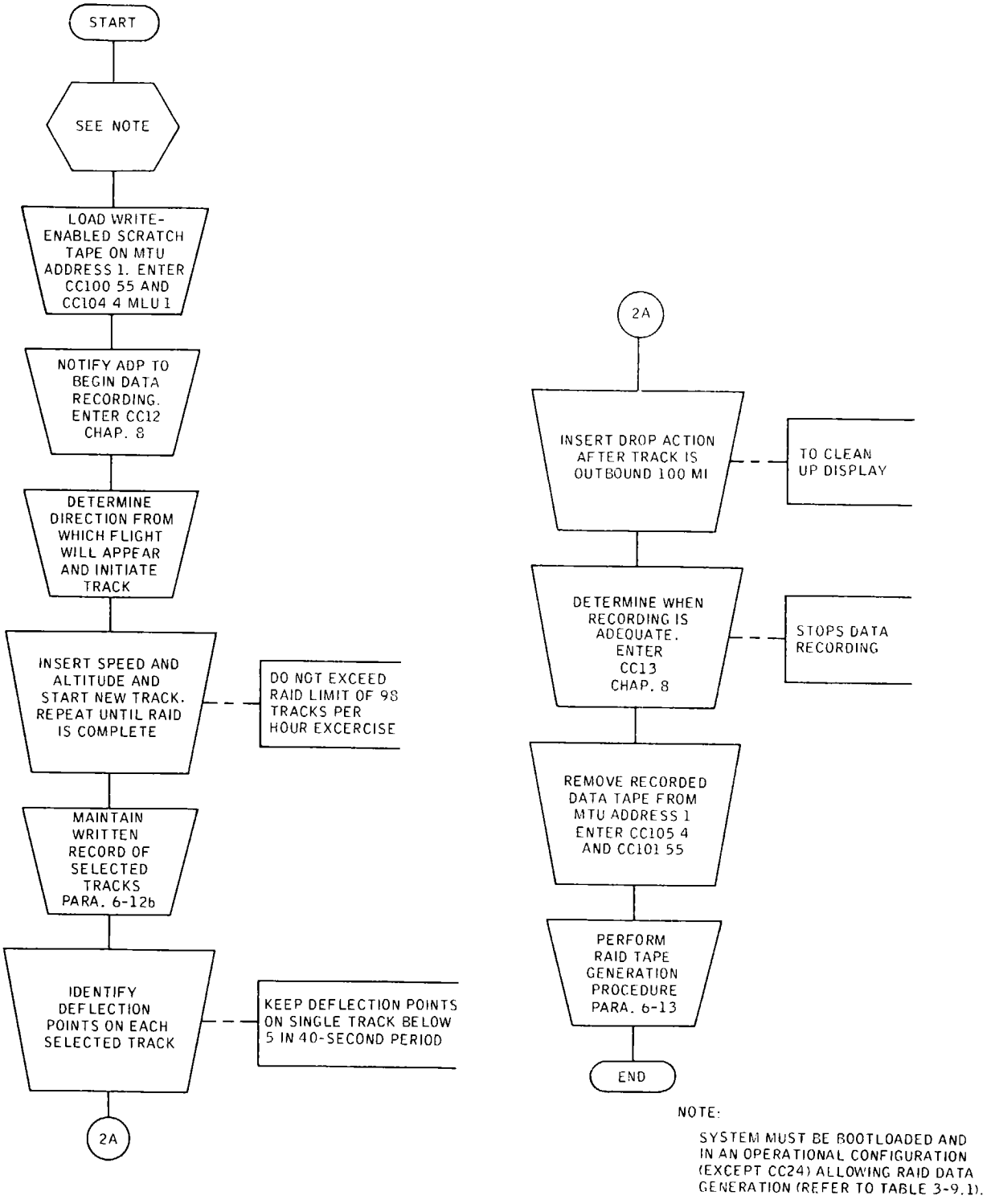

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Figure 6-8. Console Initiated Raid Tape Input Flow Chart

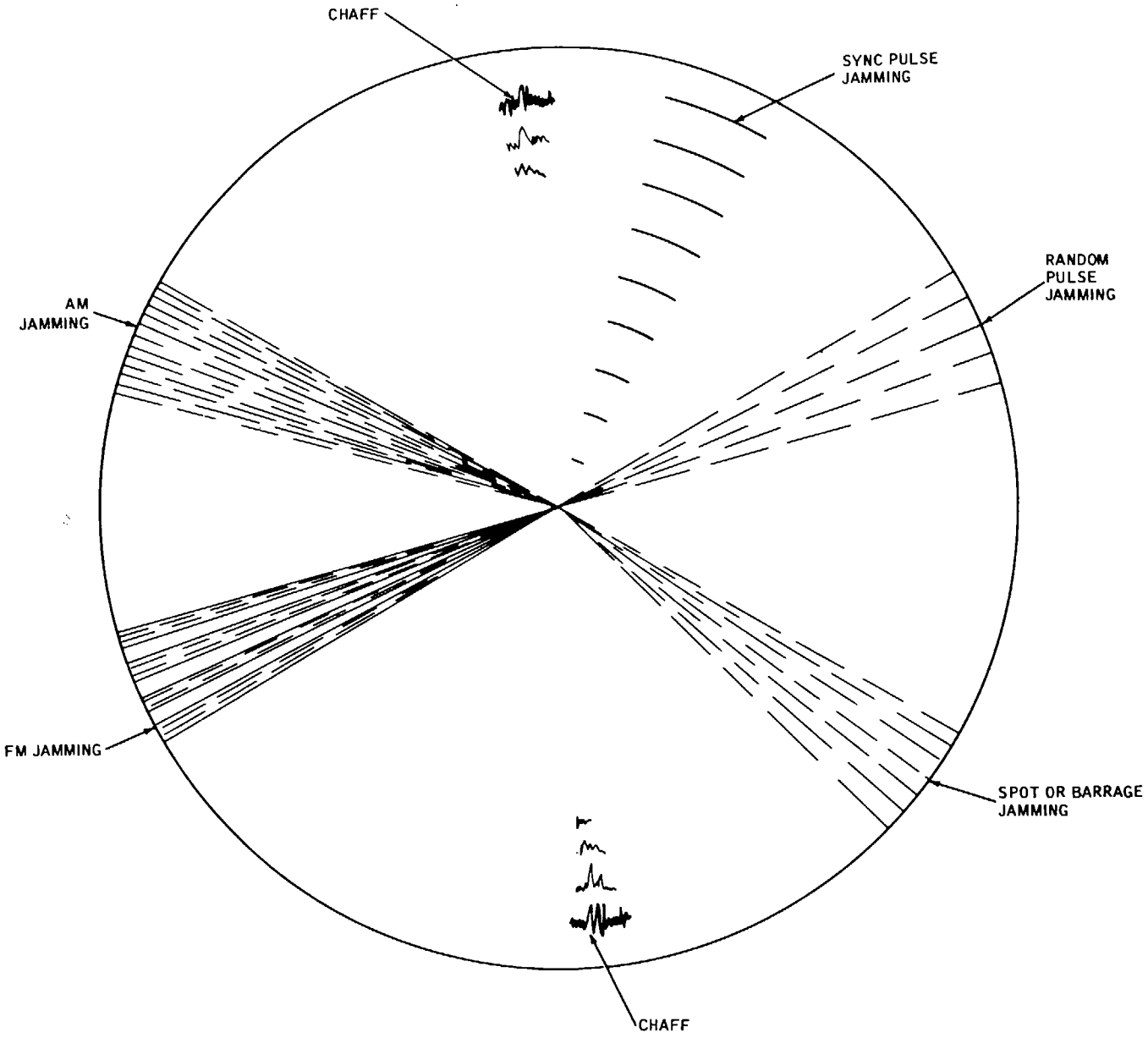

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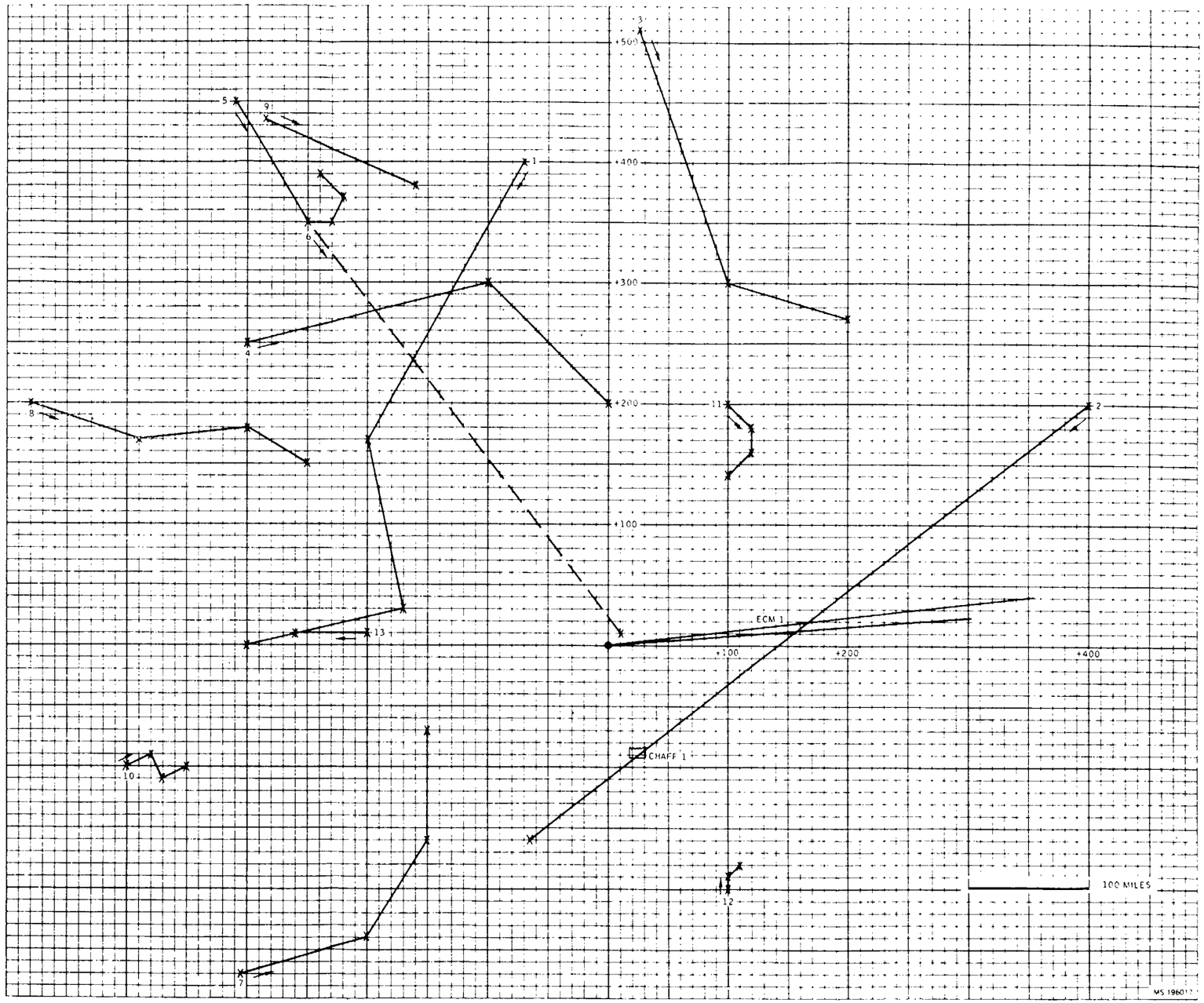
Figure 6-9. Chaff and ECM Available for Simulation Exercise

Section III. SCRIPTED RAID REFERENCE DATA

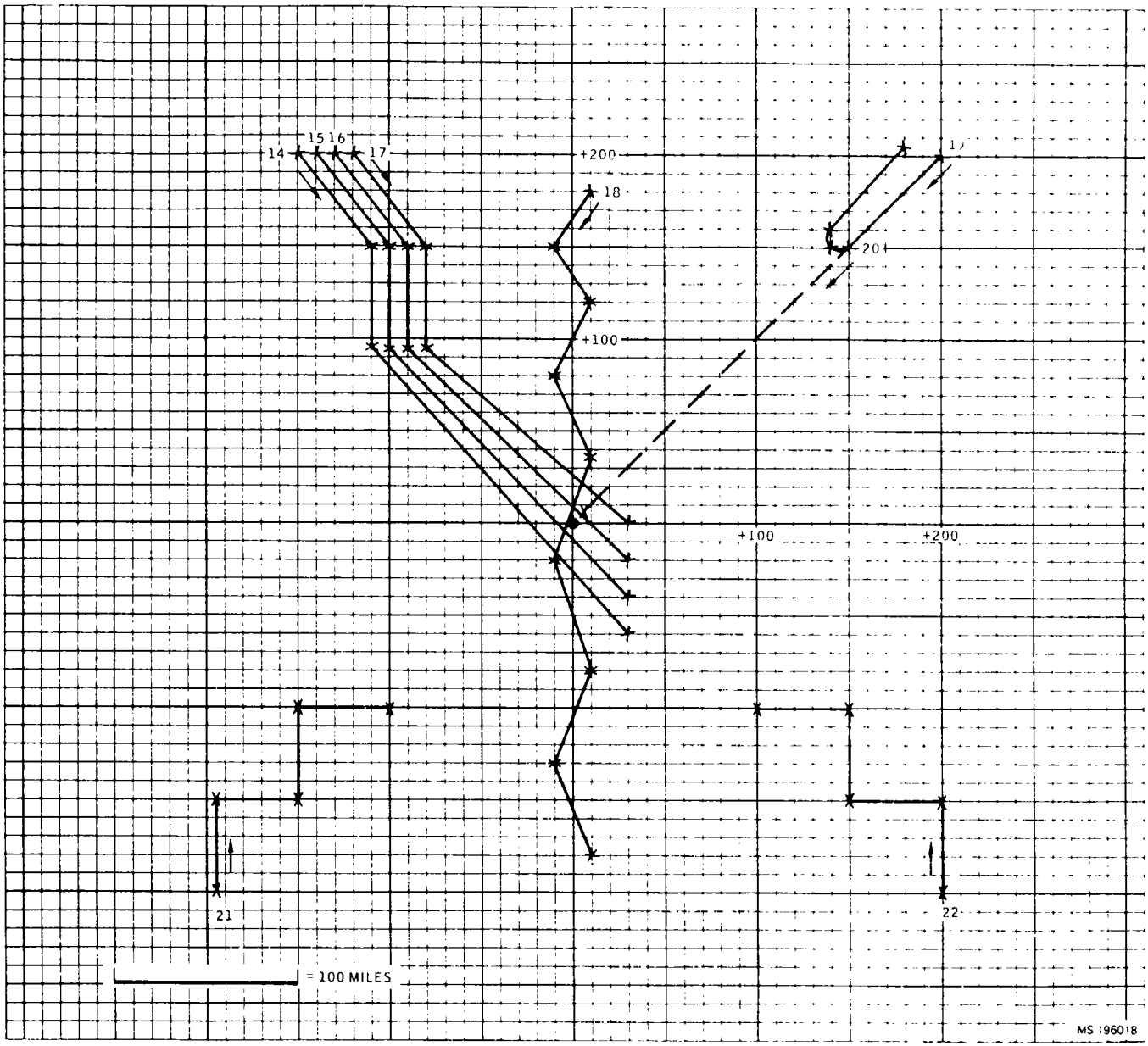
6-21. General. The raid data contained in this section includes at least one of each type of aircraft with a wide range of speeds, altitudes, flight paths, etc. It contains 64 target aircraft with 18 that emit ECM and 7 that drop chaff in a 1-hour period.

6-22. Raid Data. Figure 6-10 illustrates the overlays used to generate the simulated raid while figure 6-11 shows the input data for the MAINRAID program. Notice that the coding follows the descriptions in tables 6-1 thru 6-5 and rules of paragraph 6-7. As recommended, all entries for an STN are entered at one time (type 1, 2, 3, and 5 messages). Also, all entries of chaff (type 4 messages) are entered by STN.



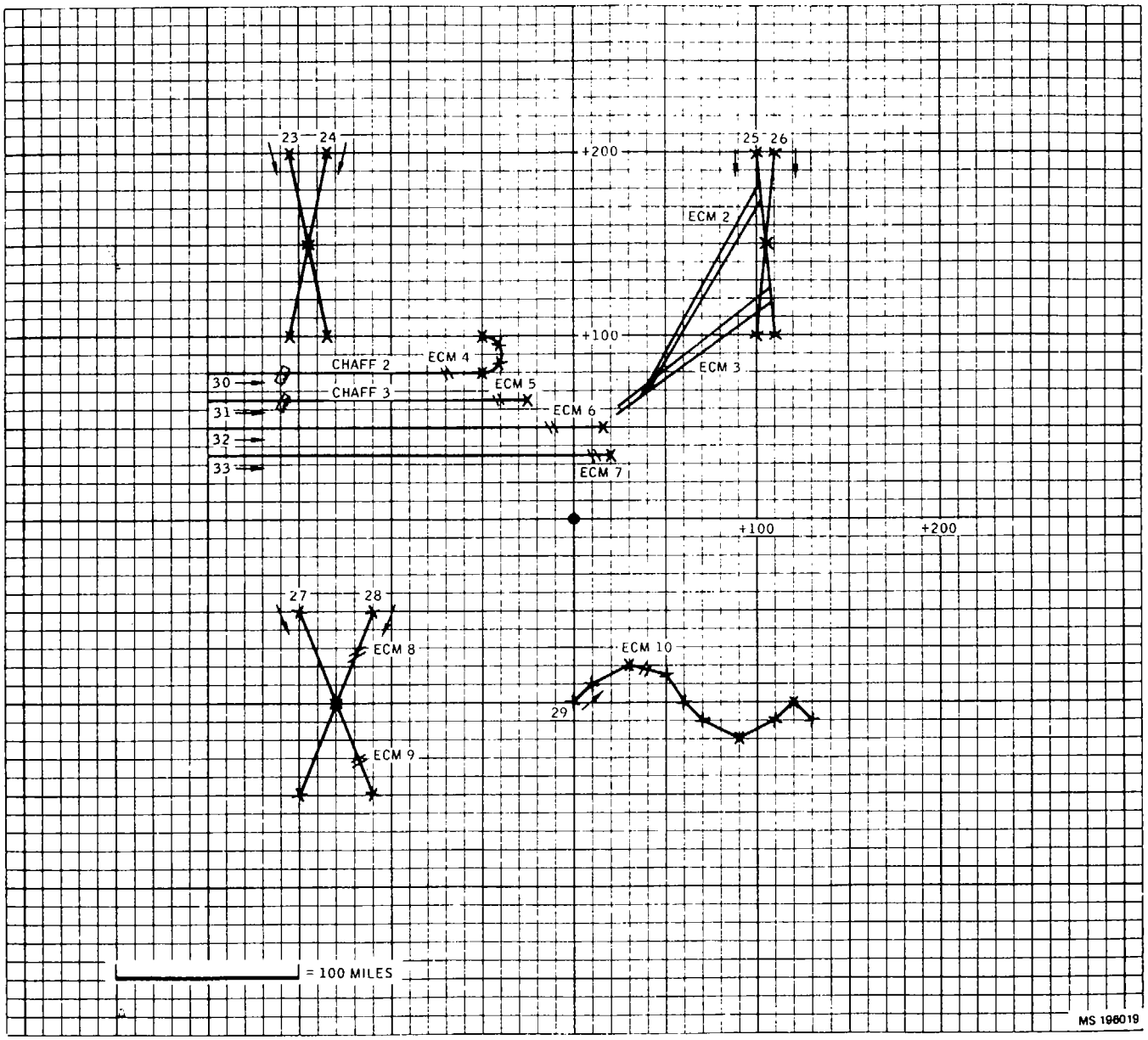
MS 196017

Figure 6-10. Raid Generation Overlays (Sheet 1 of 5)



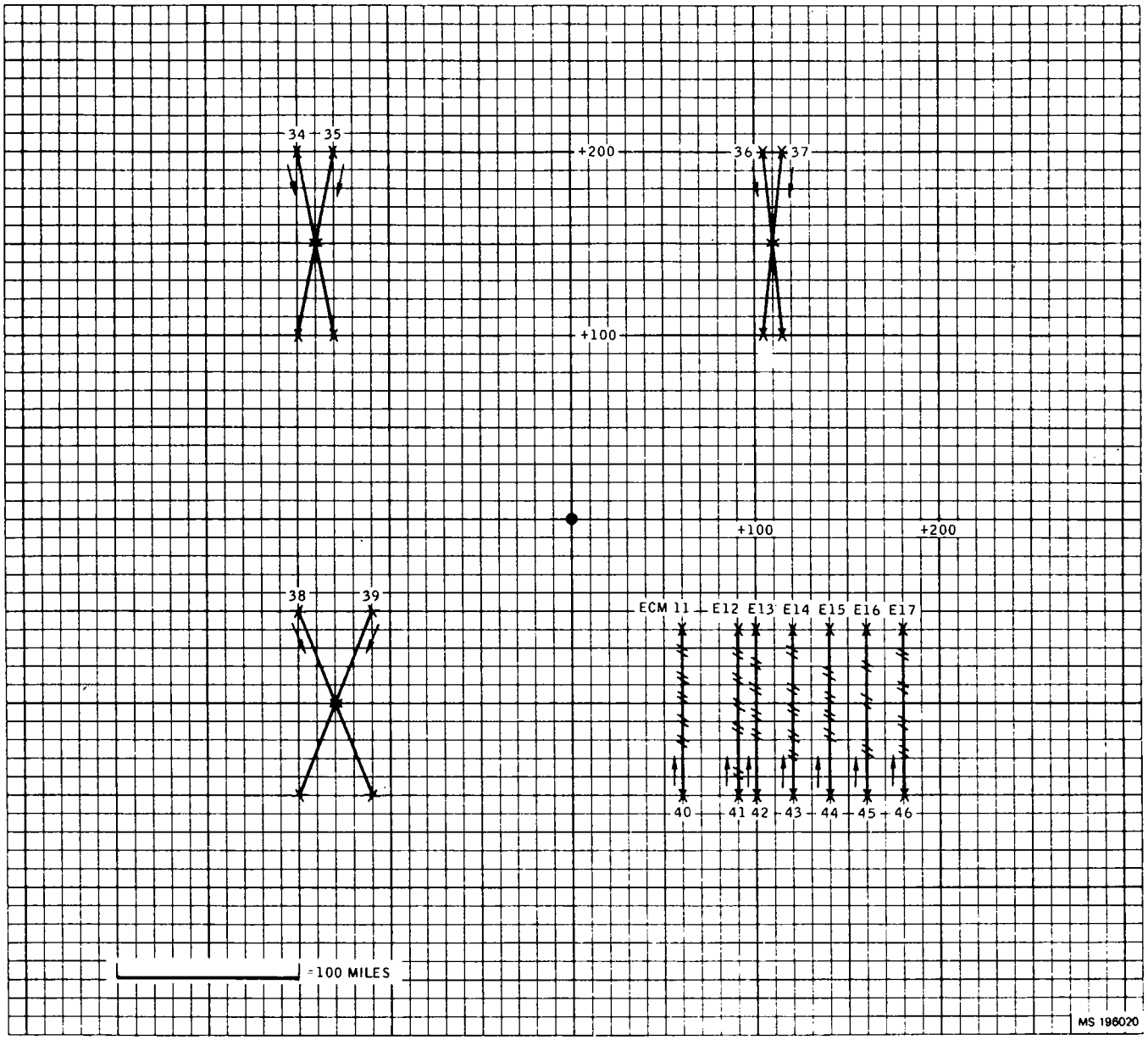
MS 196018

Figure 6-10. Raid Generation Overlays (Sheet 2 of 5)



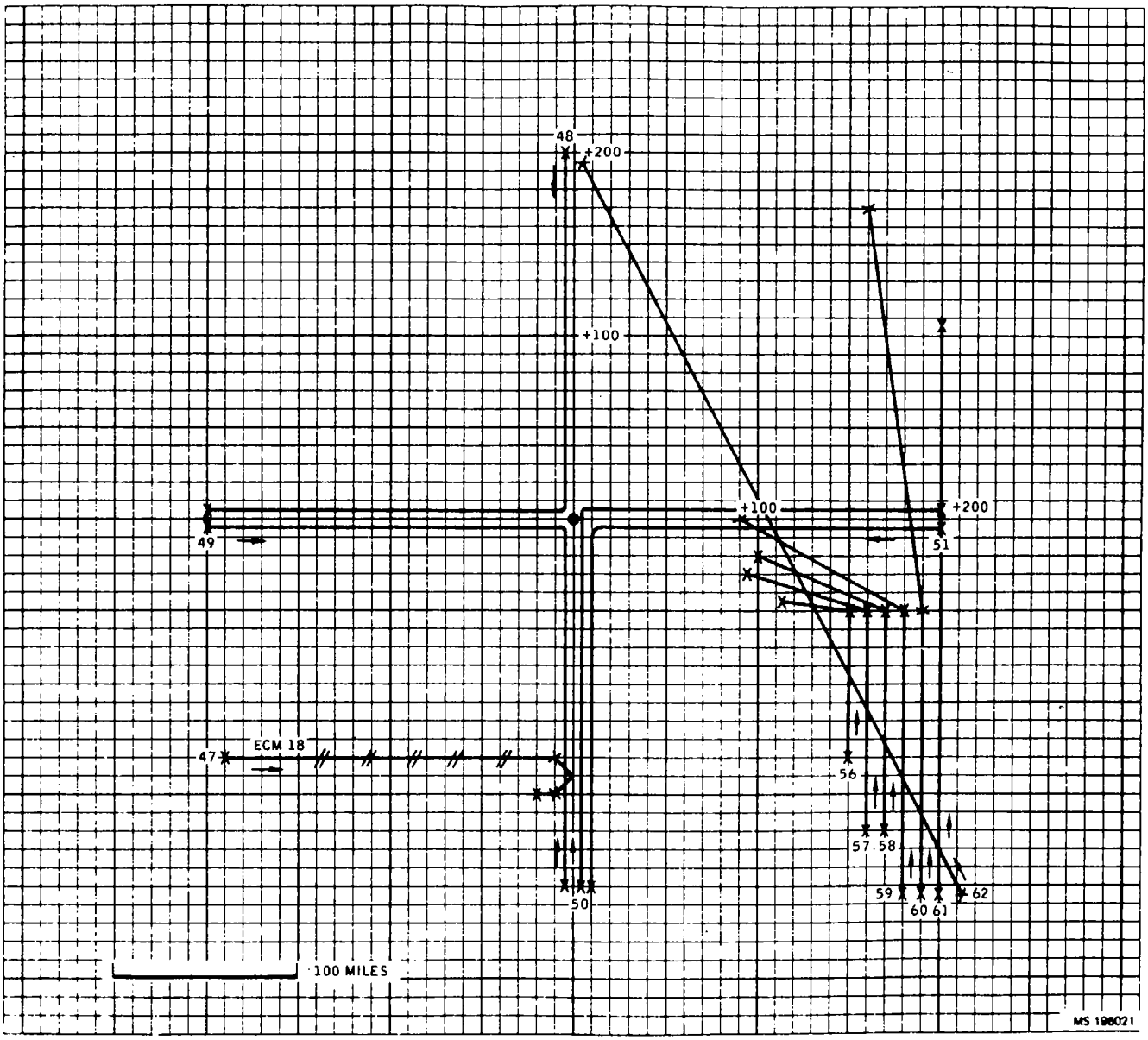
MS 196019

Figure 6-10. Raid Generation Overlays (Sheet 3 of 5)



MS 196020

Figure 6-10. Raid Generation Overlays (Sheet 4 of 5)



MS 196021

Figure 6-10. Raid Generation Overlays (Sheet 5 of 5)

```
STN1
     1,0745,1,0,-70,400,6;
     2,0745,2700, 1, -200,+170,300;
     2,2700,4200, 1, -170,+030,;
     5,2945,1,9,0,01,2,1,8,0,0;

STN2
     1,0200, 2,    400, 200   ,400 , 8;
     2,0200,5900, 2,  -65,-160,200;
     3,3200, 1, 2,0,5,  2,5,0;
     3,3600, 1, 2,0,5,  2,5,1;
     5,1500,1,9,0,02,2,1,8,0,0;

STN3
     1,0903,3,50,405,400,7;
     2,0903,3700,3,100,300,150;
     2,3700,5700,3,200,270,150;
     5,3703,1,9,0,03,2,1,8,0,0;
     5,3903,1,15,0,03,07,1,0,0;

STN4
     1,0130, 4,   -300,  +250,400 , 7;
     2,0130,1530, 4, -100,+300, 50;
     2,1530,3130, 4,     -1,    200, 100,1;
     5,1200,1,9,0,04,2,1,8,0,0;

STN5
     1,0045, 5,   -310,   +450,400 , 6;
     2,0045,1345, 5, -250,+350,;
     2,1345,1645, 5, -230,+350,;
     2,1645,1945, 5, -220,+370,;
     2,1945,2400, 5,   -240,    390,    ,1;
     5,0245,1,9,0,05,2,1,8,0,0;

STN6
     1,1345, 6,   -250,   +350,400 , 8;
     2,1345,2345, 6,     10,     10,    ,1;
     5,1745,1,9,0,06,2,1,8,0,0;

STN7
     1,0540, 7,   -305,   -270,440 , 7;
     2,0540,1310, 7, -200,-200,390,;
     2,1310,2010, 7, -150,-160,400,;
     2,2010,2600, 7,   -150,    -70,  70,1;
     5,1840,1,9,0,07,2,1,8,0,0;
     5,2040,1,15,0,07,06,1,0,0;

STN8
     1,0020, 8,  -480,    200, 400, 7;
     2,0020,1620, 8, -390,+170,350,;
     2,1620,3020, 8, -300,+180,400, ;
     2,3020,3620, 8,   -250,    150, 440,1;
     5,3300,1,9,0,08,2,1,8,0,0;

STN9
     1,0805, 9,   -285,    435, 200, 6;
     2,0805,2005, 9,   -160,    380, 100,1;
     5,0905,1,9,0,09,2,1,8,0,0;
```

MS427744A

Figure 6-11. MAINRAID Program Data (Sheet 1 of 10)

```
STN10
    1,0001,10,   -400,   -100, 300, 6;
    2,0001,0500,10, -380, -90, 45,;
    2,0500,1000,10, -370,-110, 40,;
    2,1000,1500,10, -350,-100, 10,;
    5,0101,1,9,0,10,2,1,4,0,0;

STN11
    1,   0,11,    100,    200, 350, 6;
    2,0000,1000,11,    120,    180,    :
    2,1000,1500,11, +120,+160,;
    2,1500,2000,11,    100,    140,    ,1;
    5,0530,1,9,0,11,2,1,8,0,0;

STN12
    1,   1,12,    100,   -200, 350, 1;
    2,0001,1200,12, +100,-190,350,;
    2,1200,1305,12,100,-187,,,1;
    2,1305,1900,12, +100,-190, 70, , ;
    2,1900,3200,12, +110, -80, 50, , ;

STN13
    1,   2,13,   -200,     10, 350, 6;
    2,   2, 700,13,   -260,    +10,    ,1;
    5,0102,1,9,0,13,2,1,4,0,0;

STN14
    1,0500,14,   -150,   +200,400 , 6;
    2,0500,1100,14, -110,+150,;
    2,1100,1600,14, -110, +95,;
    2,1600,3300,14,     30,    -60,    ,1;
    5,0800,1,9,0,14,2,1,8,0,0;

STN15
    1,0500,15,   -140,    200,400 , 6;
    2,0500,1100,15, -100,+150,;
    2,1100,1600,15, -100, +95,;
    2,1600,3300,15,     30,    -40,   ,1;
    5,0800,1,9,0,15,2,1,8,0,0;

STN16
    1,0500,16,   -130,    200,400 , 6;
    2,0500,1100,16,  -90, 150,;
    2,1100,1600,16,-90,95,;
    2,1600,3000,16,     20,    -20,    ,1;
    5,0800,1,9,0,16,2,1,8,0,0;

STN17
    1,0500,17,   -120,    200,400 , 6;
    2,0500,1100,17, -80 ,+150,;
    2,1100,1600,17, -80 , +95,;
    2,1600,3000,17,     30,     00,    ,1;
    5,0800,1,9,0,17,2,1,8,0,0;
```

MS 427745

Figure 6-11. MAINRAID Program Data (Sheet 2 of 10)

```
STN18
     1,0001,18,      10,     180,400 , 6;
     2,0001,0800,18,   -10,+150,;
     2,0800,1500,18,   +10,+120,;
     2,1500,2200,18,   -10, +80,;
     2,2200,2900,18,   +10, +30,;
     2,2900,3600,18,   -10, -20,;
     2,3600,4300,18,   +10, -80,;
     2,4300,5000,18,   -10,-130,;
     2,5000,5700,18,      10,    -180,     ,1;
     5,0201,1,9,0,18,2,1,8,0,0;

STN19
     1,1500,19,     200,     200,360 , 7;
     2,1500,2000,19, +150,+150,;
     2,2000,2100,19, +140,+150,;
     2,2100,2200,19, +145,+160,    , ,1;
     2,2200,2600,19, +165,+185,    , ;
     2,2600,3000,19,     180,    205,     ,1;
     5,1800,1,9,0,19,2,1,8,0,0;

STN20
     1,2000,20,     150,     150,360 , 9;
     2,2000,2330,20,       1,       1,     ,1;
     5,2200,1,9,0,20,2,1,8,0,0;

STN21
     1,0001,21,-200,-200,400,6;
     2,0001,0700,21, -200,-150,;
     2,0700,1400,21, -150,-150,;
     2,1400,2100,21, -150,-100,;
     2,2100,2800,21,    -100,    -100,     ,1;
     5,0310,1,9,0,21,2,1,8,0,0;

STN22
     1,0001,22,     200,    -200,400 , 6;
     2,0001,0700,22, +200,-150,;
     2,0700,1400,22, +150,-150,;
     2,1400,2100,22, +150,-100,;
     2,2100,2800,22,     100,    -100,     ,1;
     5,0101,1,9,0,22,2,1,8,0,0;

STN23
     1,0122,23,0,140,300,1;
     2,0122,1117,23,140,0,,1;
     5,0345,1,9,0,23,2,1,8,0,0;

STN24
     1,0122,24,140,140,350,1;
     2,0122,1117,24,0,0,,1;
     5,0340,1,9,0,24,2,1,8,0,0;
```

MS 427746

Figure 6-11. MAINRAID Program Data (Sheet 3 of 10)

```
STN25
    1,0122,25,-140,140,300,1;
    2,0122,1117,25,0,0,,1;
    3,0805, 2,25,1,7,  2,0,0;
    3,1105, 2,25,1,7,  2,0,1;
    5,0345,1,9,0,25,2,1,8,0,0;

STN26
    1,0122,26,-140,0,450,1;
    2,0122,1117,26,0,140,;
    2,1117,1210,26,20,150,;
    2,1210,1456,26,90,150,;
    2,1456,1529,26,100,140,;
    2,1529,2005,26,100,100,,1;
    3,1505, 3,26,2,7,    4,0;
    3,1905, 3,26,2,7,    4,1;
    5,0345,1,9,0,26,2,1,8,0,0;

STN27
    1,0404,27,-150,-50,380,1;
    2,0404,0844,27,-110,-150,,1;
    3,0835, 9,27,2,6,  1,0,0;
    3,1035, 9,27,2,6,  1,0,1;
    5,0445,1,9,0,27,2,1,8,0,0;

STN28
    1,0404,28,-150,-150,430,1;
    2,0404,0844,28,-110,-50,,1;
    3,0800, 8,28,1,5,  1,5,0;
    3,1000, 8,28,1,5,  1,5,1;
    5,0445,1,9,0,28,2,1,8,0,0;

STN29
    1,0005,29,     -1,   -100,350 , 6;
    2,0005,0305,29, +10, -90,;
    2,0305,0805,29, +30, -80,;
    2,0805,1305,29, +50, -85,;
    2,1305,1709,29, +60,-100,;
    2,1709,2012,29, +70,-110,;
    2,2012,2512,29, +90,-120,
    2,2512,3022,29,+110,-110,;
    2,3022,3526,29,+120,-100,;
    2,3526,3800,29,+130,-110,;
    3,0805,10,29,2,4,  3,0,0;
    3,1005,10,29,2,4,  3,0,1;
    3,2805,10,29,2,4,  3,0,0;
    3,2905,10,29,2,4,  3,0,1;
    5,0145,1,9,0,29,2,1,8,0,0;

STN30
    1,2010,30,   -190,     80,450 , 6;
    2,2010,3310,30, -50, +80,;
    2,3310,3510,30, -40, +85,;
    2,3510,3710,30, -40, +95,;
    2,3710,3910,30,    -50,    100,    ,1;
    3,2740, 4,30,2,1,  2,0,0;
    3,2940,4,30,2,1,  2,0,1;
    5,2310,1,9,0,30,2,1,8,0,0;
```

MS 427747

Figure 6-11. MAINRAID Program Data (Sheet 4 of 10)

```
STN31
    1,2009,31,   -190,     65, 450, 6;
    2,2009,3510,31,    -25,     65,    ,1;
    3,3009, 5,31,4,4,  2,3,0;
    3,3209, 5,31,4,4,  2,3,1;
    5,2309,1,9,0,31,2,1,8,0,0;

STN32
    1,2011,32,   -190,     50, 450, 6;
    2,2011,3710,32,     20,     50,    ,1;
    3,3141, 6,32,5,5,  2,8,0;
    3,3341, 6,32,5,5,  2,8,1;
    5,2311,1,9,0,32,2,1,8,0,0;

STN33
    1,2404,33,-150,-50,380,1;
    2,2404,2844,33,-110,-150,,1;
    3,3314, 7,33,6,6,  2,8,0;
    3,3514, 7,33,6,6,  2,8,1;
    5,2445,1,9,0,33,2,1,8,0,0;

STN34
    1,2122,34,0,140,250,1;
    2,2122,3117,34,140,0,,1;
    5,2345,1,9,0,34,2,1,8,0,0;

STN35
    1,2122,35,140,140,300,1;
    2,2122,3117,35,0,0,,1;
    5,2345,1,9,0,35,2,1,8,0,0;

STN36
    1,2122,36,-140,140,450,1;
    2,2122,3117,36,0,0,,1;
    5,2345,1,9,0,36,2,1,8,0,0;

STN37
    1,2122,37,-140,0,350,1;
    2,2122,3117,37,0,140,,1;
    5,2345,1,9,0,37,2,1,8,0,0;

STN38
    1,2404,38,-150,-150,430,1;
    2,2404,2844,38,-110,-50,,1;
    5,2445,1,9,0,38,2,1,8,0,0;

STN39
    1,2024,39,   -110,    -50, 300, 6;
    2,2024,3415,39,   -150,   -150,    ,1;
    5,2324,1,9,0,39,2,1,8,0,0;
```

MS 427748

Figure 6-11. MAINRAID Program Data (Sheet 5 of 10)

```
STN40
    1,2900,40,      60,    -150, 450, 6;
    2,2900,5900,40,      60,    -60,     ,1;
    3,3000,11,40,0,7,   2,0,0,;
    3,3800,11,40,1,7,   2,0;
    3,5000,11,40,2,7,   2,0;
    3,5200,11,40,2,7,   2,0;
    3,5400,11,40,6,7,   2,0, ;
    5,3000,1,9,0,40,2,1,8,0,0;

STN41
    1,2902,41,      90,    -150, 450, 6;
    2,2902,5900,41,      90,    -60,     ,1;
    3,3000,12,41,0,7,   2,0,0;
    3,3800,12,41,1,7,   2,0;
    3,5000,12,41,2,7,   2,0;
    3,5200,12,41,2,7,   2,0,1;
    5,3002,1,9,0,41,2,1,8,0,0;

STN42
    1,2904,42,     100,    -150, 450, 6;
    2,2904,5900,42,     100,    -60,     ,1;
    3,3000,13,42,0,7,   2,0,0;
    3,3800,13,42,1,7,   2,0;
    3,5000,13,42,2,7,   2,0;
    3,5200,13,42,2,7,   2,0;
    3,5400,13,42,6,7,   2,0, ;
    5,3004,1,9,0,42,2,1,8,0,0;

STN43
    1,2906,43,     120,    -150, 450, 6;
    2,2906,5900,43,     120,    -60,     ,1;
    3,3000,14,43,0,7,   2,0,0;
    3,3800,14,43,1,7,   2,0;
    3,5000,14,43,2,7,   2,0;
    3,5200,14,43,2,7,   2,0,1;
    5,3006,1,9,0,43,2,1,8,0,0;

STN44
    1,2908,44,     140,    -150, 450, 6;
    2,2908,5900,44,     140,    -60,     ,1;
    3,3000,15,44,0,7,   2,0,0;
    3,3800,15,44,1,7,   2,0;
    3,5000,15,44,2,7,   2,0;
    3,5200,15,44,2,7,   2,0;
    3,5400,15,44,6,7,   2,0, ;
    5,3008,1,9,0,44,2,1,8,0,0;
```

MS 427749

Figure 6-11. MAINRAID Program Data (Sheet 6 of 10)

```
STN45
    1.2910.45.     160.    -150. 300. 6;
    2.2910.5900.45.     160.     -60.     .1;
    3.3000.16.45.0.7.  2.0.0;
    3.3800.16.45.1.7.  2.0;
    3.5000.16.45.2.7.  2.0;
    3.5200.16.45.2.7.  2.0.1;
    5.4520.1.9.0.45.2.1.8.0.0;

STN46
    1.2912.46.     180.    -150. 300. 6;
    2.2912.5900.46.     180.     -60.     .1;
    3.3000. 4.46.0.7.  2.0.0;
    3.3800. 4.46.1.7.  2.0;
    3.5000. 4.46.2.7.  2.0;
    3.5200. 4.46.2.7.  2.0;
    3.5400. 4.46.6.7.  2.0. ;
    5.3012.1.9.0.46.2.1.8.0.0;

STN47
    1.3010.47.    -185.    -130. 250. 7;
    2.3010.5310.47.     -10.    -130.     ;
    2.5310.5410.47.-001.-140.;
    2.5410.5510.47. -10.-150.;
    2.5510.5930.47.-60.-150..1;
    3.3510. 2.47.1.7.  1.5.0;
    3.3910. 2.47.1.6.  1.5;
    3.4310. 2.47.1.5.  1.5;
    3.4710. 2.47.1.4.  1.5;
    3.5110. 2.47.1.3.  1.5;
    3.5510. 2.47.1.2.  1.5;
    3.5910. 2.47.1.1.  1.5.1;
    5.3110.1.9.0.47.2.1.8.0.0;

STN48
    1.2700.48.     -5 .     200. 400. 7;
    2.2700.4000.48.  -5.          5.     ;
    2.4000.5300.48.-200.5..1;
    5.2800.1.9.0.48.2.1.8.0.0;

STN49
    1.2700.49.    -200.      -5. 400. 6;
    2.2700.4000.49.      -5.      -5.     ;
    2.4000.5301.49.      -5.    -200.     .1;
    5.2800.1.9.0.49.2.1.8.0.0;

STN50
    1.2700.50.       5.    -200. 400. 7;
    2.2700.4000.50.       5.       5.     ;
    2.4000.5300.50.     200.       5.     .1;
    5.2800.1.9.0.50.2.1.8.0.0;

STN51
    1.2700.51.     200.      -5. 400. 7;
    2.2700.4000.51.       5.      -5.     ;
    2.4000.5300.51. 005.-200.    . . ;
    5.2800.1.9.0.51.2.1.8.0.0;
```

MS 427750

Figure 6-11. MAINRAID Program Data (Sheet 7 of 10)

```
STN52
    1,3310,52,   -180,   -120, 500, 6;
    2,3310,4111,52,   -180,    -80,    :
    2,4111,4311,52,-190, -75,;
    2,4311,4511,52,-200, -75,  , , ;
    5,3610,1,9,0,52,2,1,8,0,0;

STN53
    1,3310,53,   -170,   -130, 500, 6;
    2,3310,4111,53,-170, -90,;
    2,4111,4311,53,-180, -85,;
    2,4311,4511,53,-190, -85,   , , ;
    5,3610,1,9,0,53,2,1,8,0,0;

STN54
    1,3310,54,   -160,   -140, 500, 6;
    2,3310,4111,54,-160,-100,;
    2,4111,4311,54,-170, -95,;
    2,4311,4511,54,-180, -95,   , , ;
    5,3610,1,9,0,54,2,1,8,0,0;

STN55
    1,3310,55,   -150,   -150, 500, 6;
    2,3310,4111,55,-150,-110,;
    2,4111,4311,55,-160,-105,;
    2,4311,4511,55,-170,-105,   , , ;
    5,3610,1,9,0,55,2,1,8,0,0;

STN56
    1,3310,56,    150,   -125, 400, 6;
    2,3310,4810,56,+150, -50,   :
    2,4810,5540,56,115,-45,;
    5,3610,1,9,0,56,2,1,8,0,0;

STN57
    1,3420,57,    160,   -165, 300, 6;
    2,3420,4420,57,+160, -50,;
    2,4420,4920,57,120,-40,;
    5,4520,1,9,0,57,2,1,8,0,0;

STN58
    1,3421,58,    170,   -165, 750, 6;
    2,3421,4520,58,+170, -50,;
    2,4520,5050,58,100,-20,;
    5,4620,1,9,0,58,2,1,8,0,0;
```

MS 427751

Figure 6-11. MAINRAID Program Data (Sheet 8 of 10)

```
STN59
    1,4042,59,38,50,400,1;
    2,4042,4212,59,47,50,;
    2,4212,4242,59,50,50,;
    2,4242,4252,59,51,49.9,;
    2,4252,4302,59,51.9,49.7,;
    2,4302,4312,59,52.9,49.4,;
    2,4312,4322,59,53.8,49,;
    2,4322,4332,59,54.6,48.4,;
    2,4332,4342,59,55.3,47.7,;
    2,4342,4352,59,56,47,;
    2,4352,4402,59,56.5,46.2,;
    2,4402,4412,59,56.9,45.3,;
    2,4412,4422,59,57.3,44.3,;
    2,4422,4432,59,57.4,43.3,;
    2,4432,4442,59,57.5,42.4,;
    2,4442,4512,59,57.5,39.4,;
    2,4512,4642,59,57.5,30.4,;
    5,4322,1,9,0,59,2,1,8,0,0;

STN60
    1,3423,60,    190,   -200, 300, 8;
    2,3423,4820,60,+170,+115,400, 1;
    5,3623,1,9,0,60,2,1,8,0,0;

STN61
    1,3424,61,    200,   -200, 350, 9;
    2,3424,3920,61,+200,+105,   , 1;
    5,3624,1,9,0,61,2,1,8,0,0;

STN62
    1,3425,62,   +210,   -200, 300, 9;
    2,3425,3827,62, +05,+195,   , 1;
    5,3625,1,9,0,62,2,1,8,0,0;

STN63
    1,3705,63,   -100,   -150, 300, 6;
    2,3705,4705,63, -20,-100,;
    2,4705,4906,63, -10,-100,;
    2,4906,5106,63, -05,-110,;
    2,5106,5406,63, -10,-115,   ,  1;
    5,4105,1,9,0,63,2,1,8,0,0;

STN64
    1,4705,64,    -20,   -100, 300, 8;
    2,4705,5920,64,235,60,;
    5,4805,1,9,0,64,2,1,8,0,0;
```

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Figure 6-11. MAINRAID Program Data (Sheet 9 of 10)

```
CHAFF STN1
     4,2240,1,7,   165,   171, 292.0,294.0,300,1,1;
     4,2740,1,7,   164,   172, 292.3,294.3,250,1,1;
     4,3240,1,7,   163,   173, 292.6,294.6,200,1,1;
     4,3740,1,7,   162,   174, 292.9,294.9,150,1,1, ;
     4,3810,1,4,   195,   201, 242.0,244.0, 50,0,3,1;
     4,4310,1,4,   193,   203, 241.0,245.0, 20,0,3, ;
     4,4500,1,5,    85,    95,  144,  152, 300,0,0,;
     4,5000,1,5,    87,    97,  148,  157, 250,  1;
     4,5500,1,5,    89,    99,  152,  161, 200, , ;
     4,5501,1,5,    89,    99,  152,  161, 200,  ,  ;

CHAFF STN2
     4,2240,2,7,   172,   180,  296,  298, 300,1,1;
     4,2740,2,7,   171,   181, 296.3,298.3,250,1,1;
     4,3240,2,7,   170,   182, 296.6,299.6,200,1,1;
     4,3740,2,7,   169,   183, 296.9,299.9,150,1,1;
     4,3810,2,4,   195,   202, 237.0,239.0, 50,0,3;
     4,4310,2,4,   194,   203, 236.0,240.0, 20,0,3, ;
```

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Figure 6-11. MAINRAID Program Data (Sheet 10 of 10)

CHAPTER 7

SIMULATION OPERATIOI

7-1. Raid Tape Implementation and Online Simulation.

a. This chapter provides the description of implementation of a previously generated raid tape for training and evaluation of operator skills and equipment performance. This procedure should be performed in the sequence given to ensure correct operation of the simulated raid.

b. Online simulation provides the capability of training an operator while maintaining the system's operational capability. When online simulation is accomplished, battalion configuration CC24 or CC26 must be used. Online simulation should only be used during periods of low activity or when no local radar is used.

7-2. Raid Tape Operation. Raid tape operation is accomplished through KPU or console entries as described in paragraph 7-4. The operator reacts to the simulated targets as if they were real and responds accordingly. Manual or automatic modes of console operation may be used to combat the simulated raid according to the preference of the unit SOP. To accomplish playback of a raid exercise for evaluation of operator responses, the exercise must be recorded as it is run. Data recording of a raid exercise (Chapter 8) is implemented by entering an R on the keyboard in response to the question <SIMULATION READY?>. The raid tape will then wait for the data recording command (CC12) to initiate the exercise.

7-3. Simulation Features. The system simulation function (see figure 7-1) provides random suppression of simulated target reports for a more realistic environment and will randomly take fire units out of action for periods ranging from one minute to one hour. The fire unit will simulate an engagement status in a realistic manner; response times for appropriate status conditions (acknowledge, tracking, firing and effective) will vary randomly and, during an engagement sequence, a fire unit will not go tracking or firing until the engaged track is within the legal range for the fire unit to realistically go to that status. The procedure for performing online simulation is identical to raid tape operation (para 7-4).

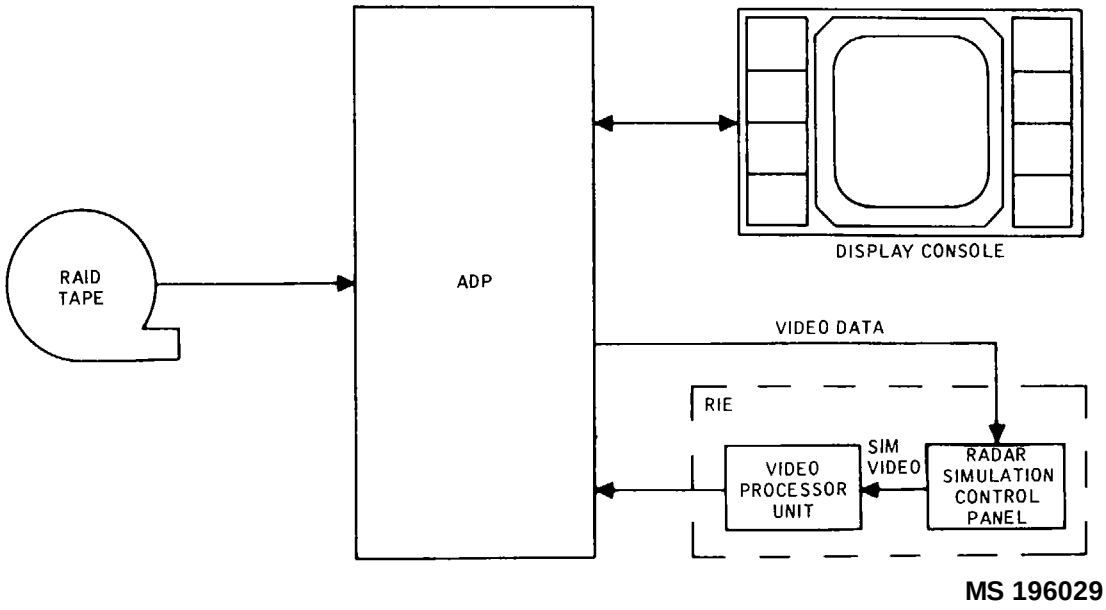

Figure 7-1. Simulation Equipment Interface

7-4. Raid Tape Operation and Online Simulation. Online simulation requires battalion configuration CC24 or CC26 to be loaded prior to performing the following procedures. Figure 7-2 illustrates the procedure for simulation operation.

7-5. Simulated Exercise Error Printout. In the event a wrong or illegal entry is made during initialization of the online simulation function, the KPU will respond with an error message alerting the operator of the error. Table 7-1 lists the possible error outputs, the definitions and what corrective action, if any, must be taken.

7-6. Playback of a Recorded Simulated Raid Exercise.

a. The simulation playback function (see figure 7-3) provides the capability of recreating a raid exercise, as it happened, for evaluation of operator action Data recording of the exercise must have been accomplished to utilize this capability. The playback function reruns the raid tape and inserts the recorded operator actions from the recorded data tape (RDT). During playback, live data must be inhibited from entering the system and the display console AN keyboards are disengaged to prevent operator actions that might influence exercise evaluation.

b. Figure 7-4 provides the necessary procedures to playback a recorded exercise. Whenever MTUs are under manual control (operator), e.g., during testing and raid simulation, and parity errors are detected while trying to successively reread short records (2000 words), or occasionally longer records, perform the following steps to adjust take-up reel tension.

(1) Wind tape forward to EOT.
(2) Rewind tape to BOT.
(3) Space forward to desired record.

Table 7-1. Simulated Exercise Error Printout

	Message	Description
1.	MOUNT RAID TAPE-READY?	MTU is offline or raid tape is not logically mounted. A CC104 command and two consecutive REQ SEND actuations will allow exercise to continue.
2	**FU ENTRY INVALID	The fire unit entered for simulation has not been defined by a CC120 command. Enter fire unit.
3.	RAID ID NOT FOUND	The raid requested is not on tape. Reenter correct raid ID or mount correct tape.
4.	NOT RAID TAPE	Raid tape does not have an EOF.
5.	ILLEGAL BEAMWIDTH	Beamwidth entered is greater than 10.5 degrees; recalculate beamwidth entry.
6.	ILLEGAL PULSEWIDTH	Pulsewidth entered is greater than 10; reenter.
7.	RAID TAPE READ ERROR	Raid tape cannot be read; replace raid tape.
8.	SIM EQ DT	Simulator unit will not respond to computer; check power and control settings.
9.	INCORRECT BOCP ACTIVE	An invalid configuration is being used. Check table 3-9 and reload with correct configuration.
10.	ILLEGAL INTENSITY	Minimum intensity entered is greater than 7; reenter correct intensity.
11.	KPU ENTRY ERROR-RETRY	Keyboard error on entry; reenter correct data.
12.	INITIALIZE LINK NO. nn RESTART EXERCISE	Data link nn was not activated for simulation. If data link messages (simulated) are wanted, initialize link and restart exercise (PRIMARY CPU RESTART). If no simulated messages are to be used; ignore and continue.
13.	RIE/VSU NOT AVAILABLE--RESTART SIM	RIE/VSU power is off. Place online and restart simulation.

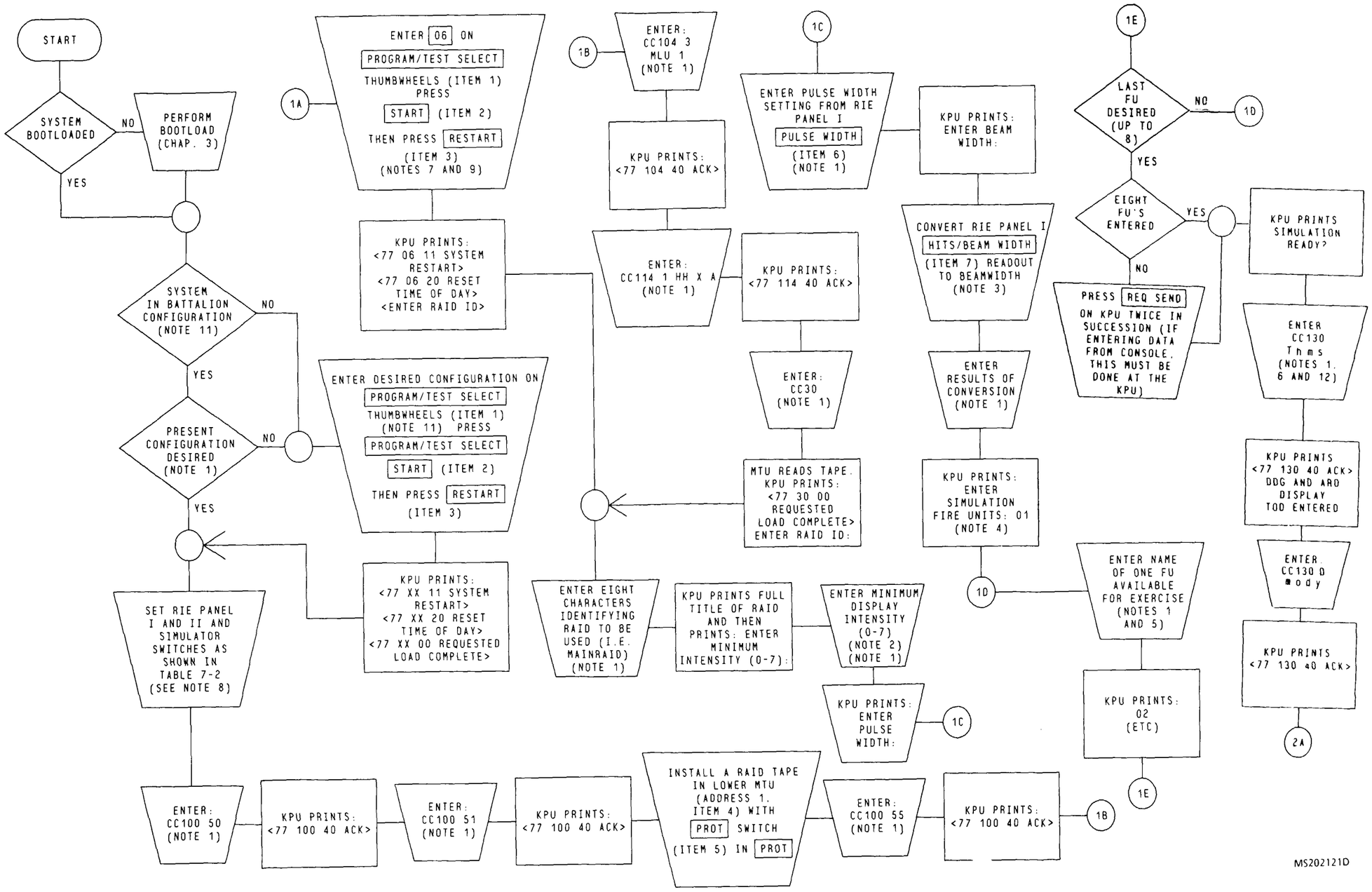

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Figure 7-2. Raid Tape Operation and Online Simulation (Sheet 1 of 3)

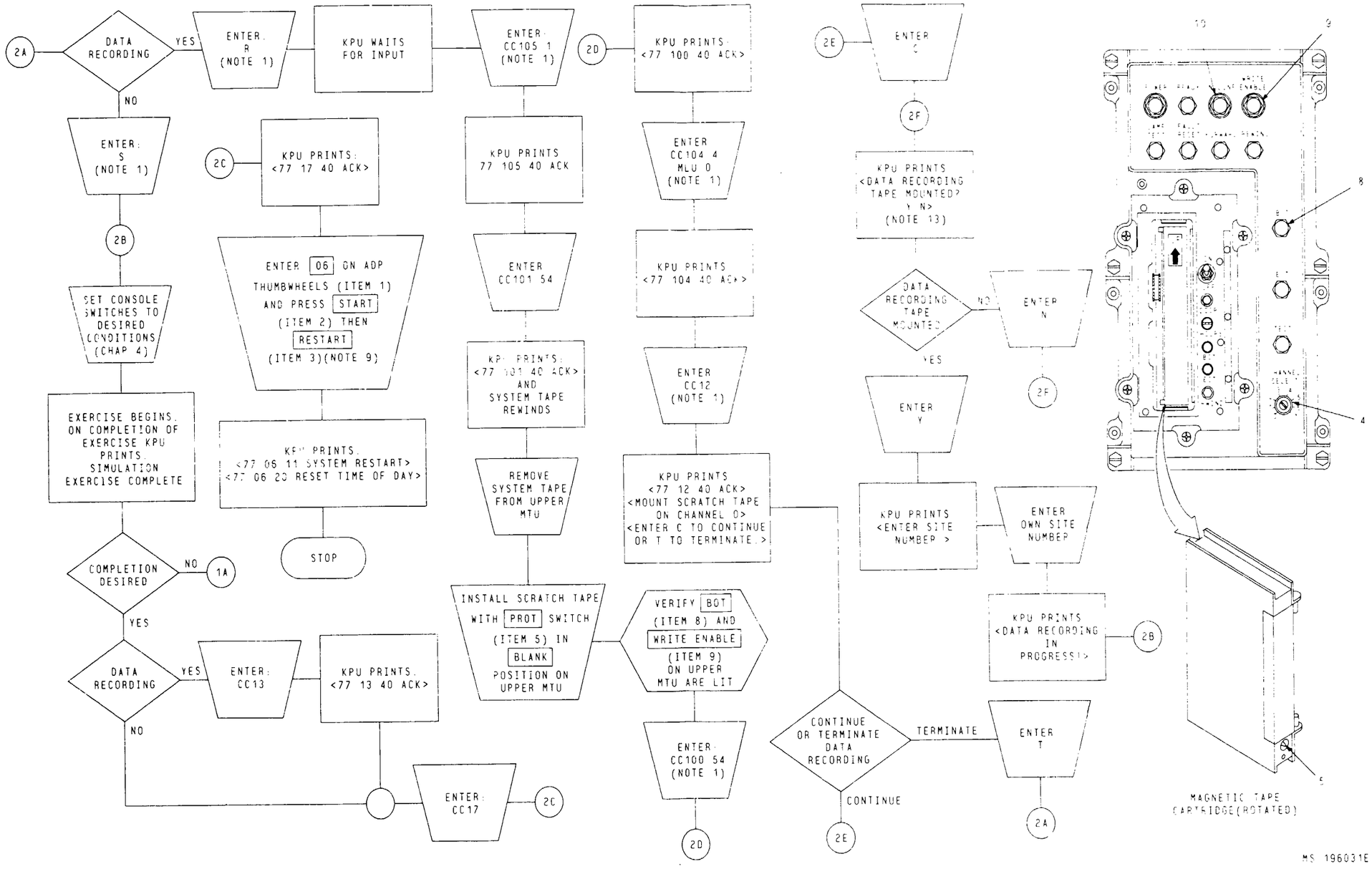
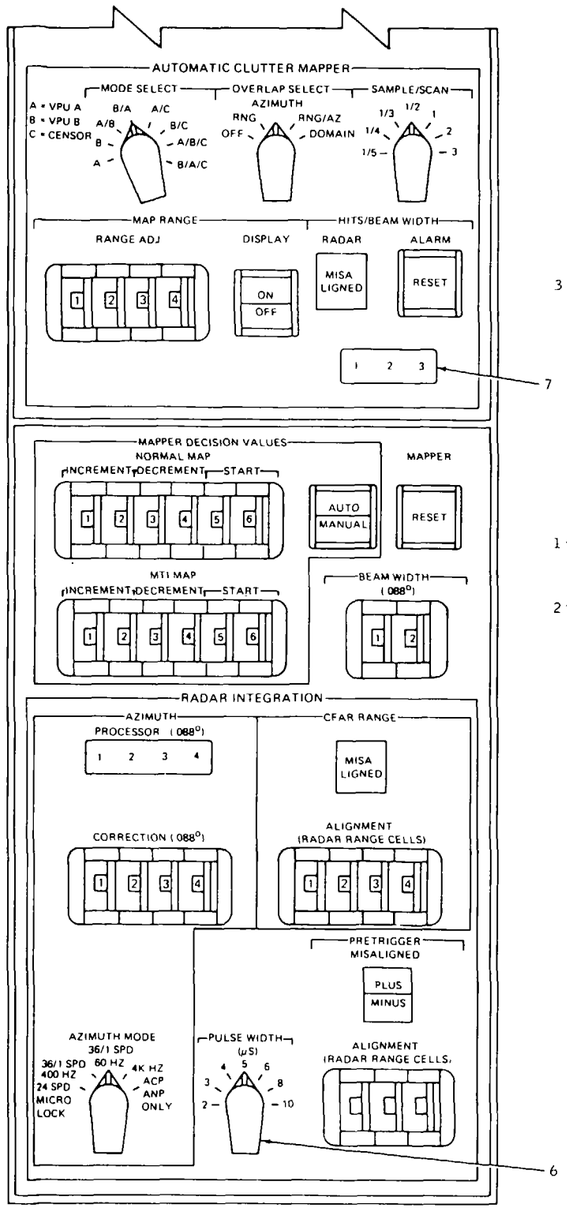
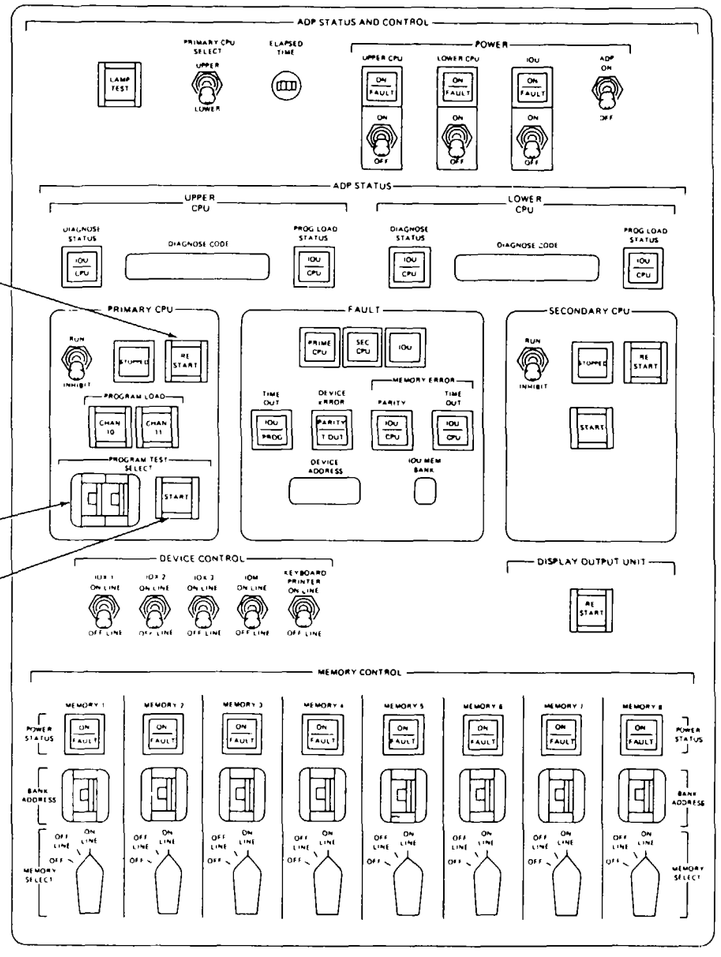


Figure 7-2. Raid Tape Operation and Online Simulation (Sheet 2 of 3)



RIE PANEL I (LOWER HALF)



ADP STATUS AND CONTROL PANEL

NOTES:

1. PROCEDURE IS WRITTEN WITH SYSTEM TAPE INSTALLED IN UPPER MTU (ADDRESS 0, ITEM 4). ENTRIES MAY BE MADE AT EITHER KPU OR CONSOLE, SEE FIGURE 3-5 FOR CONSOLE AND KPU ENTRY PROCEDURE.
2. THIS ENTRY DEFINES THE WEAKEST INTENSITY THAT CAN BE ASSIGNED A SIMULATED TARGET REPORT AT MAXIMUM RANGE OF THE SIMULATED RADAR (NORMALLY IN LIVE/SIM 3 OR GREATER).
3. BEAMWIDTH CONVERSION
   a. CONVERT RIE I PANEL HITS PER BEAMWIDTH READOUT (WHICH IS IN OCTAL) TO DECIMAL:
      BEAMWIDTH = A B C_8
      $(A \times 8^2) + (B \times 8^1) + C \times 8^0)$
      = $(A \times 64) + (B \times 8) + (C \times 1)$
      = DECIMAL EQUIVALENT OF BEAMWIDTH
   b. DIVIDE DECIMAL EQUIVALENT BEAMWIDTH NUMBER BY 11.38 AND ADD 0.7 TO DETERMINE BEAMWIDTH.
4. FIRE UNITS DESIGNATED FOR SIMULATED EXERCISE MUST HAVE BEEN PREVIOUSLY DEFINED (CC120) IF NOT DONE DURING INITIALIZATION, DO SO NOW. LIVE OR SIMULATED FIRE UNIT NAMES MAY BE USED. HOWEVER, IF A LIVE FIRE UNIT IS ENTERED, IT MAY NOT BE ON AN ACTIVE LINK.
5. NAME OF FIRE UNIT IS OBTAINED BY OBSERVING INFORMATION ON DISPLAY CONSOLE ARO. FOR AN ATDL-1 FIRE UNIT THE HOT MISSILE COUNT MUST ALSO BE ENTERED.
   EXAMPLE:
   ATDL-1 FIRE UNIT INPUT 01 BB001 10
6. ALL RAIDS BEGIN AT TIME: 00 00 00 HRS. THIS ENTRY T SPECIFIES BEGIN TIME OF RAID: EXAMPLE: CC130 00 30 00 MEANS THAT THE RAID WILL START 30 MINUTES INTO THE RAID.
7. IF DATA RECORDING HAS TAKEN PLACE, ENTER CC13 AND REPLACE THE TAPE PRIOR TO PERFORMING THE CC06.
8. THE SWITCH SETTINGS IN TABLE 7-2 ARE USED WHEN NO LOCAL RADAR IS AVAILABLE.
9. CC06 RESETS AUTO-INITIATE TO MANUAL. OPERATOR MUST RESET TO AUTO-INITIATE, IF DESIRED.
10. IF EXCESS TIME HAS ELAPSED SINCE ENTERING 'R' , ENTER CC130 AGAIN TO ENSURE STARTING AT THE BEGINNING OF THE RAID.
11. SYSTEM MUST BE CONFIGURED IN A BATTALION CONFIGURATION ALLOWING SIMULATION (REFER TO TABLE 3-9.1).
12. IF AUTOMATIC SIF CODE VALIDATION (CC151) IS ACTIVE, A NEW SYSTEM DATE OR TIME CAN BE INPUT. CC130 WILL AUTOMATICALLY DEACTIVATE THE CC151 PROCESS WHILE THE SYSTEM DATE OR TIME CHANGE IS MADE. CC130 WILL AUTOMATICALLY REACTIVATE CC151 PROCESS IF A VALID IFF TABLE EXISTS FOR THE NEW SYSTEM DATE AND/OR TIME. IF THE CC151 PROCESS IS DEACTIVATED (DUE TO NO VALID IFF TABLE) BY THE NEW DATE/TIME ENTERED, IT WILL REMAIN OFF UNTIL A NEW CC151 IS ACTIVATED WITH A VALID IFF TABLE.
13. IF EITHER OF THE FOLLOWING ERROR MESSAGES: "SET WRITE ENABLE SWITCH" OR "SCRATCH TAPE NOT ON-LINE" IS OUTPUT, CHECK ITEM 4, 9, AND 10 FOR PROPER SETTINGS, ENTER R IN RESPONSE TO <ENTER R TO RETRY OR T TO TERMINATE>, AND ENTER APPROPRIATE RESPONSE AFTER MESSAGE "DATA RECORDING TAPE MOUNTED ? Y/N".
14. [ ] INDICATES EQUIPMENT MARKING.

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Figure 7-2. Raid Tape Operation and Online Simulation (Sheet 3 of 3)

Table 7-2. RIE Panel I and II and Simulator Switch Settings for Raid Tape Operation and Online Simulation

RIE

IFF

INTERROGATION

SELECT CONTROL - LOCAL

VIDEO DISTRIBUTION

VPU INPUT SELECT

CONSOLE/LOCAL - LOCAL
VPU A-NORM
VPU B-NORM

DATA SOURCE SELECT

RADAR - SIM
IFF - SIM

AUTOMATIC CLUTTER MAPPER

MODE SELCT - AC
OVERLAP SELECT - DOMAIN
SAMPLE/SCAN-1

MAP RANGE

RANGE ADJ - 2500

MAPPER DECISION VALUES

NORMAL MAP

INCREMENT - 04
DECREMENT - 04
START - 32
AUTO/MANUAL - AUTO
BEAM WIDTH (088^{o}) - 57

RADAR INTEGRATION

AZIMUTH

AZIMUTH MODE - ACP/ANP ONLY

PRE TRIGGER

ALIGNMENT - 444
PULSE WIDTH - 3

RIE II

RDR/CPU - ON LINE
INTEGRATED MODE - OFF
POWER - ON

RADAR PROCESSING

MEMORY - ON-LINE

QUANTIZERS AND CFAR

VPU A

AUTO/MANUAL - AUTO
HIGH THRESHOLD - 04
LOW THRESHOLD - 04

AUTO CLUTTER MAPPER

THRESHOLD - 40

VPU B

AUTO/MANUAL - AUTO
HIGH THRESHOLD - 04
LOW THRESHOLD - 04

AUTO CLUTTER MAPPER

THRESHOLD - 40
RADAR J-BOX - FI INHIBIT

TARGET PROCESSOR

RADAR

AZ OFFSET (SWEEPS) - 04
BITE - OFF

TARGET DETECTOR

AUTO/A/B - AUTO
MATRIX - 4

JAM DETECTOR

ON/OFF - ON
THRESHOLD - 12

RADAR TGT DECISION VALUES

START - 15
STOP - 1
MIN WIDTH (.088) - 13

RADAR SIMULATOR

POWER - ON
MODE - STD
PFR-HZ - 229

ANTENNA

RATE RPM - 10
DIRECTION - CW
RECVR NOISE VOLTS PEAK - OFF

NOTE
These switch settings are used when no local radar is available.

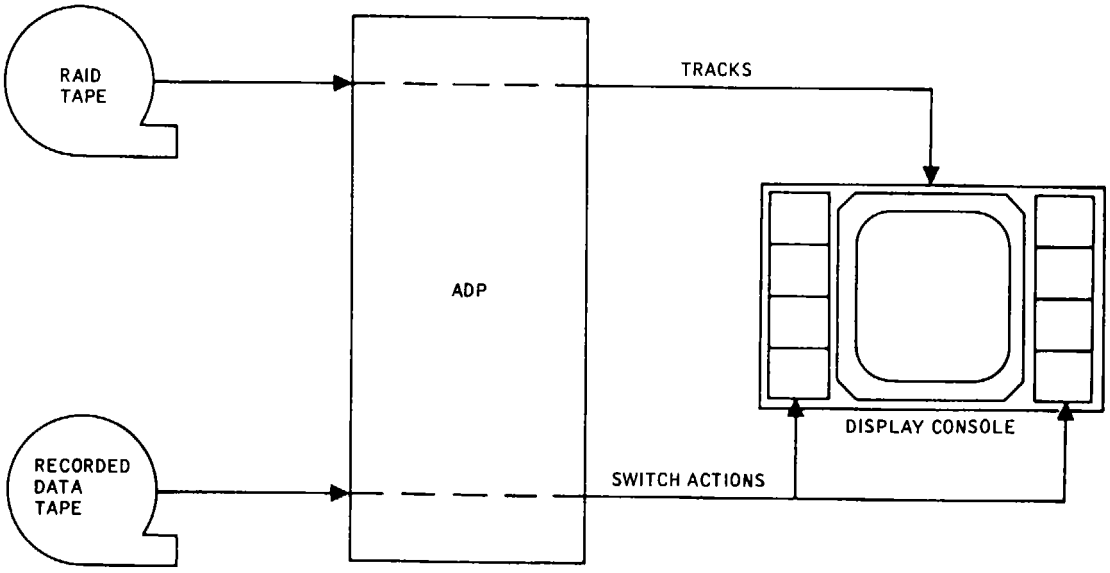

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Figure 7-3. Simulation Playback

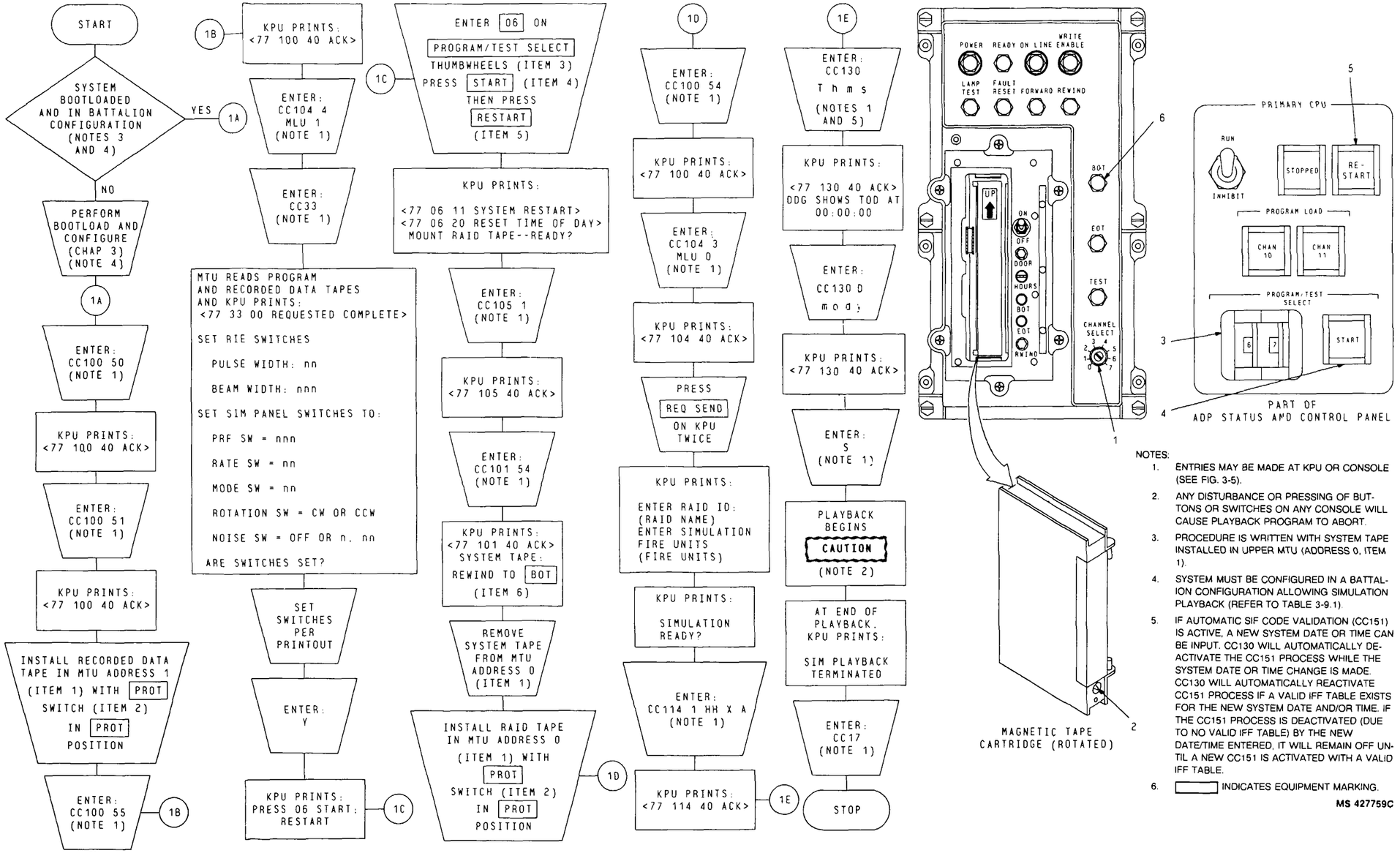

Figure 7-4. Simulation Playback Procedure

CHAPTER 8

DATA REDUCTION AND RECORDING

Section I. DATA RECORDING

8-1. General. Recording of an exercise must be accomplished if full utilization of the simulated raid playback (CC33) or data reduction and printout program (DRPP, CC32) is to be realized. Exercises may be fully simulated (fig. 8-1), fully live (fig. 8-2), or any mixture of simulated and live. All operator actions at all online display consoles, all fire unit and site command messages and change of status messages, alerts, external command entries, as well as the full central track file are recorded and may be evaluated via the use of simulated raid playback (Chapter 7) or Data Reduction and Printout Program. Fully live exercises can only be evaluated using DRPP.

8-2. Data Recording Procedure. In order to record a fully live exercise it is not necessary to use a raid tape; therefore the MTU not having the system tape installed may be used for data recording. However, when recording a simulated or mixture of live and simulated exercise, it is necessary to logically (CC105, CC101) and physically disable the system tape to provide the additional MTU required for generating the recorded data tape (RDT). Figure 8-3 gives the procedures-to initiate and terminate data recording.

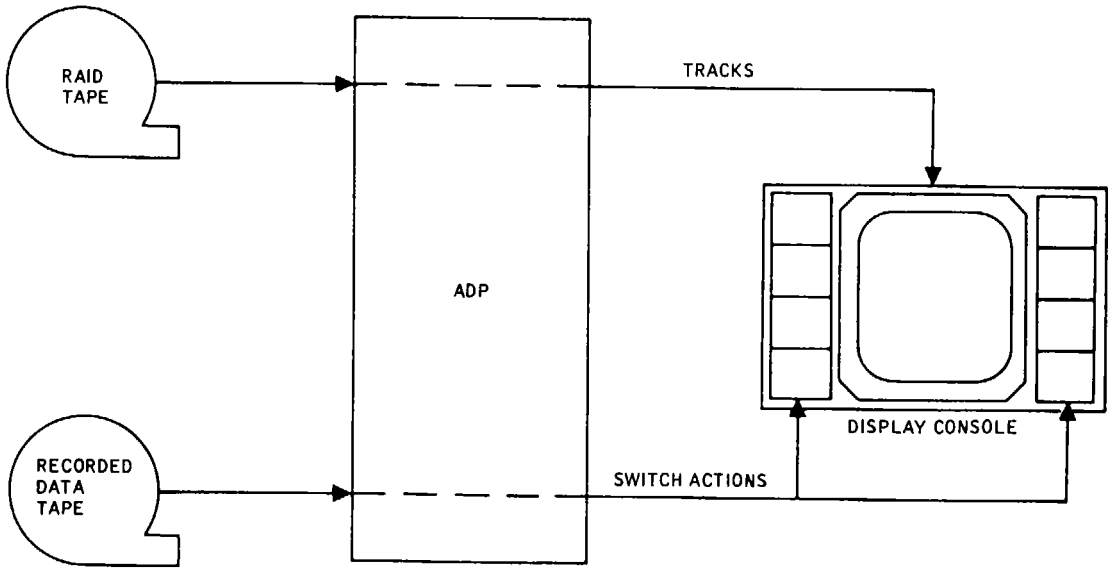

Figure 8-1. Raid Tape Exercise With Data Recording

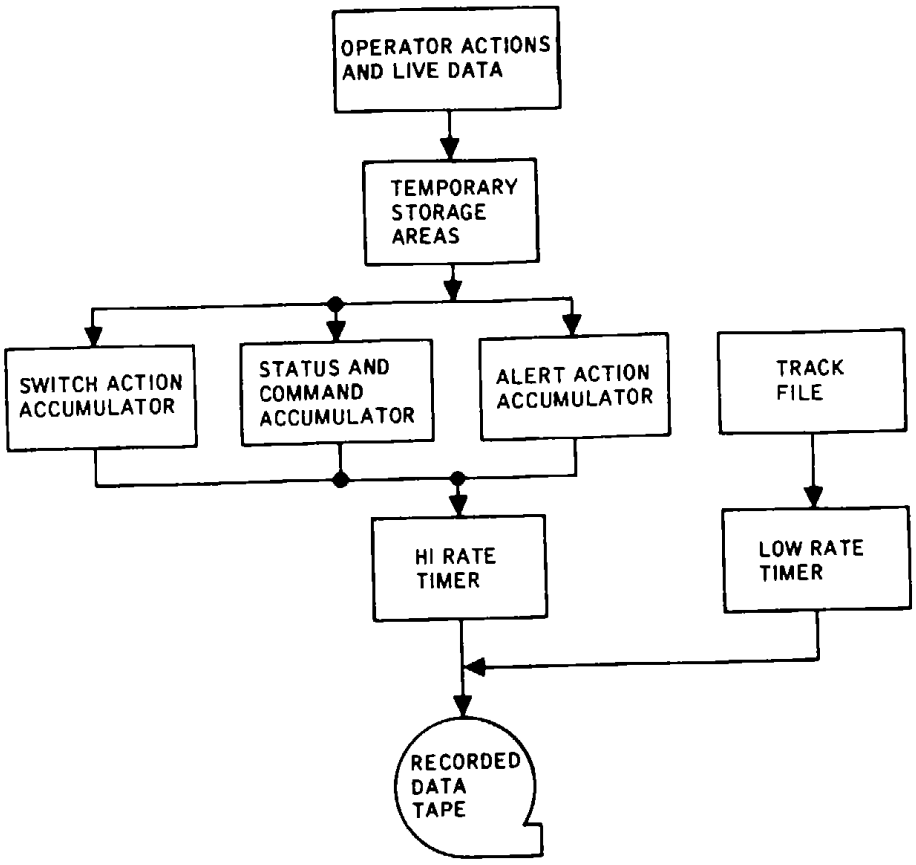

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Figure 8-2. Data Recording

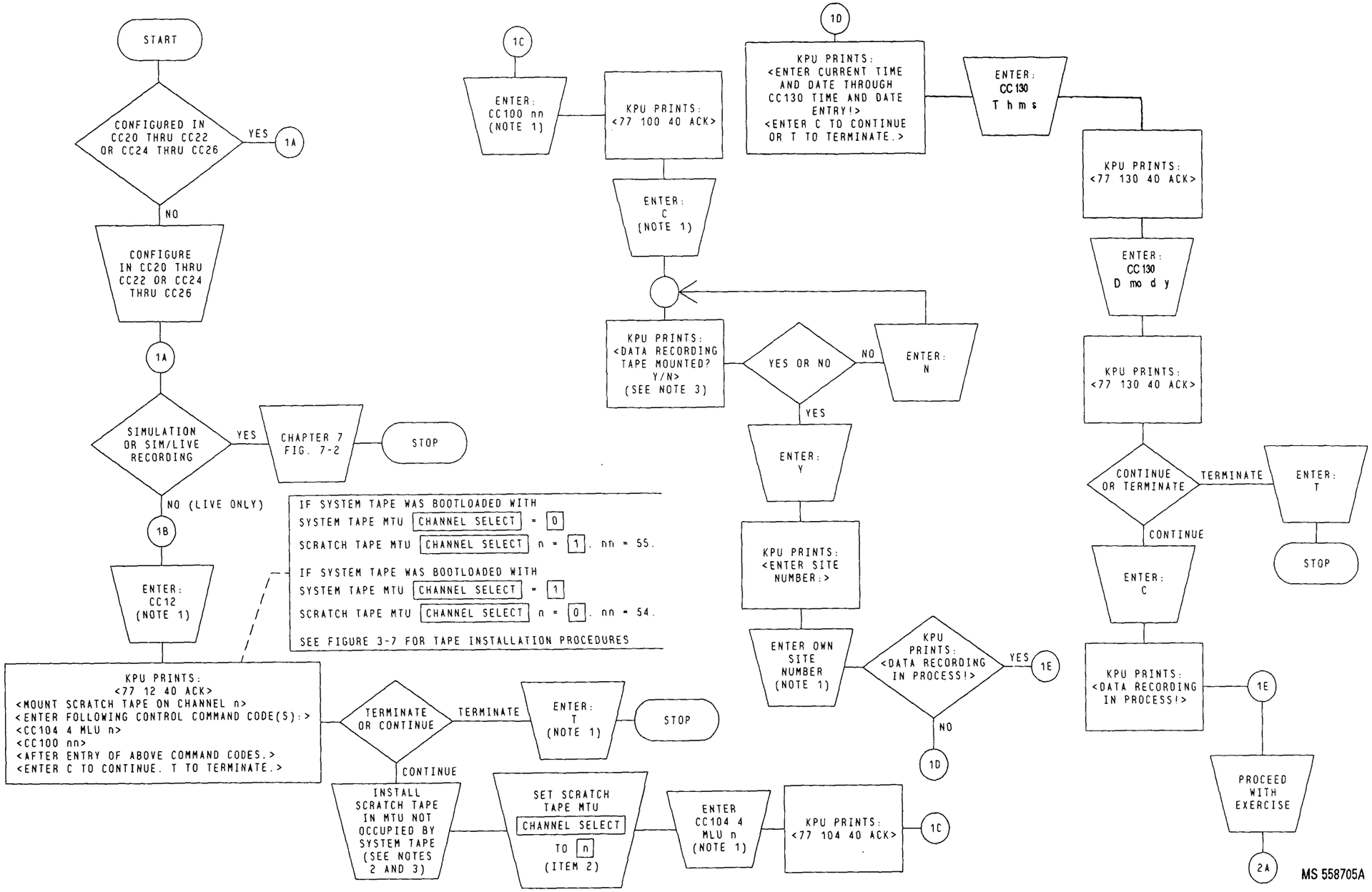
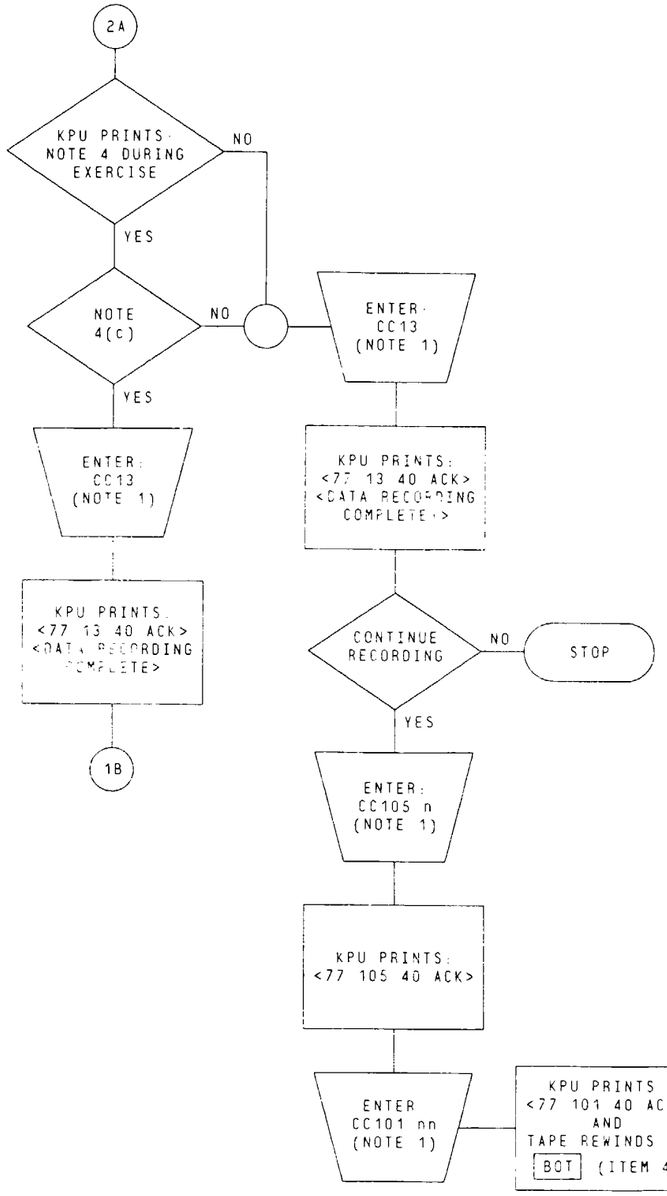
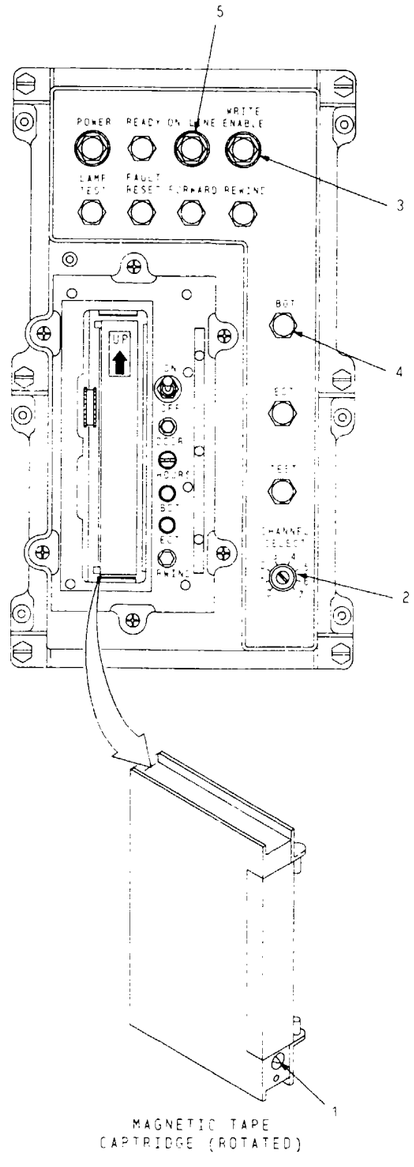


Figure 8-3. Data recording Procedure (Sheet 1 of 2)





NOTES

1 ENTRIES MAY BE MADE FROM EITHER THE KPU OR THE CONSOLE (FIGURE 3-5)

2 THE PROT SWITCH (ITEM 1) ON THE SCRATCH TAPE MUST BE IN THE BLANK POSITION AND THE WRITE ENABLE INDICATOR (ITEM 3) OF THE SCRATCH TAPE MTU MUST BE LIT

3 IF EITHER OF THE FOLLOWING ERROR MESSAGES "SET WRITE ENABLE SWITCH" OR "SCRATCH TAPE NOT ON-LINE" IS OUTPUT CHECK ITEMS 2,3 AND 5 FOR PROPER SETTINGS AND ENTER R IN RESPONSE TO <ENTER R TO RETRY OR T TO TERMINATE > AND ENTER APPROPRIATE RESPONSE AFTER MESSAGE DATA RECORDING TAPE MOUNTED?> Y N

4 (A) <EOT DETECTED WHILE RECORDING - RDT IS FULL>
OR
(B) <EOT DETECTED WHILE WRITING EOF - RDT IS FULL>
OR
(C) <HEADER RECORD INCORRECT - RESTART DATA RECORDING>

5 ⟨ ⟩ INDICATES EQUIPMENT MARKING

MS 202126C

Figure 8-3. Data Recording Procedure (Sheet 2 of 2)

Section II. DATA REDUCTION

8-3. General. Utilization of the data reduction and printout program (DRPP) provides the means to evaluate operator actions during a live or simulated exercise. The DRPP is activated via KPU entries, ax provides up to nine different reports that provide information concerning all aspects of the exercise (fig. 8-4). One of these reports, the flight reference report, available only for simulated exercises and the other eight reports are available for either live or stimulant exercises. Table 8-1 is provided for data reduction requirement during evaluation of sequence event reports.

8-4. DRPP Reports.

NOTE

A recorded data tape or raid tape must be provided to perform DRPP. DRPP can only be loaded from a fresh Bootload.

Upon initialization, the DRPP proceeds to print a report index (fig. 8-5) on the KPU that lists the report available and the code to enter on the KPU to enable the printout of each report. The nine reports available are discussed in the following subparagraphs. For reports except the flight reference report, the user requested to verify the Recorded Data Tape (RDT) site number. Figure 8-6 lists DRPP Option Messages and figure 8-7 lists DRPP Error Messages.

NOTE

Any occurrence of track number AA000 causes a blank to be output in the track number field of all applicable reports. Non-zero, erroneous track numbers cannot be protected against and can appear in the reports.

a. *Initialization and System Status Report (report 1 fig. 8-5).* The initialization and system status information (fig. 8-9 and 8-11) consists of initialization formation report, defended point information, safe corridor information, height finder information, system status information, track limits information, data link information, equipment status information, and simulation parameters information.

b. *Weapon System Summary Report (report 2, fig. 8-5).* The weapon system summary report (fig. 8-12 and 8-12.1) contains a summary of site/fire unit information for all units in the system, and a summary of track information as it relates to each site/fire unit or a particular site/fire unit.

c. Hostile Track Summary Report (report 3, fig 8-5). The hostile track summary report (fig. 8-13) contains information concerning each track assigned exercise.

d. Sequence Event Report (report 4, fig. 8-5). The sequence event report (fig. 8-14 and 8-14.1) gives user a view at the central file (memory) for a select period of time, including switch actions. The operations are noted as activated switches, which indicated by codes. Table 8-1 lists all concerned display console switches and indicators along with the code they appear in the sequence event report. The time period for the sequence event report is requested by ADP, via KPU printouts.

e. Track History Report (report 5, fig. 8-5). The time history report (fig. 8-15 and 8-15.1) gives the use view of all activity concerning all tracks or only specific track requested. When this report is requires the KPU printout requests a determination whether all tracks or a specific track be reduced.

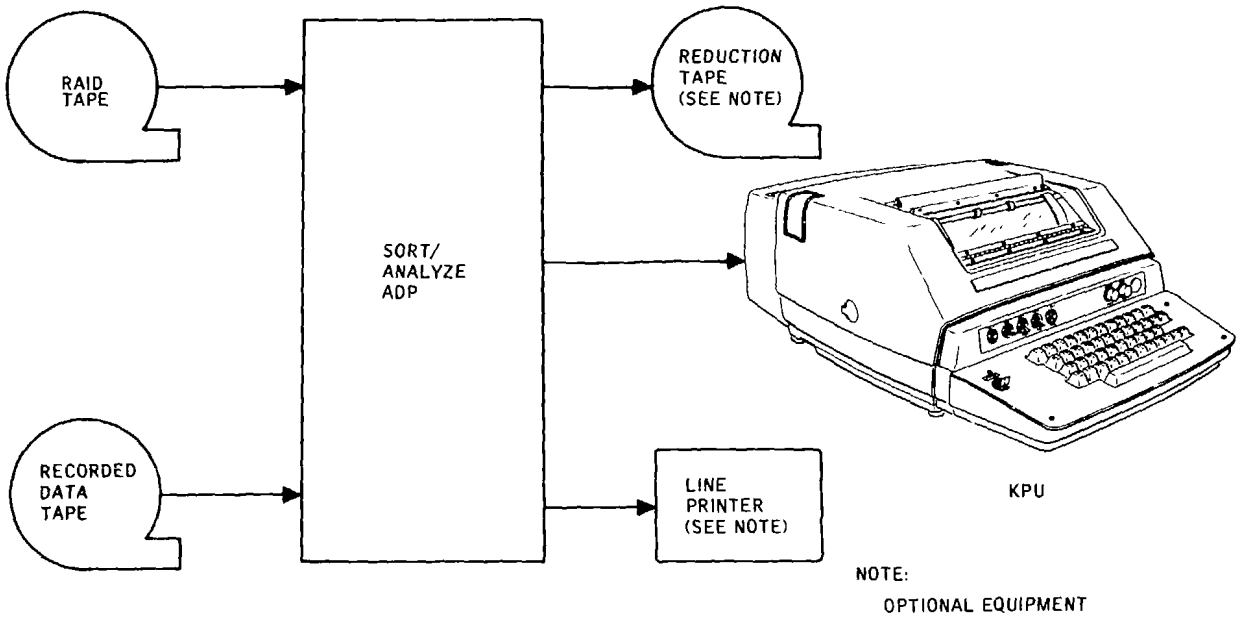
f. Track Assignment Report (report 6, fig. 8-5). The track assignment report (fig. 8-16) gives the user all identifying assignment data for all tracks assigned during the exercise.

g. Raid Summary Report (report 7, fig. 8-5). raid summary report (fig. 8-17) gives the user a summation of the effectiveness of the exercise.

h. Flight Reference Report (report 8, fig. 8-5). flight reference report (fig. 8-18) is the only report requires that the exercise be simulated, as all of information involved must come from the raid tape. This report is divided into three sections: flight profile, chaff control, and ECM capability reports. Each section of the flight reference report is produced on a separate pass of the tape.

i. Intelligence Information Report (report 9, fig. 8-5). The intelligence information report gives the user all available intelligence information recorded during the exercise. Refer to TM 9-1430-652-10-7 for Intelligence Information Report.

8-5. Data Reduction Procedure. The procedure n operating the DRPP program is contained in figure 8-19.



MS 202127

Figure 8-4. Data Reduction

Table 8-1. Display Console Switch and Indicator Codes

Code	Switch or indicator name
1	TRACK DATA DISPLAY ATMS TOS FRIEND/AN
2	TRACK DATA DISPLAY OTHER SERV FRIEND/AN
3	TRACK DATA DISPLAY LOCAL AUTO FRIEND/AN
4	TRACK DATA DISPLAY LOCAL MANUAL FRIEND/AN
5	TRACK DATA DISPLAY ATMS TOS UNK/AN
6	TRACK DATA DISPLAY OTHER SERV UNK/AN
7	TRACK DATA DISPLAY LOCAL AUTO UNK/AN
8	TRACK DATA DISPLAY LOCAL MANUAL HOST/AN
9	TRACK DATA DISPLAY ATMS TOS HOST/AN
10	TRACK DATA DISPLAY OTHER SERV HOST/AN
11	TRACK DATA DISPLAY LOCAL AUTO HOST/AN
12	TRACK DATA DISPLAY LOCAL MANUAL HOST/AN
13	TRACK DATA DISPLAY Q73 RR FRIEND/AN
14	TRACK DATA DISPLAY Q73 RR UNK/AN
15	TRACK DATA DISPLAY Q73 RR HOST/AN
16	FIRE UNIT DATA DISPLAY ALL EM/SEL EM
17	FIRE UNIT DATA DISPLAY ALL AN/SEL AN
18	FIRE UNIT DATA DISPLAYALL FU/ SEL FU

Table 8-1. Display Console switch and indicator Codes -Continued

Code	Switch or indicator name
19	CONSOLE MODE MON/TEST
20	CONSOLE MODE TRACK/TAC
21	TRACK DATA DISPLAY UNK/HOST
22	TASK FUNCTIONS 1/1/4
23	TASK FUNCTIONS 1/2/1/8
24	TASK FUNCTIONS CENTER/OFFSET
25	TASK FUNCTIONS CLEAR ALERT
26	BACKGROUND DATA DISPLAY MAP 1/MAP 2
27	TRACK DATA DISPLAY VEL VECTOR FRIEND
28	TRACK DATA DISPLAY VEL VECTOR UNK
29	TRACK DATA DISPLAY VEL VECTOR HOST
30	TRACK DATA DISPLAY SIM TEST TRACKS
31	TRACK DATA DISPLAY ALT
32	TRACK DATA DISPLAY AN ON
33	TRACK DATA DISPLAY INDV TTG
34	TRACK DATA DISPLAY PAIR LINES
35	TRACK DATA DISPLAY THREAT
36	TRACK DATA DISPLAY SPEED
37	BACKGROUND DATA DISPLAY JAM STROBE
38	BACKGROUND DATA DISPLAY VOLUME
39	BACKGROUND DATA DISPLAY FIXED POINTS SITES
40	TASK SELECTIONS TARGET PROC PARAM
41	TASK SELECTIONS PPI DATA ENTRY
42	TASK SELECTIONS (spare)
43	TASK SELECTIONS STATUS BOARD DATA
44	TASK SELECTIONS AIR DEF OPNS
45	TASK SELECTIONS IDENT-- IFF
46	TASK SELECTIONS VIDEO SWITCH
47	TASK SELECTIONS Q73 REMOTE RADAR
48	TASK SELECTIONS (spare)
49	TASK SELECTIONS ASSIGN
50	TASK SELECTIONS ADL DATA
51	TASK SELECTIONS TRACK DATA
52	When 40 activated, TASK FUNCTIONS INTERROGATE MODE When 41 activated, TASK FUNCTIONS CLEAR INDV VECTOR

Table 8-1. Display Console Switch and Indicator Codes -Continued

Code	Switch or indicator name
52 (Cont)	When 42 activated, TASK FUNCTIONS (spare)
	When 43 activated, TASK FUNCTIONS (spare)
	When 44 activated, TASK FUNCTIONS ACCEPT RECMD ASSIGI
	When 45 activated, TASK FUNCTIONS TBM
	When 46 activated, TASK FUNCTIONS ECCM 4
	When 47 activated, TASK FUNCTIONS (spare)
	When 48 activated, TASK FUNCTIONS (spare)
	When 49 activated, TASK FUNCTIONS CLEAR HOLD FIRE
	When 50 activated, TASK FUNCTIONS (spare)
	When 51 activated, TASK FUNCTIONS ERASE JAM STROBE
53	When 40 activated, TASK FUNCTIONS (spare)
	When 41 activated, TASK FUNCTIONS DESIG EM BY BN
	When 42 activated, TASK FUNCTIONS (spare)
	When 43 activated, TASK FUNCTIONS MSLS EXPENDED
	When 44 activated, TASK FUNCTIONS ENGAGE
	When 45 activated, TASK FUNCTIONS (spare)
	When 46 activated, TASK FUNCTIONS ECCM 3
	When 47 activated, TASK FUNCTIONS LINK 13
	When 48 activated, TASK FUNCTIONS (spare)
	When 49 activated, TASK FUNCTIONS (spare)
	When 50 activated, TASK FUNCTIONS (spare)
	When 51 activated, TASK FUNCTIONS ENTER JAM STROBE
54	When 40 activated, TASK FUNCTIONS RETURN TO AUTO
	When 41 activated, TASK FUNCTIONS DESIG AN BY BN
	When 42 activated, TASK FUNCTIONS (spare)
	When 43 activated, TASK FUNCTIONS (spare)
	When 44 activated, TASK FUNCTIONS HOST
	When 45 activated, TASK FUNCTIONS ENTER IFF CODE
	When 46 activated, TASK FUNCTIONS GATED MTI VIDEO
	When 47 activated, TASK FUNCTIONS (spare)
	When 48 activated, TASK FUNCTIONS (spare)
	When 49 activated, TASK FUNCTIONS (spare)
	When 50 activated, TASK FUNCTIONS DROP PTR
	When 51 activated, TASK FUNCTIONS AUTO--RAMIT
55	When 40 activated, TASK FUNCTIONS CENSOR
	When 41 activated, TASK FUNCTIONS DESIG FU BY BN
	When 42 activated, TASK FUNCTIONS (spare)

Table 8-1. Display Console Switch and Indicator Codes - Continued

Code	Switch or indicator name
55	When 43 activated, TASK FUNCTIONS (spare)
(cont)	When 44 activated, TASK FUNCTIONS UNK
	When 45 activated, TASK FUNCTIONS MODE 4 CHAL
	When 46 activated, TASK FUNCTIONS MTI VIDEO
	When 47 activated, TASK FUNCTIONS LINK 12
	When 48 activated, TASK FUNCTIONS (spare)
	When 49 activated, TASK FUNCTIONS (spare)
	When 50 activated, TASK FUNCTIONS CMD CODE
	When 51 activated, TASK FUNCTIONS RAID SIZE MANY
56	When 40 activated, TASK FUNCTIONS PROC MTI
	When 41 activated, TASK FUNCTIONS DESIG ENG BNDRY
	When 42 activated, TASK FUNCTIONS (spare)
	When 43 activated, TASK FUNCTIONS (spare)
	When 44 activated, TASK FUNCTIONS FRIEND
	When 45 activated, TASK FUNCTIONS INTERROGATE
	When 46 activated, TASK FUNCTIONS NORMAL VIDEO
	When 47 activated, TASK FUNCTIONS LINK 11
	When 48 activated, TASK FUNCTIONS (spare)
	When 49 activated, TASK FUNCTIONS CANCEL SEC ASSIGN
	When 50 activated, TASK FUNCTIONS ACTION MANAGE CODE
	When 51 activated, TASK FUNCTIONS RAID SIZE FEW
57	When 40 activated, TASK FUNCTIONS PROC NORMAL
	When 41 activated, TASK FUNCTIONS ENTER SPEED LIMITS
	When 42 activated, TASK FUNCTIONS (spare)
	When 43 activated, TASK FUNCTIONS (spare)
	When 44 activated, TASK FUNCTIONS INTERROGATE
	When 45 activated, TASK FUNCTIONS IFF MODE DESIG
	When 46 activated, TASK FUNCTIONS DESIG MAP 2
	When 47 activated, TASK FUNCTIONS LINK 10
	When 48 activated, TASK FUNCTIONS (spare)
	When 49 activated, TASK FUNCTIONS CLEAR STATUS
	When 50 activated, TASK FUNCTIONS COMPLI CODE
	When 51 activated, TASK FUNCTIONS RAID SIZE SINGLE
58	When 40 activated, TASK FUNCTIONS G SENSITIVITY
	When 41 activated, TASK FUNCTIONS DESIG INDV VECTOR
	When 42 activated, TASK FUNCTIONS (spare)
	When 43 activated, TASK FUNCTIONS MSL COUNT COLD

Table 8-1. Display Console Switch and Indicator Codes -Continued

Code	Switch or indicator name
58 (Cont)	When 44 activated, TASK FUNCTIONS DROP PTR
	When 45 activated, TASK FUNCTIONS SIM-TEST IDENT
	When 46 activated, TASK FUNCTIONS ECCM 2
	When 47 activated, TASK FUNCTIONS SUBORD FUS
	When 48 activated, TASK FUNCTIONS (spare)
	When 49 activated, TASK FUNCTIONS CLEAR EFFECT
	When 50 activated, TASK FUNCTIONS (Spare)
	When 51 activated, TASK FUNCTIONS SITE ADRS - NAME
59	When 40 activated, TASK FUNCTIONS (spare)
	When 41 activated, TASK FUNCTIONS DESIGN INDV EM
	When 42 activated, TASK FUNCTIONS (spare)
	When 43 activated, TASK FUNCTIONS MSL COUNT HOT
	When 44 activated, TASK FUNCTIONS SEND PTR
	When 45 activated, TASK FUNCTIONS IDENT AMPLI-CT-PLT
	When 46 activated, TASK FUNCTIONS ECCM 1
	When 47 activated, TASK FUNCTIONS LINK 7
	When 48 activated, TASK FUNCTIONS (spare)
	When 49 activated, TASK FUNCTIONS ENGAGE RIPPLE
	When 50 activated, TASK FUNCTIONS (Spare)
	When 51 activated, TASK FUNCTIONS SITE INIT - IDENT
60	When 40 activated, TASK FUNCTIONS (spare)
	When 41 activated, TASK FUNCTIONS DESIG INDV AN
	When 42 activated, TASK FUNCTIONS (spare)
	When 43 activated, TASK FUNCTIONS FU STATUS
	When 44 activated, TASK FUNCTIONS ACTION MANAGE CODE
	When 45 activated, TASK FUNCTIONS HOST
	When 46 activated, TASK FUNCTIONS DESIG VPU-B INPUT
	When 47 activated, TASK FUNCTIONS LINK 6
	When 48 activated, TASK FUNCTIONS (spare)
	When 49 activated, TASK FUNCTIONS ENGAGE
	When 50 activated, TASK FUNCTIONS SEND PTR
	When 51 activated, TASK FUNCTIONS POSN ENTRY
61	When 40 activated, TASK FUNCTIONS GATE COMPLETE
	When 41 activated, TASK FUNCTIONS DESIG INDV FU
	When 42 activated, TASK FUNCTIONS (spare)
	When 43 activated, TASK FUNCTIONS FU ALERT STATUS
	When 44 activated, TASK FUNCTIONS COMPLI CODE

Table 8-1. Display Console Switch and Indicator Codes -Continued

Code	Switch or indicator name
61 (Cont)	When 45 activated, TASK FUNCTIONS UNK ASSUMD ENEMY
	When 46 activated, TASK FUNCTIONS DESIG VPU-A INPUT
	When 47 activated, TASK FUNCTIONS LINK 5
	When 48 activated, TASK FUNCTIONS (spare)
	When 49 activated, TASK FUNCTIONS BN ASSIGN
	When 50 activated, TASK FUNCTIONS (spare)
	When 51 activated, TASK FUNCTIONS TRACK VEL - HDG
62	When 40 activated, TASK FUNCTIONS STOP AZ - RANGE
	When 41 activated, TASK FUNCTIONS ENTER THREAT LIMIT
	When 42 activated, TASK FUNCTIONS (spare)
	When 43 activated, TASK FUNCTIONS (spare)
	When 44 activated, TASK FUNCTIONS CMD CODE
	When 45 activated, TASK FUNCTIONS UNK
	When 46 activated, TASK FUNCTIONS DESIG SPCL VIDEO
	When 47 activated, TASK FUNCTIONS LINK 4
	When 48 activated, TASK FUNCTIONS (spare)
	When 49 activated, TASK FUNCTIONS (spare)
	When 50 activated, TASK FUNCTIONS ADL ADRS
	When 51 activated, TASK FUNCTIONS TRACK HEIGHT
63	When 40 activated, TASK FUNCTIONS START AZ - RANGE
	When 41 activated, TASK FUNCTIONS ENTER ALT LIMITS
	When 42 activated, TASK FUNCTIONS (spare)
	When 43 activated, TASK FUNCTIONS ASSIGN ROW NUMBER
	When 44 activated, TASK FUNCTIONS MODE 4 CHAL
	When 45 activated, TASK FUNCTIONS FRIEND
	When 46 activated, TASK FUNCTIONS DESIG MAP 1
	When 47 activated, TASK FUNCTIONS LINK 3
	When 48 activated, TASK FUNCTIONS (spare)
	When 49 activated, TASK FUNCTIONS ACCEPT RECMD ASSIGN
	When 50 activated, TASK FUNCTIONS WEAPON TYPE
	When 51 activated, TASK FUNCTIONS (Spare)
64	ARO DATA SELECTIONS CONTRL CMD ENTRY
65	VIDEO SELECTIONS SIM-TEST
66	VIDEO SELECTIONS A SECT/M SECT
67	VIDEO SELECTIONS PROC
68	VIDEO SELECTIONS IFF-SIF
69	VIDEO SELECTIONS SPCL

Table 8-1. Display Console Switch and Indicator Codes -Continued

Code	Switch or indicator name
70	VIDEO SELECTIONS NORM
71	Code not used
72	FAULTS
73	FAULTS SWEEP LOST
74	FAULTS CONSLE PROC FAULT
75	ARO DATA SELECTIONS JAM BY REPORT SOURCE
76	ARO DATA SELECTIONS FU BY STAT
77	ARO DATA SELECTIONS FU BY BN
78	ARO DATA SELECTIONS ALL FU
79	ARO DATA SELECTIONS FILTER DATA
80	BACKGROUND DATA DISPLAY 10 MI/20 KM
81	BACKGROUND DATA DISPLAY ANGLE MARKS
82	CONSOLE MODE COMP VIDEO ON
83	SYSTEM MODE HOLD FIRE AUTO/MANUAL
84	SYSTEM MODE ASSIGN AUTO/MANUAL
85	SYSTEM MODE CEASE FIRE AUTO/MANUAL
86	SYSTEM MODE INITIATE AUTO/MANUAL
87	SYSTEM MODE TRACK RADAR/BECON
88	SYSTEM MODE INTRG AUTO/MANUAL
89	FIRE UNIT DATA DISPLAY EM BY BN
90	FIRE UNIT DATA DISPLAY AN BY BN
91	FIRE UNIT DATA DISPLAY FU BY BN
92	FIRE UNIT DATA DISPLAY (spare)
93	FIRE UNIT DATA DISPLAY (spare)
94	FIRE UNIT DATA DISPLAY (spare)
95	FIRE UNIT DATA DISPLAY INDV EM
96	FIRE UNIT DATA DISPLAY INDV AN
97	FIRE UNIT DATA DISPLAY INDV FU
98	TERMN COMMANDS CEASE FIRE
99	TERMN COMMANDS HOLD FIRE
100	TERMN COMMANDS CEASE ENGMT
101	TASK FUNCTIONS DESIG OFFSET
102	TASK FUNCTIONS DROP
103	TASK FUNCTIONS POSN HOOK
104	TASK FUNCTIONS DEHOOK
105	TASK FUNCTIONS NUMBER HOOK
106	TASK FUNCTIONS SEQ HOOK

Table 8-1.Display Console Switch and Indicator Codes Continued

Code	Switch or indicator name
107	TASK FUNCTIONS UPDATE
108	TASK FUNCTIONS INITIATE
109	CENTER TAB
110	Code not used
111	ALERTS ATTN REQD
112	ALERTS ILLEGL ACTION
113	ALERTS ACTION REQD
114	ALERTS ILLEGL PAIR
115	ALERTS TRACK LIMIT
116	ALERTS SIM-TEST TRACKS

```
DATA REDUCTION PROGRAM OPERATING

REPORT INDEX                                                    (SEE NOTE 1)

1 - INITIALIZATION AND SYSTEM STATUS REPORT
2 - WEAPON SYSTEM SUMMARY REPORT                                (SEE NOTE 2)
3 - HOSTILE TRACK SUMMARY REPORT
4 - SEQUENCE EVENT REPORT
5 - TRACK HISTORY REPORT
6 - TRACK ASSIGNMENT REPORT
7 - RAID SUMMARY REPORT                                         (SEE NOTE 4)
8 - FLIGHT REFERENCE REPORT                                     (SEE NOTE 3)
9 - INTELLIGENCE INFORMATION REPORT

TO TERMINATE DATA REDUCTION TYPE T
PLEASE RESPOND WITH THE NUMBER OF THE REPORT DESIRED
N/A
DO YOU WANT GEOREF OR STEREO (G/S)?                             (SEE NOTE 5)
A
WHERE DO YOU WANT REPORT OUTPUT?  KPU/PNT/TAP
AAA                                                             (SEE NOTE 6)

VERIFY RECORDED DATA TAPE SITE NO.
RECORDED SITE NO. IS XXXXXXXX
ENTER C TO CONTINUE OR R TO REMOUNT
A
                                A:OPTION R
R
MOUNT RECORDING TAPE ON LOGICAL UNIT 4. READY?  Y/N
A                                                               (SEE NOTE 7)
VERIFY RECORDED DATA TAPE SITE NO.
RECORDED SITE NO. IS XXXXXXXX
ENTER C TO CONTINUE OR R TO REMOUNT
C
                                A:OPTION C
DO YOU WANT THE REPORT INDEX AGAIN?  Y/N                        (SEE NOTE 1)
N
TO TERMINATE DATA REDUCTION TYPE T
PLEASE RESPOND WITH THE NUMBER OF THE REPORT DESIRED
T
DATA REDUCTION TERMINATED
                                                                MS196038D
```

Figure 8-5. DRPP Report Index (Sheet 1 of 2)

NOTES:

1. WHEN DRPP HAS SUCCESSFULLY COMPLETED OUTPUTTING DATA FOR THE SELECTED REPORT, THE OUTPUT IS TERMINATED WITH THE FOLLOWING MESSAGE: DO YOU NEED REPORT INDEX AGAIN? Y/N THE OPERATOR SHOULD RESPOND WITH Y (YES) OR N (NO). A Y (YES) RESPONSE OUTPUTS MENU STARTING AT REPORT INDEX. A N (NO) RESPONSE OUTPUTS STARTING AT "TO TERMINATE...".
2. THESE REPORTS CONTAIN AIR TRACK AND SITE/FIRE UNIT DATA THAT CAN BE CROSS REFERENCED BY TIME (SINCE ALL EVENTS ARE TIME SEQUENCED IN EACH INDIVIDUAL REPORT)
3. THIS REPORT IS USED TO PROCESS ONLY RAID TAPES CONTAINING SIMULATED EXERCISES. THIS REPORT IS THE ONLY REPORT THAT IS NOT SELECTABLE WHEN PROCESSING A RECORDED DATA TAPE.
4. VALID FOR BATTALION RECORDED DATA TAPE ONLY.
5. THIS MESSAGE IS OUTPUT IN RESPONSE TO 2, 4, OR 5 KPU INPUT RESPONSE TO THE REQUEST FOR A REPORT PROMPT. A 'G' ENTRY CAUSES THE REQUESTED REPORT TO SUBSTITUTE GEOREF COORDINATES FOR STEREO. AN 'S' INDICATES NORMAL PROCESSING. ANY OTHER INPUT CAUSES THE PROMPT TO REPEAT.
6. OUTPUT TO KPU, LINE PRINTER, OR TAPE MOUNTED ON LOGICAL UNIT 5.
7. A Y WILL READ NEW LEADER RECORD AND REQUEST VERIFICATION. A N WILL RETURN TO "DO YOU WANT THE REPORT INDEX AGAIN" MESSAGE.

MS013195A

Figure 8-5. DRPP Report Index (Sheet 2 of 2)

WEAPON SYSTEM SUMMARY REPORT

```
DO YOU WANT TRACK INFO FOR ALL WEAPON SYSTEMS ? Y/N
A                                                          (SEE NOTE 1)
ENTER WEAPON SYSTEM A1 TRACK NUMBER (IN FORM AANNN) OR T TO TERMINATE
AANNN/A                                                    (SEE NOTES 2 AND 10)
```

SEQUENCE EVENT REPORT

```
DO YOU WANT INFO FOR TENTATIVE TRACKS? Y/N
A
ENTER REPORT START TIME, END TIME (IN FORM HHMM, HHMM)
HHMM, HHMM
```

TRACK HISTORY REPORT

```
DO YOU WANT LIST OF ALL TRACKS? Y/N                         (SEE NOTE 3)
A
CONFIGURATION:  XXXXX                                                PAGE XXXX
DATE: MM/DD/YY  TIME: HH:MM:SS  SITE: XXXXXXXX  RAID TAPE: XXXXXXXX (SEE NOTE 4)
A1TN   TBTN    NTN    A1TN   TBTN    NTN    A1TN   TBTN      NTN
AANNN  NNNN   AANNN  AANNN  NNNN   AANNN  AANNN  NNNN     AANNN
DO YOU NEED ALL TRACKS?  Y/N                               (SEE NOTE 5)
A
ENTER TRACK NUMBER (IN FORM AANNN/N  AANNN/NNNN)  OR T TO TERMINATE
AANNN/NNNN/N AANNN/A                                       (SEE NOTES 2 AND 10)
```

FLIGHT REFERENCE REPORT

```
MOUNT RAID TAPE ON LOGICAL UNIT 3
READY?  Y/N
A                                                          (SEE NOTE 6)
WANT A REPORT FOR ALL RAIDS ON TAPE?  (Y/N)                (SEE NOTE 7)
A
ENTER RAID ID (AS ON TAPE)                                 (SEE NOTE 8)
ENTER DONE WHEN JOB FINISHED
ENTER LIST IF RAID IDENTS WANTED FROM TAPE
AAAAAAAA
REQUESTED ID NOT FOUND...LIST OPTION RECOMMENDED...        (SEE NOTE 9)
```

INTELLIGENCE INFORMATION REPORT (SEE NOTE 11)

NOTES

1. A Y (YES) RESPONSE WILL BY-PASS THE NEXT MESSAGE AND OUTPUT DATA ON ALL WEAPON SYSTEMS.
2. A T TO TERMINATE WILL RETURN TO OUTPUT THE "DO YOU WANT REPORT INDEX..." MESSAGE.
3. A N (NO) RESPONSE WILL SKIP THE OUTPUTTING OF THE A1TN TBTN HEADERS AND PROCEED TO THE "DO YOU NEED ALL TRACKS..." MESSAGE.
4. THE LIST OF TRACKS WILL BE OUTPUT BOTH TO KPU AND ANY OTHER DEVICE TO WHICH THE REPORT IS OUTPUT.
5. A Y (YES) RESPONSE WILL BY-PASS THE NEXT MESSAGE AND OUTPUT DATA ON ALL TRACKS.
6. KPU PRINTS THIS MESSAGE IF RAID TAPE IS NOT MOUNTED UPON SELECTION OF REPORT 8.
7. A Y (YES) WILL BY-PASS ANY FURTHER MESSAGES AND OUTPUT DATA ON ALL RAIDS.
8. A LIST RESPONSE WILL OUTPUT THE RAID TAPE LABEL FOR ALL RAIDS ON THE TAPES. A DONE RESPONSE WILL OUTPUT "DO YOU WANT REPORT INDEX..." MESSAGE. A VALID RAID ID ENTRY WILL OUTPUT THE REPORT AND OUTPUT THIS SERIES OF MESSAGES FOR THE NEXT RAID OR T WILL TERMINATE THIS REPORT.
9. THIS MESSAGE IS IN RESPONSE TO AN INVALID RAID ID. AFTER OUTPUTTING THIS MESSAGE THE PREVIOUS SERIES OF THREE MESSAGES WILL BE OUTPUT.
10. A NUMBER ENTRY OF "CCNNN" IS INVALID SINCE THE SYSTEM TREATS IT AS A CC COMMAND.
11. REFER TO TM 9-1430-652-10-7.

MS 558807B

Figure 8-6. Data Reduction Option Messages

```
MOUNT RAID TAPE ON LOGICAL UNIT 3.  READY? (Y/N)
A                                                    (SEE NOTE 1)

MOUNT RECORDING TAPE ON LOGICAL UNIT 4.  READY? (Y/N)
A                                                    (SEE NOTE 2)

MOUNT REDUCTION TAPE ON LOGICAL UNIT 5.  READY? (Y/N)
A                                                    (SEE NOTE 3)

PUT PRINTER ON LINE.  READY? (Y/N)
A                                                    (SEE NOTE 4)

*** TAPE ERROR ON RECORD XXX ***
ENTER C TO CONTINUE OR T TO TERMINATE
A                                                    (SEE NOTE 5)

*** TAPE ERROR ON RECORD XXX ***
DO YOU WANT THE REPORT INDEX AGAIN? Y/N              (SEE NOTE 6)
A                                                    (SEE NOTE 7)

BUFFER CAPACITY EXCEEDED                             (SEE NOTE 8)
SEQ NUMBERS ARE RESET TO 1

BUFFER CAPACITY EXCEEDED                             (SEE NOTE 9)
ONLY MAX. NO. OF TRACKS ARE OUTPUT ON "ALL" OPTION

BD CONF                                              (SEE NOTE 10)
DO YOU WANT THE REPORT INDEX AGAIN? Y/N
A

TRACK NOT FOUND                                      (SEE NOTE 11)
DO YOU WANT TRACK HISTORY AGAIN? Y/N
A
```

MS 202151A

Figure 8-7. Data Reduction Error Messages (Sheet 1 of 2)

NOTES:

1. THE PROBLEM OF NOT MOUNTING THE RAID TAPE DURING FLIGHT REFERENCE REPORT DETECTED. A Y(YES) RESPONSE WILL RETRY. AN N(NO) RESPONSE WILL OUTPUT "DO YOU WANT REPORT INDEX" MESSAGES. THIS MESSAGE IS OUTPUT ONLY TO KPU.
2. THE PROBLEM OF NOT MOUNTING THE REDUCTION TAPE DETECTED. A Y(YES) RESPONSE WILL RETRY. AN N(NO) RESPONSE WILL OUTPUT "DO YOU WANT REPORT INDEX" MESSAGE. THIS MESSAGE IS OUTPUT ONLY TO KPU.
3. THE PROBLEM OF NOT MOUNTING THE REDUCTION TAPE DETECTED. A Y(YES) RESPONSE WILL RETRY. AN N(NO) RESPONSE WILL OUTPUT DATA TO KPU. THIS MESSAGE IS OUTPUT ONLY TO KPU.
4. AN I/O PROBLEM WITH LINE PRINTER DETECTED. A Y(YES) RESPONSE WILL RETRY. AN N(NO) RESPONSE WILL OUTPUT "DO YOU WANT REPORT INDEX" MESSAGE. THIS MESSAGE IS OUTPUT ONLY TO KPU.
5. AN I/O PROBLEM DETECTED WITH EITHER THE RAID OR RECORDED DATA TAPE DETECTED. A T WILL OUTPUT "DO YOU WANT REPORT INDEX" MESSAGE. A C WILL READ THE NEXT RECORD WHICH MAY CAUSE ERRONEOUS DATA TO BE PROCESSED. THIS MESSAGE IS OUTPUT TO KPU AND PRINTER/TAPE.
6. A READ ERROR DETECTED ON THE RECORDED DATA TAPE. THE DATA READ DOES NOT AGREE WITH GIVEN LOGICAL RECORDED SIZE. THIS MESSAGE IS OUTPUT TO KPU AND PRINTER/TAPE.
7. THIS MESSAGE IS OUTPUT ONLY TO KPU.
8. SEQUENCE NUMBER TABLE CAPACITY EXCEEDED. THERE EXISTS MORE THAN THE MAXIMUM NUMBER OF UNIQUE TRACK NUMBERS ON THE RECORDED DATA TAPE. THE SEQUENCE NUMBER TABLE IS CLEARED AND THE NUMBERS OUTPUT BY THE REPORT FROM THE POINT THE CAPACITY IS EXCEEDED BEGIN AGAIN AT 1. THIS MESSAGE IS OUTPUT TO KPU AND PRINTER/TAPE.
9. THE WORK BUFFER CAPACITY EXCEEDED DURING THE TRACK HISTORY REPORT. THERE EXISTS MORE THAN THE MAXIMUM NUMBER OF UNIQUE TRACK NUMBERS ON THE RECORDED DATA TAPE. THE REPORT WILL ONLY REPORT THE FIRST TRACKS ENCOUNTERED UP TO SYSTEM CAPACITY AND IGNORE ALL OTHERS ON THE "ALL" OPTION. THIS MESSAGE IS OUTPUT TO KPU AND PRINTER/TAPE.
10. RAID SUMMARY REQUESTED FOR A BRIGADE RECORDED DATA TAPE. THIS MESSAGE IS OUTPUT ONLY TO KPU.
11. A REQUEST FOR A TRACK HISTORY REPORT OR A TRACK NUMBER NOT PRESENT ON THE RECORDED DATA TAPE. THIS MESSAGE IS OUTPUT ONLY TO KPU.

MS 202128A

Figure 8-7. Data Reduction Error Messages (Sheet 2 of 2)

Figure 8-8 Deleted

```
   DDDDDD                          DDDDDD        (NOTE 4)       DDDDDD

CONFIGURATION: BATTALION                                              PAGE 1
DATE: MM/DD/YY  TIME: HH:MM:SS  SITE: XXXXXXXX  RAID TAPE: XXXXXXXX

INITIALIZATION AND SYSTEM STATUS REPORT

RECORDING TIME                  HH:MM:SS
DELTA GREENWICH MEAN TIME       XX
SITE LATITUDE                   DXXX/XX/XX
SITE LONGITUDE                  DXXX/XX/XX
SITE ALTITUDE                   XXX
MAXIMUM CONSOLES                X
TYPE RADAR                      TPS XX
SIF                             X X XX X

   FIRE UNIT DATA                                  HAWK      PAT

MAX INTERCEPT RANGE                                XX.X      XX.X
MAX DIST OF CLOSEST APPROACH                       XX.X      XX.X
MAX INTERCEPT RANGE FOR RECEDING TARGET            XX.X      XX.X
MAX DIST OF CLOSEST APPROACH FOR RECEDING TARGET   XX.X      XX.X
MISSILE VELOCITY                                    .X        .X
MAX ALTITUDE                                       XXXX      XXXX
MIN ALTITUDE                                       XXX       XXX
DEFENSE THREAT PRIORITY NO. 1 THRESHOLD             X         X
DEFENSE MISSILE COUNT NO. 1 THRESHOLD              XXX       XXX
DEFENSE THREAT PRIORITY NO. 2 THRESHOLD             X         X
DEFENSE MISSILE COUNT NO. 2 THRESHOLD              XXX       XXX
CREW RESPONSE TIME FOR FIRE UNIT                   XX        XX
RIPPLE THREAT PRIORITY                             XX        XX
WEAPON ASSIGNMENT SECTOR                              XX
KEEPOUT BOUNDARY RANGE                                XX

   DDDDDD                          DDDDDD                    DDDDDD
   DDDDDD                          DDDDDD                    DDDDDD

CONFIGURATION: BATTALION                                              PAGE 2
DATE: MM/DD/YY  TIME: HH:MM:SS  SITE: XXXXXXXX  RAID TAPE: XXXXXXXX

*DEFENDED POINTS*
PRIORITY     RADIUS      ID      X-COR       Y-COR

   X           XX        X      ±XXX.XX     ±XXX.XX

   DDDDDD                          DDDDDD                    DDDDDD
```

MS196047E

Figure 8-9. Initialization and System Status Report (Battalion)
(Sheet 1 of 8)

```
   DDDDDD                          DDDDDD                          DDDDDD

CONFIGURATION: BATTALION                                                PAGE X
DATE: MM/DD/YY  TIME: HH.MM:SS  SITE: XXXXXXXX  RAID TAPE: XXXXXXXX

*SAFE CORRIDORS*

NAME
X
BOUNDARY ONE              BOUNDARY TWO
X-COR       Y-COR         X-COR         Y-COR

±XXX.XX     ±XXX.XX       ±XXX.XX       ±XXX.XX
±XXX.XX     ±XXX.XX       ±XXX.XX       ±XXX.XX
±XXX.XX     ±XXX.XX       ±XXX.XX       ±XXX.XX
±XXX.XX     ±XXX.XX       ±XXX.XX       ±XXX.XX
±XXX.XX     ±XXX.XX       ±XXX.XX       ±XXX.XX
±XXX.XX     ±XXX.XX       ±XXX.XX       ±XXX.XX

MIN SPD     XXX           MAX SPD     XXXX
MIN ALT     XXX           MAX ALT     XXXX
TIME START  HH:MM:SS      STOP  HH.MM:SS

   DDDDDD                          DDDDDD                          DDDDDD
   DDDDDD                          DDDDDD                          DDDDDD

CONFIGURATION: BATTALION                                                PAGE X
DATE: MM/DD/YY  TIME: HH:MM:SS  SITE: XXXXXXXX  RAID TAPE  XXXXXXXX

*HEIGHT FINDER(S)*

X-COR       Y-COR       ALT          LAT              LONG

±XXX.XX     ±XXX.XX     XXX       DXXX/XX/XX       DXXX/XX/XX

*SYSTEM STATUS*

AUTO HOLD FIRE          - Y/N
AUTO ASSIGN             - Y/N
AUTO CEASE FIRE         - Y/N
WEAPONS                 - T/F/H
AUTO ADL ENGAGE         - A/M
INTEL TEVAL MODE        - A/M
INTEL ID MODE           - A/M
SIF VALIDATION          - ON/OFF
VALIDATION PERIOD       - (NOTE 8)
AUTO INITIATE           - Y/N
RADAR TRACKING          - Y/N
BEACON TRACKING         - Y/N
AUTO INTERROGATE        - Y/N
```

MS 013196A

Figure 8-9. Initialization and System Status Report (Battalion) (Sheet 2 of 8)

```
*TRACK LIMITS*

LOC. = XXX REM. = XXX AUTO. = XXX
TB TN BLOCK = XXXX XXXX
CURRENT CONFIGURATION = X (NOTE 2)
MAN. TRACK UPDATE WARN. TIME = XXX
A1 STA. ADDR. = XXXXX
TB STA. ADDR. = XXX
G-MANEUVER LIMIT = X

   DDDDDD                          DDDDDD                          DDDDDD
   DDDDDD                          DDDDDD                          DDDDDD

CONFIGURATION: BATTALION                                              PAGE X
DATE: MM/DD/YY  TIME: HH:MM:SS  SITE: XXXXXXXX  RAID TAPE: XXXXXXXX

 *DATA LINK*
   FILTERS

     VOLUME REFERENCE
LNK    TYPE   SYSTEM            REFERENCE POSITION

  0  XXXXXXX   XX  X XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX (NOTE 6)
  1
  2
  3
  4
  5
  6
  7
 10
 11
 12
 13
 14
 15
 16
 17
 20
 21
 22
 23
 24
 25                                                                  MS196049C
```

Figure 8-9. Initialization and System Status Report (Battalion) (Sheet 3 of 8)

```
     VOLUME  REFERENCE
LNK   TYPE    SYSTEM                REFERENCE POSITION

 26
 27
 30
 31
 32
 33
 34
 35
 36
 37

   DDDDDD                        DDDDDD                        DDDDDD
   DDDDDD                        DDDDDD                        DDDDDD

CONFIGURATION: BATTALION                                        PAGE X
DATE: MM/DD/YY  TIME: HH:MM:SS  SITE: XXXXXXXX  RAID TAPE: XXXXXXXX

              LOWER SPEED  UPPER SPEED  HEIGHT
LNK  SECURITY (10 DM/HR)   (10 DM/HR)  (100 FT)  ID(0,2,4,5,12,13)

  0   XXXX        XXXX         XXXX       XXX       X X X X  X  X (NOTE 3)
  1
  2
  3
  4
  5
  6
  7
 10
 11
 12
 13
 14
 15
 16
 17
 20
 21
 22
 23
 24
 25
 26
 27
 30
 31
```

MS558793A

Figure 8-9. Initialization and System Status Report (Battalion) (Sheet 4 of 8)

```
                LOWER SPEED  UPPER SPEED  HEIGHT
LNK  SECURITY   (10 DM/HR)   (10 DM/HR)  (100 FT)  ID(0,2,4,5,12,13)

 32
 33
 34
 35
 36
 37

   DDDDDD                      DDDDDD                      DDDDDD
   DDDDDD                      DDDDDD                      DDDDDD

CONFIGURATION: BATTALION                                        PAGE X
DATE: MM/DD/YY  TIME: HH:MM:SS  SITE: XXXXXXXX  RAID TAPE: XXXXXXXX

     RADIUS  INTELLIGENCE
LNK   (DM)     SECURITY

  0   XXXX       XXX (NOTE 7)
  1
  2
  3
  4
  5
  6
  7
 10
 11
 12
 13
 14
 15
 16
 17
 20
 21
 22
 23
 24
 25
 26
 27
 30
 31
 32

                                                        MS 558794A
```

Figure 8-9. Initialization and System Status Report (Battalion) (Sheet 5 of 8)

```
LNK   RADIUS   INTELLIGENCE
       (DM)      SECURITY

 33
 34
 35
 36
 37

DLRP LAT     DXXX/XX/XX
DLRP LONG    DXXX/XX/XX

   DDDDDD                          DDDDDD                          DDDDDD
   DDDDDD                          DDDDDD                          DDDDDD

CONFIGURATION: BATTALION                                                PAGE X
DATE: MM/DD/YY  TIME: HH:MM:SS  SITE: XXXXXXXX  RAID TAPE: XXXXXXXX

LNK              THRESHOLDS
           OPEN/NOISY

  0            XX              XXX
  1            XX              XXX
  2            XX              XXX
  3            XX              XXX
  4            XX              XXX
  5            XX              XXX
  6            XX              XXX
  7            XX              XXX
 10            XX              XXX
 11            XX              XXX
 12            XX              XXX
 13            XX              XXX
 14            XX              XXX
 15            XX              XXX
 16            XX              XXX
 17            XX              XXX
 20            XX              XXX
 21            XX              XXX
 22            XX              XXX
 23            XX              XXX
 24            XX              XXX
 25            XX              XXX
 26            XX              XXX
 27            XX              XXX
 30            XX              XXX
                                                          MS196050C
```

Figure 8-9. Initialization and System Status Report (Battalion) (Sheet 6 of 8)

```
LNK                THRESHOLDS
             OPEN/NOISY       PARITY

 31              XX               XXX
 32              XX               XXX
 33              XX               XXX
 34              XX               XXX
 35              XX               XXX
 36              XX               XXX
 37              XX               XXX

*SIMULATION PARAMETERS*

SIM. PULSE WIDTHS        XX
SIM. AZIM WIDTH          XXX.X
VSU PRF                  XXXX
VSU RPM                  XX.X
VSU MODE                 -43/-32/STD/OFFLIMIT/TEST
VSU ROTATION             CW/CCW/STOP
VSU NOISE                X.X/OFF

   DDDDDD                          DDDDDD                          DDDDDD
   DDDDDD                          DDDDDD                          DDDDDD

CONFIGURATION: BATTALION                                              PAGE X
DATE: MM/DD/YY  TIME: HH:MM:SS  SITE: XXXXXXXX  RAID TAPE: XXXXXXXX

*EQUIPMENT STATUS*

             DEVICE
LNK NO       MODEM       SIM      OL       M&D     NP      AV

  XX         XX           X       X         X              X  (NOTE 1)

PHYS ADDR

  10         MT1          X       X         X       X      X
  11         MT2
  14         SDP 1
  16         SDP 2
                                                              MS 196051C
```

Figure 8-9. Initialization and System Status Report (Battalion) (Sheet 7 of 8)

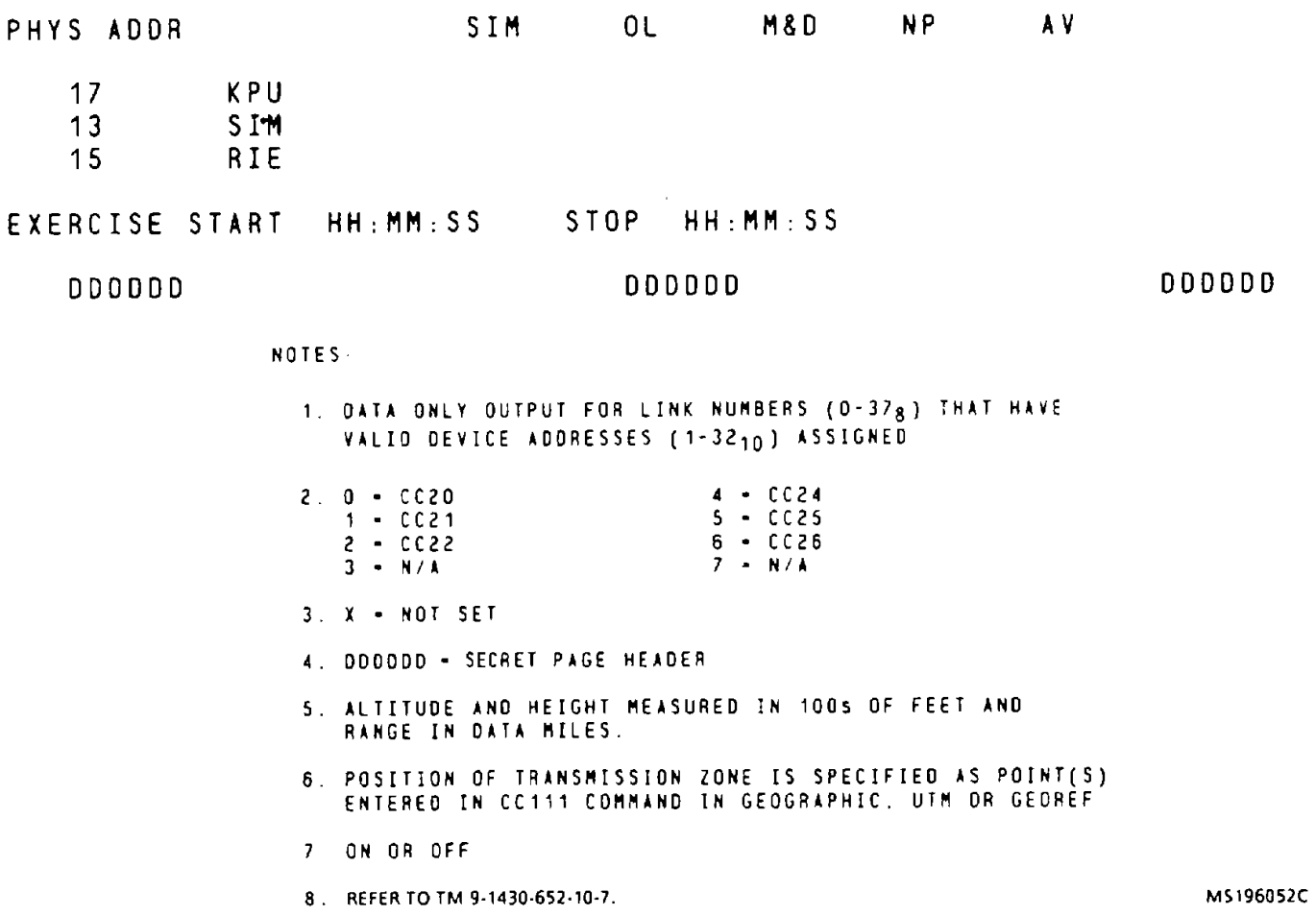


Figure 8-9. Initialization and System Status Report (Battalion) (Sheet 8 of 8)

Figure 8-10 Deleted

```
   DDDDDD      (NOTE 4)          DDDDDD                          DDDDDD

CONFIGURATION: BRIGADE                                                PAGE 1
DATE: MM/DD/YY  TIME: HH:MM:SS  SITE: XXXXXXXX  RAID TAPE: XXXXXXXX

INITIALIZATION AND SYSTEM STATUS REPORT

RECORDING TIME                  HH:MM:SS
DELTA GREENWICH MEAN TIME       XX
SITE LATITUDE                   DXXX/XX/XX
SITE LONGITUDE                  DXXX/XX/XX
SITE ALTITUDE                   XXX
MAXIMUM CONSOLES                X


  FIRE UNIT DATA                                          HAWK      PAT

 MAX INTERCEPT RANGE                                      XX.X      XX.X
 MAX DIST OF CLOSEST APPROACH                             XX.X      XX.X
 MAX INTERCEPT RANGE FOR RECEDING TARGET                  XX.X      XX.X
 MAX DIST OF CLOSEST APPROACH FOR RECEDING TARGET         XX.X      XX.X
 MISSILE VELOCITY                                          .X        .X
 MAX ALTITUDE                                             XXXX      XXXX
 MIN ALTITUDE                                             XXX       XXX
 DEFENSE THREAT PRIORITY NO. 1 THRESHOLD                   X         X
 DEFENSE MISSILE COUNT NO. 1 THRESHOLD                    XXX       XXX
 DEFENSE THREAT PRIORITY NO. 2 THRESHOLD                   X         X
 DEFENSE MISSILE COUNT NO. 2 THRESHOLD                    XXX       XXX
 CREW RESPONSE TIME FOR FIRE UNIT                          XX        XX
 RIPPLE THREAT PRIORITY                                    XX
 WEAPON ASSIGNMENT SECTOR                                      XX
 KEEPOUT BOUNDARY RANGE                                        XX

   DDDDDD                          DDDDDD                          DDDDDD
   DDDDDD                          DDDDDD                          DDDDDD

CONFIGURATION: BRIGADE                                                PAGE 2
DATE: MM/DD/YY  TIME: HH:MM:SS  SITE: XXXXXXXX  RAID TAPE: XXXXXXXX

*DEFENDED POINTS*
PRIORITY     RADIUS      ID      X-COR       Y-COR

    X          XX        X      ±XXX.XX     +XXX.XX


  DDDDDD                          DDDDDD                          DDDDDD
  DDDDDD                          DDDDDD                          DDDDDD

CONFIGURATION: BRIGADE                                                PAGE 3
DATE: MM/DD/YY  TIME: HH:MM:SS  SITE: XXXXXXXX  RAID TAPE: XXXXXXXX

*SAFE CORRIDORS*
```

MS196056E

Figure 8-11. Initialization and System Status Report (Brigade) (Sheet 1 of 5)

```
NAME
X
BOUNDARY ONE          BOUNDARY TWO
X-COR     Y-COR       X-COR     Y-COR

±XXX.XX   ±XXX.XX     ±XXX.XX   ±XXX.XX
±XXX.XX   ±XXX.XX     ±XXX.XX   ±XXX.XX
±XXX.XX   ±XXX.XX     ±XXX.XX   ±XXX.XX
±XXX.XX   ±XXX.XX     ±XXX.XX   ±XXX.XX
±XXX.XX   ±XXX.XX     ±XXX.XX   ±XXX.XX
±XXX.XX   ±XXX.XX     ±XXX.XX   ±XXX.XX

MIN SPD     XXX       MAX SPD   XXX
MIN ALT     XXX       MAX ALT   XXX

TIME START  HH:MM:SS   STOP HH:MM:SS

   DDDDDD                  DDDDDD                  DDDDDD


   DDDDDD                  DDDDDD                  DDDDDD

CONFIGURATION: BRIGADE                                        PAGE X
DATE: MM/DD/YY  TIME: HH:MM:SS  SITE: XXXXXXXX  RAID TAPE: XXXXXXXX

*HEIGHT FINDER(S)*

X-COR       Y-COR       ALT        LAT              LONG

±XXX.XX     ±XXX.XX     XXX      DXXX/XX/XX       DXXX/XX/XX

*SYSTEM STATUS*
AUTO HOLD FIRE    Y/N
AUTO ASSIGN       Y/N
AUTO CEASE FIRE   Y/N
WEAPONS           T/F/H
AUTO ADL ENGAGE   A/M
INTEL TEVAL MODE  A/M
INTEL ID MODE     A/M
SIF VALIDATION    ON/OFF
VALIDATION PERIOD (NOTE 8)

*TRACK   LIMITS*

LOC = XXX REM = XXX AUTO = XXX
TB TN BLOCK = XXXX XXXX
CURRENT CONFIGURATION = X (NOTE 1)
MAN. TRACK UPDATE WARN. TIME = XXX
A1 STA. ADDR. = XXXXX
TB STA. ADDR. = XXX

   DDDDDD                  DDDDDD                  DDDDDD
   DDDDDD                  DDDDDD                  DDDDDD
```

MS1960570

Figure 8-11. Initialization and System Status Report (Brigade) (Sheet 2 of 5)

```
CONFIGURATION: BRIGADE                                          PAGE X
DATE: MM/DD/YY  TIME: HH:MM:SS  SITE: XXXXXXXX  RAID TAPE: XXXXXXXX

*DATA LINK*
  FILTERS

    VOLUME  REFERENCE
LNK  TYPE    SYSTEM            REFERENCE POSITION

  0 XXXXXXX    XX   XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX (NOTE 6)
  1
  2
  3
  4
  5
  6
  7
 10
 11
 12
 13

   DDDDDD                      DDDDDD                      DDDDDD
   DDDDDD                      DDDDDD                      DDDDDD

CONFIGURATION: BRIGADE                                          PAGE X
DATE: MM/DD/YY  TIME: HH:MM:SS  SITE: XXXXXXXX  RAID TAPE: XXXXXXXX


             LOWER SPEED  UPPER SPEED  HEIGHT
LNK  SECURITY (10 DM/HR)   (10 DM/HR)  (100 FT)  ID(0,2,4,5,12,13) (NOTE 2)

  0   XXXX        XXXX         XXXX       XXX        X X X X  X  X
  1
  2
  3
  4
  5
  6
  7
 10
 11
 12
 13

   DDDDDD                      DDDDDD                      DDDDDD
   DDDDDD                      DDDDDD                      DDDDDD

CONFIGURATION: BRIGADE                                          PAGE X
DATE: MM/DD/YY  TIME: HH:MM:SS  SITE: XXXXXXXX  RAID TAPE: XXXXXXXX
```

MS558795B

Figure 8-11. Initialization and System Status Report (Brigade) (Sheet 3 of 5)

```
     RADIUS   INTELLIGENCE
LNK   (DM)      SECURITY

  0   XXXX        XXX (NOTE 7)
  1
  2
  3
  4
  5
  6
  7
 10
 11
 12
 13


DLRP LAT       DXXX/XX/X.X
DLRP LONG      DXXX/XX/XX

   DDDDDD                        DDDDDD                        DDDDDD
   DDDDDD                        DDDDDD                        DDDDDD

CONFIGURATION: BRIGADE                                              PAGE X
DATE: MM/DD/YY  TIME: HH:MM:SS  SITE: XXXXXXXX  RAID TAPE: XXXXXXXX

LNK            THRESHOLDS
         OPEN/NOISY

  0          XX              XXX
  1          XX              XXX
  2          XX              XXX
  3          XX              XXX
  4          XX              XXX
  5          XX              XXX
  6          XX              XXX
  7          XX              XXX
  8          XX              XXX
  9          XX              XXX
 10          XX              XXX
 11          XX              XXX
 12          XX              XXX
 13          XX              XXX

*SIMULATION PARAMETERS*

SIM. PULSE WIDTHS      XX
SIM. AZIM WIDTH        XXX.X
VSU PRF                XXXX
VSU RPM                XX.X
VSU MODE               -43/-32/STD/OFFLIMIT/TEST
VSU ROTATION           CW/CCW/STOP
VSU NOISE              X.X/OFF

   DDDDDD                        DDDDDD                        DDDDDD
```

MS196058D

Figure 8-11. Initialization and System Status Report (Brigade) (Sheet 4 of 5)

DDDDDD DDDDDD DDDDDD

CONFIGURATION: BRIGADE PAGE X
DATE: MM/DD / YY TIME: HH: MM: SS SITE: XXXXXXXX RAID TAPE: XXXXXXXX

"EQUIPMENT STATUS"

LNK NO	DEVICE MODEM	SIM	OL	M&D	NP	AV
XX	XX	X	X	X	X	X (NOTE 3)
PHYS ADDR						
10	MT1	X	X	X	X	X
11	MT2					
14	SDP1					
16	SDP2					
17	KPU					

EXERCISE START HH:MM:SS STOP HH:MM:SS

DDDDDD DDDDDD DDDDDD

NOTES:

1. 0 = CC20, 1 = CC21, 2 = CC22, 3 = N/A, 4 = CC24, 5 = CC25, 6 = CC26, 7 = N/A
2. X = NOT SET
3. DATA ONLY OUTPUT FOR LINK NUMBERS (0 - 13_8) THAT HAVE VALID DEVICE ADDRESSES (1 - 32_{10}) ASSIGNED.
4. DDDDDD = SECRET PAGE HEADER
5. ALTITUDE AND HEIGHT MEASURED IN 100s OF FEET AND RANGE IN DATA MILES.
6. POSITION OF TRANSMISSION ZONE IS SPECIFIED AS POINT(S) ENTERED IN CC111 COMMAND IN GEOGRAPHIC, UTM OR GEOREF.
7. ON OR OFF.
8. REFER TO TM 9-1430-652-10-7.

MS 196059D

Figure 8-11. Initialization and System Status Report (Brigade) (Sheet 5 of 5)

CONFIGURATION: XXXXX PAGE XXXX
DATE: MM/DD/YY TIME: HH:MM:SS SITE: XXXXXXXX RAID TAPE: XXXXXXXX

WEAPON SYSTEM SUMMARY REPORT

"WEAPON SYSTEM INFORMATION"

WPN SYS A1-TN	WPN SYS TB-TN	MSL TYPE	W R	X-COR	Y-COR	ALT	MSL COUNT PAT	COUNT HAWK	MSLS EXPENDED PAT	EXPENDED HAWK	
XXXXX	XXXX	XXXX	X	±XXX.X	±XXX.X	XXX	XXX	XXX	XXX	XXX	SIMULATED (IF SO)

"TRACK INFORMATION"

WEAPON SYSTEM XXXXX MISSILE TYPE XXXX

WEAPON SYSTEM CM	ST	IDA	RS	TIME	TRACK	STN	X-COR	Y-COR	ALT	RANGE
XX	X	XXX	X	XX:XX:XX	XXXXX	XX	±XXX.X	±XXX.X	XXX	XXX

LEGEND

CONFIGURATION	CONFIGURATION IN WHICH RECORDING WAS PERFORMED: BRIGADE/BATTALION
WPN SYS	SITE/FIRE UNIT ATDL-1 AND TADIL B TRACK NUMBERS
MSL TYPE	MISSILE TYPE (HAWK, PAT, OR P-H
WR	WEAPON SYSTEM RANGE (U/S/M/L) (NOTE 3)
X-COR	X-COORDINATE OF THE FIRE UNIT (STEREO)
Y-COR	Y-COORDINATE OF THE FIRE UNIT (STEREO)
ALT	ALTITUDE OF FU IN 100'S OF FEET
MSL COUNT	TOTAL AT BEGINNING OF EXERCISE (HOT) (NOTE 3)
MSLS EXPENDED	TOTALS EXPENDED DURING EXERCISE (NOTE 4)
CM	COMMAND HF – HOLD FIRE CF – CEASE FIRE CE – CEASE ENGAGE ME – MANUAL ENGAGE AE – AUTO ENGAGE MR – MANUAL ENGAGE RIPPLE AR – AUTO ENGAGE RIPPLE WF – WEAPONS FREE WT – WEAPONS TIGHT CX – COVER IA – INVESTIGATE/ASSIGN SA – SALVO
ST	WEAPON SYSTEM STATUS FOR FIRE UNIT R – READY L – LASHE V – SECTOR SCAN O – OUT OF ACTION W – WEAPON ASSIGNED T – TRACKING S – SILENT TRACKING F – FIRING E – EFFECTIVE B – BROKEN/INEFFECTIVE H – HEADS UP FOR SITE: R – READY O – OUT OF ACTION

MS 196060F

Figure 8-12. Weapon System Summary Report (Stereo) (Sheet 1 of 2)

IDA	TARGET IDA
RS	RAID SIZE U - UNKNOWN S - SINGLE F - FEW M - MANY
TIME	TIME OF COMMAND OR STATUS CHANGE
TRACK	ATDL-1 TRACK NUMBER (NOTE 5)
STN	SIMULATED TARGET NUMBER OR A = AUTO, R = RAMIT/REMOTE, D = DROPPED FROM CF, BLANK = NO STN (NOTE 2)
X-COOR	STEREO X-COORDINATE OF TARGET IF ENGAGED, ELSE BLANK
Y-COORD	STEREO Y-COORDINATE OF TARGET IF ENGAGED, ELSE BLANK
ALT	TARGET ALTITUDE (IN 100'S OF FEET) IF TARGET IS ENGAGED, ELSE BLANK
RANGE	RANGE (IN MILES) FROM FU TO TARGET AT MSG TIME

NOTES:

1. ID, PRI AMP, AMP-CLASSIFIED, SEE TM 9-1430-652-10-7.
2. A BLANK IN THE STN FIELD OCCURS WHEN THE TRACK NUMBER DOES NOT APPEAR IN THE SIMULATED TRACK FILE UNTIL THE RECORD FOLLOWING THE ONE IN WHICH THE TRACK NUMBER APPEARS IN THE CENTRAL FILE.
3. PATRIOT COUNT SHALL CONSIST OF ALL HOT MISSILES REPORTED BY LONG-RANGE (L) UNITS KNOWN TO BE SUBORDINATE TO THE SITE. HAWK COUNT SHALL CONSIST OF ALL HOT MISSILES REPORTED BY UNKNOWN (U), SHORT (S), AND MEDIUM-RANGE (M) UNITS KNOWN TO BE SUBORDINATE TO THE SITE.
4. TOTAL NUMBER OF PATRIOT AND HAWK MISSILES REPORTED AS FIRED DURING THE RECORDING.
5. TRACK NUMBER OF THE WEAPON SYSTEM SHALL BE THAT OF THE FIRE UNIT OR SITE THAT ENGAGES THE TRACK.

MS 196061E

Figure 8-12. Weapon System Summary Report (Stereo) (Sheet 2 of 2)

CONFIGURATION: XXXXX PAGE XXXX
DATE: MM/DD/YY TIME: HH:MM:SS SITE: XXXXXXXX RAID TAPE: XXXXXXXX

WEAPON SYSTEM SYMMARY REPORT

WEAPON SYSTEM INFORMATION

WPN SYS A1-TN	TB-TN	MSL TYPE	W R	GEOREF COORD	ALT	MSL COUNT PAT	HAWK	MSLS EXPENDED PAT	HAWK	
XXXXX	XXXX	XXXX	X	XXXXXXXX	XXX	XXX	XXX	XXX	XXX	SIMULATED (IF SO)

TRACK INFORMATION

WEAPON SYSTEM XXXXX MISSILE TYPE XXXX

WEAPON SYSTEM

CM	ST	IDA	RS	TIME	TRACK	STN	GEOREF COORD	ALT	RANGE
XX	X	XXX	X	XX:XX:XX	XXXXX	XX	XXXXXXXX	XXX	XXX

LEGEND

CONFIGURATION	CONFIGURATION IN WHICH RECORDING WAS PERFORMED: BRIGADE/BATTALION
WPN SYS	SITE/FIRE UNIT ATDL-1 AND TADIL B TRACK NUMBERS
MSL TYPE	MISSILE TYPE (HAWK, PAT, OR P-H)
WR	WEAPON SYSTEM (U/S/M/L) (NOTE 3)
GEOREF COORD	GEOREF COORDINATE OF THE FIRE UNIT
ALT	ALTITUDE OF FU IN 100'S OF FEET
MSL COUNT	TOTAL AT BEGINNING OF EXERCISE (HOT) (NOTE 3)
MSLS EXPENDED	TOTALS EXPENDED DURING EXERCISE (NOTE 4)
CM	COMMAND HF - HOLD FIRE CF - CEASE FIRE CE - CEASE ENGAGE ME - MANUAL ENGAGE AE - AUTO ENGAGE MR - MANUAL ENGAGE RIPPLE AR - AUTO ENGAGE RIPPLE WF - WEAPONS FREE WT - WEAPONS TIGHT CX - COVER IA - INVESTIGATE/ASSIGN SA - SALVO
ST	WEAPON SYSTEM STATUS FOR FIRE UNIT: R - READY L - LASHE V - VECTOR SCAN O - OUT OF ACTION W - WEAPON ASSIGNED T - TRACKING S - SILENT TRACKING F - FIRING E - EFFECTIVE B - BROKEN/INEFFECTIVE H - HEADS UP FOR SITE: R - READY O - OUT OF ACTION

MS 013197B

Figure 8-12.1. Weapon System Summary Report (GEOREF) (Sheet 1 of 2)

IDA	TARGET IDA	(SEE NOTE 1)
	RAID SIZE	
	U - UNKNOWN	
	S - SINGLE	
	F - FEW	
	M - MANY	
TIME	TIME OF COMMAND OR STATUS CHANGE	
TRACK	ATDL-1 TRACK NUMBER (NOTE 5)	
STN	SIMULATED TARGET NUMBER OR A = AUTO, R = RAMIT/REMOTE, D = DROPPED FROM CF, BLANK = NO STN (NOTE 2)	
GEOREF COORD	GEOREF COORDINATE OF TARGET IF ENGAGED, ELSE BALNK	
ALT	TARGET ALTITUDE (IN 100'S OF FEET) IF TARGET IS ENGAGED, ELSE BLANK	
RANGE	RANGE (IN MILES) FROM FU TO TARGET AT MSG TIME	

NOTES:

1. ID, PRI AMP, AMP-CLASSIFIED, SEE (C) TM 9-1430-652-10-7.
2. A BLANK IN THE STN FIELD OCCURS WHEN THE TRACK NUMBER DOES NOT APPEAR IN THE SIMULATED TRACK FILE UNTIL THE RECORD FOLLOWING THE ONE IN WHICH THE TRACK NUMBER APPEARS IN THE CENTRAL FILE.
3. PATRIOT COUNT SHALL CONSIST OF ALL HOT MISSILES REPORTED BY LONG-RANGE (L) UNITS KNOWN TO BE SUBORDINATE TO THE SITE. HAWK COUNT SHALL CONSIST OF ALL HOT ISSILES REPORTED BY UNKNOWN (U), SHORT (S), AND MEDIUM-RANGE (M) UNITS KNOWN TO BE SUBORDINATE TO THE SITE.
4. TOTAL NUMBER OF PATRIOT AND HAWK MISSILES REPORTED AS FIRED DURING THE RECORDING.
5. TRACK NUMBER OF THE WEAPON SYSTEM SHALL BE THAT OF THE FIRE UNIT OR SITE THAT ENGAGES THE TRACK.

MS13198B

Figure 8-12.1. Weapon System Summary Support (GEOREF) (Sheet 2 of 2)

CONFIGURATION:XXXXX PAGE XXXX
DATE: MM/DD/YY TIME: HH:MM:SS SITE: XXXXXXXX RAID TAPE: XXXXXXXX

HOSTILE TRACK SUMMARY REPORT

SEQ	TRACK	STN	ENTRY TIME	ASSIGN TIME	ID TIME	TP MAX	TIME	TERMINATION TIME	CAUSE
XX	XXXXX	XX	HH:MM:SS	HH:MM:SS	HH:MM:SS	X	HH:MM:SS	HH:MM:SS	XX

LEGEND:

CONFIGURATION	CONFIGURATION IN WHICH RECORDING WAS PERFORMED BRIGADE/BATTALION
SEQ	TRACK SEQUENCE NUMBER. NO RELATION TO SEQUENCE NUMBERS IN OTHER REPORTS. SEQUENCE NUMBER ASSIGNED TO TRACK NUMBER CHANGES WHEN AN AIR TRACK IS DROPPED AND THE SYSTEM REASSIGNS THE SAME TRACK NUMBER TO A NEWLY INITIATED AIR TRACK
TRACK	ATDL-1 TRACK NUMBER
STN	SIMULATED TRACK NUMBER OR A = AUTO, R = RAMIT/REMOTE D = DROPPED FROM CF, BLANK = NO STN (SEE NOTE)
ENTRY TIME	INITIAL APPEARANCE OF TRACK
ASSIGN TIME	TIME OF ASSIGNMENT TO A FIRE UNIT
ID TIME	TIME TRACK WAS IDENTIFIED AS HOSTILE
TP MAX	MAXIMUM THREAT PRIORITY (0 = FRIEND, 1 THRU 5 = HIGH THREAT, 6 = LOW THREAT, 7 = NO THREAT)
TIME	TIME OF THREAT PRIORITY
TERMINATION	REASON FIRE UNIT TERMINATED ENGAGEMENT
TIME	TERMINATION TIME
CAUSE	TERMINATION CAUSE EF - EFFECTIVE FD - FADE IC - ID CHANGE FROM HOSTILE TO NON HOSTILE ER - END RECORDING (RECORDING ENDED BEFORE TERMINATION OF ENGAGEMENT)

NOTE:

A BLANK IN THE STN FIELD OCCURS WHEN THE TRACK NUMBER DOES NOT APPEAR IN THE SIMULATED TRACK FILE UNTIL THE RECORD FOLLOWING THE ONE IN WHICH THE TRACK NUMBER APPEARS IN THE CENTRAL FILE

MS558783B

Figure 8-13. Hostile Track Summary Report

```
CONFIGURATION: XXXXX                                                PAGE XXXX
DATE: MM/DD/YY   TIME: HH:MM:SS  SITE: XXXXXXXX  RAID TAPE: XXXXXXXX

SEQUENCE EVENT REPORT

SEQ   A1-TN   STN    TIME       OC   LK   C  TS  L  FN  ANKB ALR

XXX   XXXXX  XX   XX:XX:XX     XX   XX   X XXX  X  XX  XX   XXX

        TRACK
SEQ  A1-TN TBTN  NTN STN   TIME    ALT HS HDG SPD  IDA  X-COR    Y-COR    R  T
                                                                  S  P
XXX  XXXXX XXXX XXXXX XX XX:XX:XX XXX X XXX XXX  XXX  ± XXX.X  ± XXX.X  X  X

IFF CODE:  XX XXXX XXXX XX (IF CHANGED)
```

LEGEND

CONFIGURATION	CONFIGURATION IN WHICH RECORDING WAS PERFORMED BRIGADE/BATTALION
SEQ	TRACK SEQUENCE NUMBER (NO RELATION TO SEQUENCE NUMBERS IN OTHER REPORTS)- SEQUENCE NUMBER ASSIGNED TO A TRACK NUMBER CHANGES WHEN AN AIR TRACK IS DROPPED AND THE SYSTEM REASSIGNS THE SAME TRACK NUMBER TO A NEWLY INITIATED AIR TRACK
TRACK A1-TN	ATDL-1 TRACK NUMBER
TB-TN	TADIL B TRACK NUMBER
NTN	NATO TRACK NUMBER
STN	SIMULATED TRACK NUMBER OR A = AUTO, R = RAMIT/REMOTE D = DROPPED FROM CF, BLANK = NO STN (SEE NOTE 4)
TIME	TIME OF EVENT
ALT	ALTITUDE IN HUNDREDS OF FEET
HS	HEIGHT SOURCE U - UNKNOWN/ESTIMATED R - RADAR A - AIRCRAFT I - IFF
HDG	HEADING
SPD	SPEED IN TENS OF DMPH
IDA	TRACK ID WITH AMPLIFICATION (ID, PRI, AMP, AMP-SEE TM 9-1430-652-10-7
X,Y-COR	X AND Y STEREO COORDINATES OF TRACK
RS	RAID SIZE U - NO ESTIMATE S - SINGLE F - FEW M - MANY
TP	THREAT PRIORITY (0-7)
OC	OTHER COMMANDS ID - INFO DIFF CD - CHANGE DATA DR - DROP TRACK EF - EMERGENCY/FORCETELL CU - CONTROLLING UNIT TF - TERMINATE EMERGENCY/FORCETELL EN - ENGAGE IA - INVESTIGATE/ASSIGN CE - CEASE ENGAGE HF - HOLD FIRE CF - CEASE FIRE CK - COVER SA - SALVO ER - ENGAGE RIPPLE CA - NEW IFF DATA ACCEPTED CR - NEW IFF DATA REJECTED

MS196063E

Figure 8-14. Sequence Event Report (Stereo) (Sheet 1 of 2)

LK	LINK NUMBER FOR SOURCE OF OTHER COMMANDS	(SEE NOTE 1)
C	CONSOLE NUMBER OF OPERATOR ACTION	
TS	TASK SELECTIONS AND OTHER CONSOLE SWITCHES ACTIVATED (REFER TO TABLE 8-1)	
L	LAMP STATUS 0 - OFF 1 - TOP 2 - BOTTOM 3 - BOTH ACTIVATED	
FN	TASK FUNCTIONS SWITCH ACTIVATED	
ANKB	AN KEYBOARD ENTRY	
ALR	OPERATIONAL ALERTS (SEE NOTE 2) OR SYSTEM ALERTS (SEE NOTE 3)	

NOTES:

1. EXAMPLE 1:

C	TS	L	FN
0	26	3	
CONSOLE	TASK SELECTIONS	BOTH	TASK FUNCTIONS
1	MAP 1/MAP 2	ACTIVE	

LAMP STATUS (L) APPLIED ONLY FOR NUMBERS 1 THRU 39 AND 64 THRU 116 IN TS FIELD

EXAMPLE 2:

C	TS	L	FN
0	45	0	54
CONSOLE	TASK SELECTIONS	N/A	TASK FUNCTIONS
1	IDENT IFF		ENTER IFF CODE

LAMP STATUS (L) DOES NOT APPLY FOR NUMBERS 40 THRU 51 IN TS FIELD 52 THRU 63 IN FN FIELD.

2. OPERATIONAL ALERTS:

AIR TRACK ALERTS	FU ALERTS
0 - ENGAGED NON-HOSTILE	0 - PAIRED FU OUT OF ACTION
1 - COMMAND MESSAGE RECEIVED	1 - SPARE
2 - SPARE	2 - DATA LINK STATUS UNKNOWN
3 - CHANGE DATA	3 - DATA LINK STATUS OPEN/NOISY
3 - SPARE	4 - DATA LINK STATUS PARITY ERROR
5 - INFORMATION DIFFERENCE	5 - FU SELF INITIATED ENGAGEMENT
6 - SAFE CORRIDOR WARNING	6 - FU SIM-LIVE PAIRING
7 - LOCAL-REMOTE POSITION VALIDATION ERROR	7 - WEAPONS TIGHT/WEAPONS FREE CHANGE (SITE ONLY)
8 - NEW IFF DATA REJECTED	8-15 - UNDEFINED
9 - NEW IFF DATA REPORTED OR ACCEPTED	
10 - HEADS UP CONDITION IN EFFECT	
11 - TRACK MERGE	
12 - NEW IFF DATA ACCEPTED	
13 - SPARE	
14 - FU EFFECTIVE RECEIVED	
15 - FU INTERCEPTOR ENGAGED TO SAME TRACK	

3. SYSTEM ALERTS
   - 0 - NONE
   - 1 - WHITE
   - 2 - YELLOW
   - 3 - RED
4. A BLANK IN THE STN FIELD OCCURS WHEN THE TRACK NUMBER DOES NOT APPEAR IN THE SIMULATED TRACK FILE UNTIL THE RECORD FOLLOWING THE ONE IN WHICH THE TRACK NUMBER APPEARS IN THE CENTRAL FILE.

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Figure 8-14. Sequence Event Report (STEREO) (Sheet 2 of 2)

CONFIGURATION: XXXXX *PAGE XXXX*
DATE: MM/DD/YY TIME: HH:MM:SS SITE: XXXXXXXX RAID TAPE: XXXXXXXX

SEQUENCE EVENT REPORT

SEQ	A1-TN	STN	TIME	OC	LK	C	TS	L	FN	ANKB	ALR
XXX	XXXXX	XX	XX:XX:XX	XX	XX	X	XXX	X	XX	XX	XXX

TRACK SEQ	A1-TN	TBTN	NTN	STN	TIME	ALT	HS	HDG	SPD	IDA	(SEE NOTE 5) GEOREF COORD	R S	T P
XXX	XXXXX	XXXX	XXXXX	XX	XX:XX:XX	XXX	X	XXX	XXX	XXX	XXXXXXXX	X	X

IFF CODE: XX XXXX XXXX XX (IF CHANGED)

LEGEND:

CONFIGURATION	CONFIGURATION IN WHICH RECORDING WAS PERFORMED: BRIGADE/BATTALION
SEQ	TRACK SEQUENCE NUMBER (NO RELATION TO SEQUENCE NUMBERS IN OTHER REPORTS)- SEQUENCE NUMBER ASSIGNED TO A TRACK NUMBER CHANGES WHEN AN AIR TRACK IS DROPPED AND THE SYSTEM REASSIGNS THE SAME TRACK NUMBER TO THE NEWLY INITIATED AIR TRACK.
TRACK A1-TN	ATDL-1 TRACK NUMBER
TB-TN	TADIL B TRACK NUMBER
NTN	NATO TRACK NUMBER
STN	SIMULATED TRACK NUMBER OF A = AUTO, R = RAMIT/REMOTE D = DROPPED FROM CF, BLANK = NO STN (SEE NOTE 4)
TIME	TIME OF EVENT
ALT	ALTITUDE IN HUNDREDS OF FEET
HS	HEIGHT SOURCE U - UNKNOWN/ESTIMATED R - RADAR A - AIRCRAFT I - IFF
HDG	HEADING
SPD	SPEED IN TENS OF DMPH
IDA	TRACK ID WITH AMPLIFICATION (ID, PRI, AMP, AMP-SEE (C) TM 9-1430-652-10-7)
GEOREF COORD	GEOREF COORDINATES OF TRACK (SEE NOTE 5)
RS	*RAID SIZE* U - NO ESTIMATE S - SINGLE F - FEW M - MANY
TP	THREAT PRIORITY (0-7)
OC	OTHER COMMANDS ID - INFO DIFF *CD - CHANGE DATA* DR - DROP TRACK EF - EMERGENCY/FORCETELL CU - CONTROLLING UNIT TF - TERMINATE EMERGENCY/FORCETELL EN - ENGAGE IA - INVESTIGATE/ASSIGN CE - CEASE ENGAGE *HF - HOLD FIRE* CF - CEASE FIRE CX - COVER SA - SALVO ER - ENGAGE RIPPLE CA - NEW IFF DATA ACCEPTED CR - NEW IFF DATA REJECTED

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Figure 8-14.1. Sequence Event Report (GEOREF) (Sheet 1 of 2)

LK	LINK NUMBER FOR SOURCE OF OTHER COMMANDS	(SEE NOTE 1)
C	CONSOLE NUMBER OF OPERATOR ACTION	
TS	TASK SELECTIONS AND OTHER CONSOLE SWITCHES ACTIVATED (REFER TO TABLE 8-1)	
L	LAMP STATUS 0 - OFF 1 - TOP 2 - BOTTOM 3 - BOTH ACTIVATED	
FN	TASK FUNCTIONS SWITCH ACTIVATED	
ANKB	AN KEYBOARD ENTRY	
ALR	OPERATIONAL ALERTS (SEE NOTE 2) OR SYSTEM ALERTS (SEE NOTE 3)	

NOTES:

1. EXAMPLE 1:

C	TS	L	FN
0	26	3	

CONSOLE	TASK SELECTIONS	BOTH	TASK FUNCTIONS
1	MAP 1/MAP 2	ACTIVE	

LAMP STATUS (L) APPLIED ONLY FOR NUMBERS 1 THRU 39 AND 64 THRU 116 IN TS FIELD

EXAMPLE 2:

C	TS	L	FN
0	45	0	54

CONSOLE	TASK SELECTIONS	N/A	TASK FUNCTIONS
1	IDENT IFF		ENTER IFF CODE

LAMP STATUS (L) DOES NOT APPLY FOR NUMBERS 40 THRU 51 IN TS FIELD 52 THRU 63 IN FN FIELD.

2. OPERATIONAL ALERTS:

AIR TRACK ALERTS	FU ALERTS
0 - ENGAGED NON-HOSTILE	0 - PAIRED FU OUT OF ACTION
1 - COMMAND MESSAGE RECEIVED	
2 - SPARE	2 - DATA LINK STATUS UNKNOWN
3 - CHANGE DATA	3 - DATA LINK STATUS OPEN/NOISY
3 - SPARE	4 - DATA LINK STATUS PARITY ERROR
5 - INFORMATION DIFFERENCE	5 - FU SELF INITIATED ENGAGEMENT
6 - SAFE CORRIDOR WARNING	6 - FU SIM-LIVE PAIRING
7 - LOCAL-REMOTE POSITION VALIDATION ERROR	7 - WEAPONS TIGHT/WEAPONS FREE CHANGE (SITE ONLY)
8 - NEW IFF DATA REJECTED	8-15 - UNDEFINED
9 - NEW IFF DATA REPORTED OR ACCEPTED	
10 - HEADS UP CONDITION IN EFFECT	
11 - TRACK MERGE	
12 - NEW IFF DATA ACCEPTED	
13 - SPARE	
14 - FU EFFECTIVE RECEIVED	
15 - FU INTERCEPTOR ENGAGED TO SAME TRACK	

3. SYSTEM ALERTS
   - 0 - NONE
   - 1 - WHITE
   - 2 - YELLOW
   - 3 - RED
4. A BLANK IN THE STN FIELD OCCURS WHEN THE TRACK NUMBER DOES NOT APPEAR IN THE SIMULATED TRACK FILE UNTIL THE RECORD FOLLOWING THE ONE IN WHICH THE TRACK NUMBER APPEARS IN THE CENTRAL FILE.
5. ACTUALLY PRINTS X-COR Y-COR.

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Figure 8-14.1. Sequence Event Report (GEOREF) (Sheet 2 of 2)

CONFIGURATION: XXXXX PAGE XXXX
DATE: MM/DD/YY TIME: HH:MM:SS SITE: XXXXXXXX RAID TAPE: XXXXXXXX

TRACK HISTORY REPORT TRACK XXXXX XXXX XXXXX SEQ XXX STN XXX

IFF CODES: XX XXXX XXXX XX

TIME	X-COR	Y-COR	ALT	H S	HDG	SPD	IDA	R R	TQ L	TQ R	R S	T P	WPN SYS CM	WPN SYS A1TN	ST	OC	LK
XX:XX:XX	±XXX.X	±XXX.X	XXX	X	XXX	XXX	XXX	XX	X	X	X	X	XX	XXXXX	X	XX	XX

LEGEND:

CONFIGURATION	CONFIGURATION IN WHICH RECORDING WAS PERFORMED: BRIGADE/BATTALION
TRACK	ATDL-1, TADIL B AND NATO TRACK NUMBER
SEQ	TRACK SEQUENCE NUMBER (NO RELATION TO SEQUENCE NUMBERS IN OTHER REPORTS)- SEQUENCE NUMBER ASSIGNED TO A TRACK NUMBER CHANGES WHEN AN AIR TRACK IS DROPPED AND THE SYSTEM REASSIGNS THE SAME TRACK NUMBER TO THE NEWLY INITIATED AIR TRACK.
STN	SIMULATION TARGET NUMBER - OR A = AUTO, R = RAMIT/REMOTE, D = DROPPED FROM CF, BLANK = NO STN (SEE NOTE 3)
TIME	EVENT TIME (SEE NOTE 2)
X-COR	X - STEREO COORDINATE (SEE NOTE 1)
Y-COR	Y - STEREO COORDINATE (SEE NOTE 1)
ALT	ALTITUDE IN HUNDREDS OF FEET (SEE NOTE 1)
HS	HEIGHT SOURCE U - UNKNOWN/ESTIMATED R - RADAR A - AIRCRAFT I - IFF
HDG	HEADING
SPD	SPEED IN TENS OF DMPH
IDA	TRACK ID WITH AMPLIFICATION (ID, PRI, AMP, AMP-SEE (C) TM 9-1430-652-10-7)
RR	REPORTING RESPONSIBILITY LINK NUMBER
TQ	LTQ = LOCAL TRACK QUALITY RTQ = REMOTE TRACK QUALITY
RS	RAID SIZE U - NO ESTIMATE S - SINGLE F - FEW M - MANY
TP	THREAT PRIORITY (0-7)
WPN SYS	WEAPON SYSTEM
CM	COMMAND 0 - NOT USED (MEANS REFERENCE MESSAGE) EN - ENGAGE ER - ENGAGE RIPPLE HF - HOLD FIRE CF - CEASE FIRE CE - CEASE ENGAGE ME - MANUAL ENGAGE MR - MANUAL ENGAGE RIPPLE AE - AUTO ENGAGE AR - AUTO ENGAGE RIPPLE CX - COVER IA - INVESTIGATE/ASSIGN SA - SALVO

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Figure 8-15. Track History Report (STEREO) (Sheet 1 of 2)

A1-TN	SITE/FIRE UNIT ATDL-1 NUMBER
ST	WEAPON SYSTEM STATUS
	FOR FIRE UNIT: R - READY W - WEAPON ASSIGNED T - TRACKING S - SILENT TRACKING F - FIRING E - EFFECTIVE B - BROKEN/INEFFECTIVE O - OUT OF ACTION
	FOR SITE: R - READY O - OUT OF ACTION
OC	OTHER COMMANDS INCLUDES THOSE IN CM PLUS IA - INVESTIGATE/ASSIGN CX - COVER SA - SALVO ID - INFO DIFF CD - CHANGE DATA DR - DROP EF - EMERGENCY/FORCE TELL CU - CONTROLLING UNIT TF - TERMINATE EMERGENCY/FORCE TELL
LK	LINK NUMBER FOR SOURCE OF OTHER COMMANDS

NOTES:

1. DUE TO DATA LINK UPDATES, REMOTE TRACKS MAY HAVE POSITIONAL UPDATES WHEN NO ACTUAL UPDATE HAS OCCURRED AT LOCAL SITE.
2. IF THE REQUESTED TRACK IS DROPPED FROM THE SYSTEM, THE WORDS "TRACK DROPPED" ARE OUTPUT.
3. A BLANK IN THE STN FIELD OCCURS WHEN THE TRACK NUMBER DOES NOT APPEAR IN THE SIMULATED TRACK FILE UNTIL THE RECORD FOLLOWING THE ONE IN WHICH THE TRACK NUMBER APPEARS IN THE CENTRAL FILE.

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Figure 8-15. Track History Report (STEREO) (Sheet 2 of 2)

CONFIGURATION: XXXXX PAGE XXXX
DATE: MM/DD/YY TIME: HH:MM:SS SITE: XXXXXXXX RAID TAPE: XXXXXXXX

TRACK HISTORY REPORT TRACK XXXXX XXXX XXXXX SEQ XXX STN XXX

IFF CODES: XX XXXX XXXX XX

TIME	GEOREF COORD	ALT	H S	HDG	SPD	IDA	R R	TQ L	R	R S	T P	WPN SYS CM	A1TN	ST	OC	LK
XX:XX:XX	XXXXXXXX	XXX	X	XXX	XXX	XXX	XX	X	X	X	X	XX	XXXXX	X	XX	XX

LEGEND:

CONFIGURATION	CONFIGURATION IN WHICH RECORDING WAS PERFORMED: BRIGADE/BATTALION
TRACK	ATDL-1 (FIRE UNIT OR SITE ENGAGING TRACK) TADIL B AND NATO TRACK NUMBER
SEQ	TRACK SEQUENCE NUMBER (NO RELATION TO SEQUENCE NUMBERS IN OTHER REPORTS)- SEQUENCE NUMBER ASSIGNED TO A TRACK NUMBER CHANGES WHEN AN AIR TRACK IS DROPPED AND THE SYSTEM REASSIGNS THE SAME TRACK NUMBER TO THE NEWLY INITIATED AIR TRACK.
STN	SIMULATION TARGET NUMBER - OR A = AUTO, R = RAMIT/REMOTE, D = DROPPED FROM CF, BLANK = NO STN (SEE NOTE 3)
TIME	EVENT TIME (SEE NOTE 2)
GEOREF COORD	GEOREF COORDINATE (SEE NOTE 1)
ALT	ALTITUDE IN HUNDREDS OF FEET (SEE NOTE 1)
HS	HEIGHT SOURCE U - UNKNOWN/ESTIMATED R - RADAR A - AIRCRAFT I - IFF
HDG	HEADING
SPD	SPEED IN TENS OF DMPH
IDA	TRACK ID WITH AMPLIFICATION (ID, PRI AMP, AMP - SEE (C) TM 9-1430-652-10-7)
RR	REPORTING RESPONSIBILITY LINK NUMBER
TQ	LTQ = LOCAL TRACK QUALITY RTQ = REMOTE TRACK QUALITY
RS	RAID SIZE U - NO ESTIMATE S - SINGLE F - FEW M - MANY
TP	THREAT PRIORITY (0-7)
WPN SYS	WEAPON SYSTEM
CM	COMMAND 0 - NOT USED (MEANS REFERENCE MESSAGE) EN - ENGAGE ER - ENGAGE RIPPLE HF - HOLD FIRE CF - CEASE FIRE CE - CEASE ENGAGE ME - MANUAL ENGAGE MR - MANUAL ENGAGE RIPPLE AE - AUTO ENGAGE AR - AUTO ENGAGE RIPPLE CX - COVER IA - INVESTIGATE/ASSIGN SA - SALVO

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Figure 8-15.1. Track History Report (GEOREF) (Sheet 1 of 2)

		SITE/FIRE UNIT ATDL-1 TRACK NUMBER
	A1-TN	WEAPON SYSTEM STATUS:
	ST	FOR FIRE UNIT R - READY W - WEAPON ASSIGNED T - TRACKING S - SILENT TRACKING F - FIRING E - EFFECTIVE B - BROKEN/INEFFECTIVE O - OUT OF ACTION FOR SITE: R - READY O - OUT OF ACTION
	OC	OTHER COMMANDS INCLUDES THOSE IN CM PLUS IA - INVESTIGATE/ASSIGN CX - COVER SA - SALVO ID - INFO DIFF CD - CHANGE DATA DR - DROP EF - EMERGENCY/FORCE TELL CU - CONTROLLING UNIT TF - TERMINATE EMERGENCY/FORCE TELL
NOTES	LK	LINK NUMBER SOURCE OF OTHER COMMANDS

1. DUE TO DATA LINK UPDATES, REMOTE TRACKS MAY HAVE POSITIONAL UPDATES WHEN NO ACTUAL UPDATE HAS OCCURRED AT LOCAL SITE.
2. IF THE REQUESTED TRACK IS DROPPED FROM THE SYSTEM, THE WORDS "TRACK DROPPED" ARE OUTPUT.
3. A BLANK IN THE STN FIELD OCCURS WHEN THE TRACK NUMB R DOES NOT APPEAR IN THE SIMULATED TRACK FILE UNTIL THE RECORD FOLLOWING THE ONE IN WHICH THE TRACK NUMBER APPEARS IN THE CENTRAL FILE.

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Figure 8-15.1. Track History Report (GEOREF) (Sheet 2 of 2)

CONFIGURATION: XXXX PAGE XXXX
DATE: MM/DD/YY TIME: HH:MM:SS SITE: XXXXXXXX RAID TAPE: XXXXXXXX

TRACK ASSIGNMENT REPORT

SEQ	TRACK	STN	ENTRY TIME	ASSIGN TIME	LAST IDA	T P	WPN SYS A1-TN	ST	MSL TYP	TERMINATION TIME	CAUSE
XX	XXXXX	XX	HH:MM:SS	HH:MM:SS	XXX	X	XXXXX	X	XXXX	HH:MM:SS	XX

LEGEND:

CONFIGURATION	CONFIGURATION IN WHICH RECORDING WAS PERFORMED: BRIGADE/BATTALION
SEQ	TRACK SEQUENCE NUMBER. NO RELATION TO SEQUENCE NUMBER IN OTHER REPORTS. SEQUENCE NUMBER ASSIGNED TO TRACK NUMBER CHANGES WHEN AN AIR TRACK IS DROPPED AND THE SYSTEM REASSIGNS THE SAME TRACK NUMBER TO A NEWLY INITIATED AIR TRACK.
TRACK	ATDL-1 TRACK NUMBER (FIRE UNIT OR SITE ENGAGING TRACK)
STN	SIMULATED TARGET NUMBER OR A = AUTO, R = RAMIT/REMOTE, D = DROPPED FROM CF, BLANK = NO STN (SEE NOTE)
ENTRY TIME	TIME OF INITIAL APPEARANCE
ASSIGN TIME	TIME OF ASSIGNMENT
LAST IDA	TRACK ID (ID, PRI, AMP, -SEE TM 9-1430-652-10-7(C)) AT TERM. OF ENGAGEMENT
TP	THREAT PRIORITY AT ASSIGNMENT (0-7)
WPN SYS	
A1-TN	SITE/FIRE UNIT ATDL-1 TRACK NUMBER
ST	WEAPON SYSTEM STATUS AT ASSIGNMENT FOR FIRE UNIT: R - READY W - WEAPON ASSIGNED T - TRACKING S - SILENT TRACKING F - FIRING E - EFFECTIVE B - BROKEN O - OUT OF ACTION FOR SITE: R - READY O - OUT OF ACTION
MSL TYP	MISSILE TYPE (HAWK, PAT OR PH)
TERMINATION TIME	TIME OF ENGAGEMENT TERMINATION
CAUSE	EF - EFFECTIVE IF - INEFFECTIVE FD - FADE OA - OUT OF ACTION ER - END RECORDING (RECORDING ENDED BEFORE TERMINATION OF ENGAGEMENT)

NOTE:

A BLANK IN THE STN FIELD OCCURS WHEN THE TRACK NUMBER DOES NOT APPEAR IN THE SIMULATED TRACK FILE UNTIL THE RECORD FOLLOWING THE ONE IN WHICH THE TRACK NUMBER APPEARS IN THE CENTRAL FILE.

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Figure 8-16. Track Assignment Report.

CONFIGURATION: XXXX PAGE XXXX
DATE: MM/DD/YY TIME: HH:MM:SS SITE: XXXXXXXX RAID TAPE: XXXXXXXX

RAID SUMMARY REPORT

TRACK AND MISSILE COUNTS

HAWK MISSILES EXPENDED	XXX
HOSTILE TRACKS	XXX
UNKNOWN TRACKS	XXX
FRIENDLY TRACKS	XXX
ENGAGED TRACKS	XXX
PATRIOT MISSILES EXPENDED	XXX

ENGAGEMENT TERMINATIONS

EFFECTIVE	XXX
INEFFECTIVE	XXX
OTHER	XXX

AVERAGE MISSILES EXPENDED PER TRACK PAT = X.X HAWK = X.X

ASSIGNMENTS

INBOUND	XXX
OUTBOUND	XXX
MANUAL	XXX
AUTO	XXX

LEGEND:

CONFIGURATION: BRIGADE OR BATTALION
INBOUND: TOWARD ENGAGED FU
OUTBOUND: AWAY FROM ENGAGED FU
OTHER TERMINATIONS: FADES AND END OF RECORDING

NOTE:

ONLY IN BATTALION CONFIGURATION WILL TRACKS AND MISSILES FROM LOCAL SUBORDINATE FIRE UNITS BE SUMMED.

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Figure 8-17. Raid Summary Report

XXXXXXXX PAGE XXXX

FLIGHT PROFILE

STN	TIME SPAN		X-COR	Y-COR	ALT	- CHG	HEADING	- CHG	SP
XX	XX:XX:XX	XX:XX:XX	±XXX.XX	±XXX.XX	XXXX	±XX	XXX.X	±XXX.X	XXXX

LEGEND:

STN	SIMULATED TARGET NUMBER
TIME SPAN	PREVIOUS AND CURRENT TIMES OF THE POINT
X-COR	X-COORDINATE (STEREO)
Y-COR	Y-COORDINATE (STEREO)
ALT-CHG	CURRENT ALTITUDE WITH CHANGE RATE
HEADING-CHG	CURRENT HEADING WITH CHANGE FROM PREVIOUS
SP	SPEED

XXXXXXXX PAGE XXXX

CHAFF CONTROL

CHF NO	TIME	INT	START RANGE	END RANGE	START AZIM	END AZIM	ALT	RANGE JITTER	AZIM FTHR	STATUS
XX	XX:XX:XX	X	XXX.X	XXX.X	XXX.X	XXX.X	XXXX	X	X.X	ACTIVE/ INACTIVE

LEGEND:

CHF NO	CHAFF SIMULATION NUMBER
TIME	ENTRY TIME
INT	INTENSITY
START RANGE	STARTING RANGE
END RANGE	ENDING RANGE
START AZIM	STARTING AZIMUTH
END AZIM	ENDING AZIMUTH
ALT	ALTITUDE
RANGE JITTER	RANGE JITTER CONTROL
AZIMUTH FTHR	AZIMUTH FEATHER CONTROL
STATUS	ACTIVE/INACTIVE

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Figure 8-18. Flight Reference Report (Sheet 1 of 2)

XXXXXXXX PAGE XXXX

ECM CAPABILITY

ECM NO	TIME	ASSOC TARGET	TYPE	INT	WIDTH	STATUS
XX	XX:XX:XX	XX	XXXXXXXXXXX	X	XXX.X	ACTIVE/INACTIVE

LEGEND:

ECM NO	ECM SIMULATION NUMBER
TIME	ENTRY TIME
ASSOC TARGET	ASSOCIATED TARGET NUMBER
TYPE	ECM TYPE
INT	INTENSITY
WIDTH	AZIMUTH WIDTH
STATUS	ACTIVE/INACTIVE

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Figure 8-18. Flight Reference Report (Sheet 2 of 2)

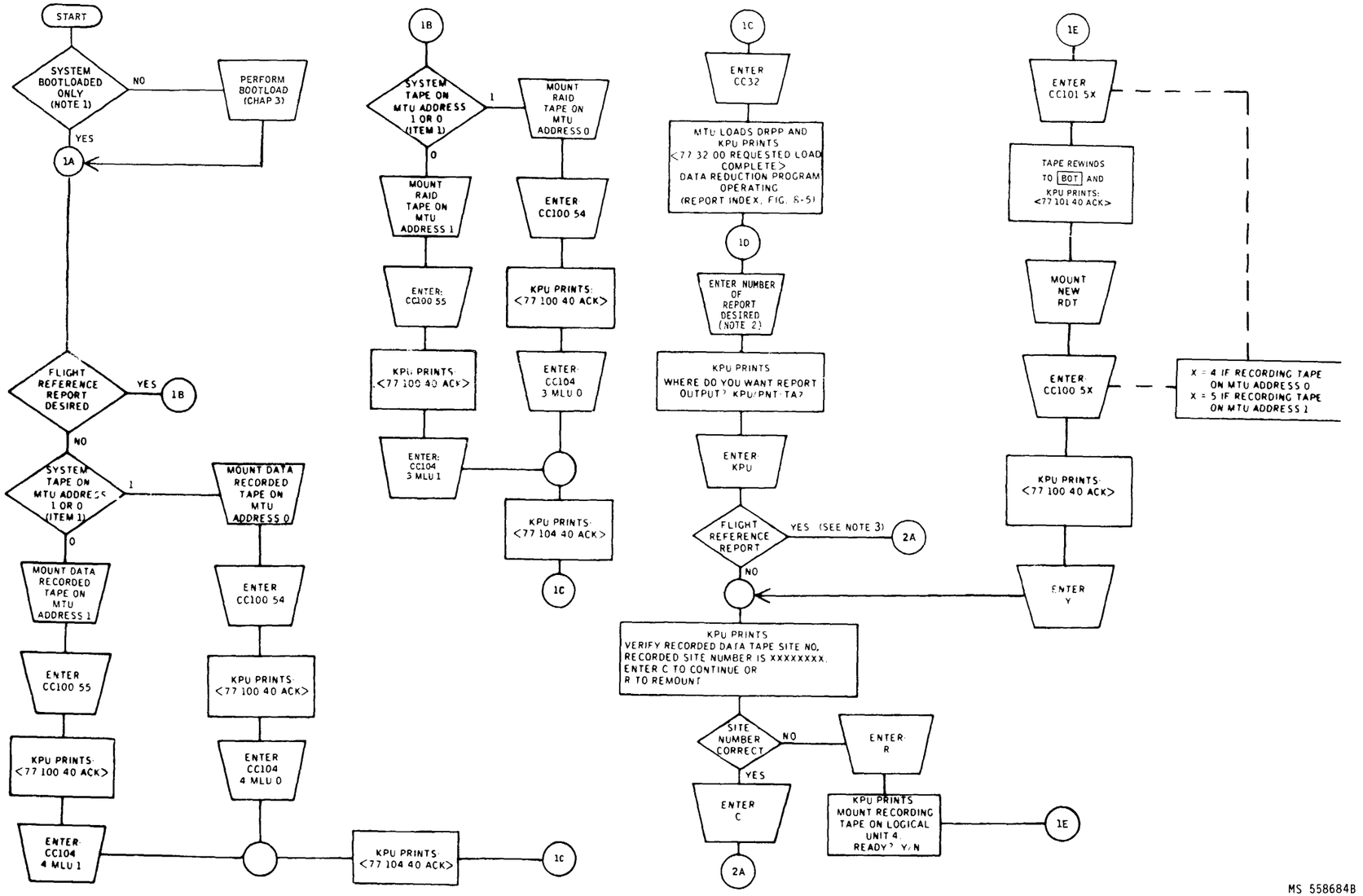
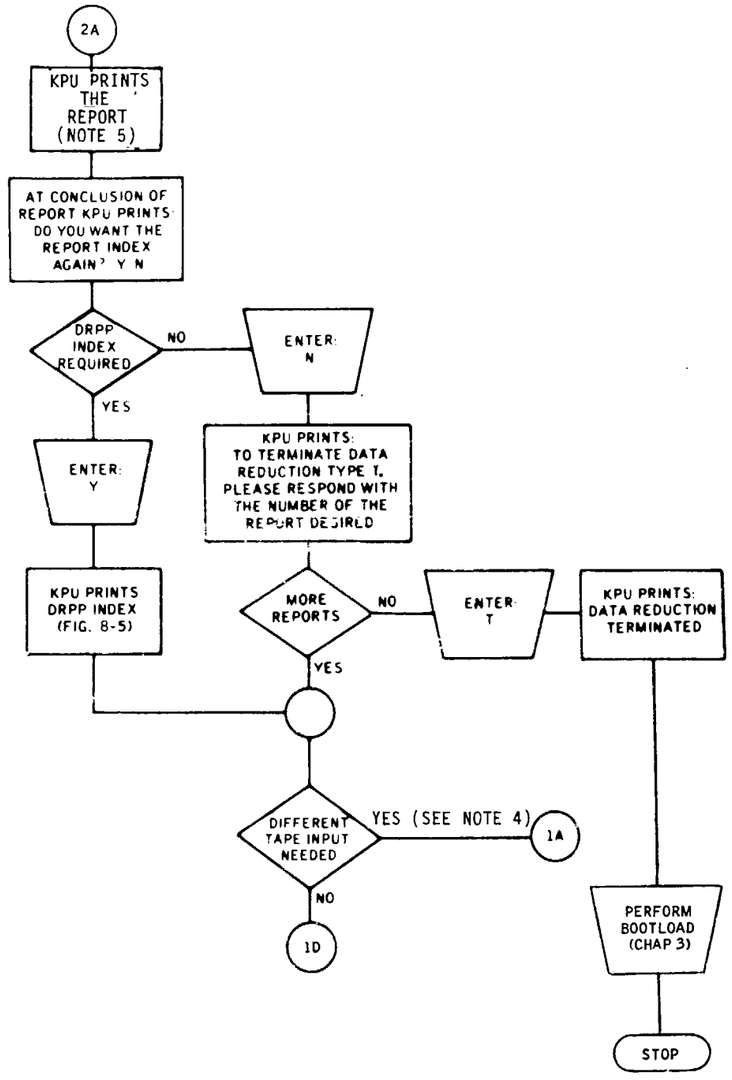
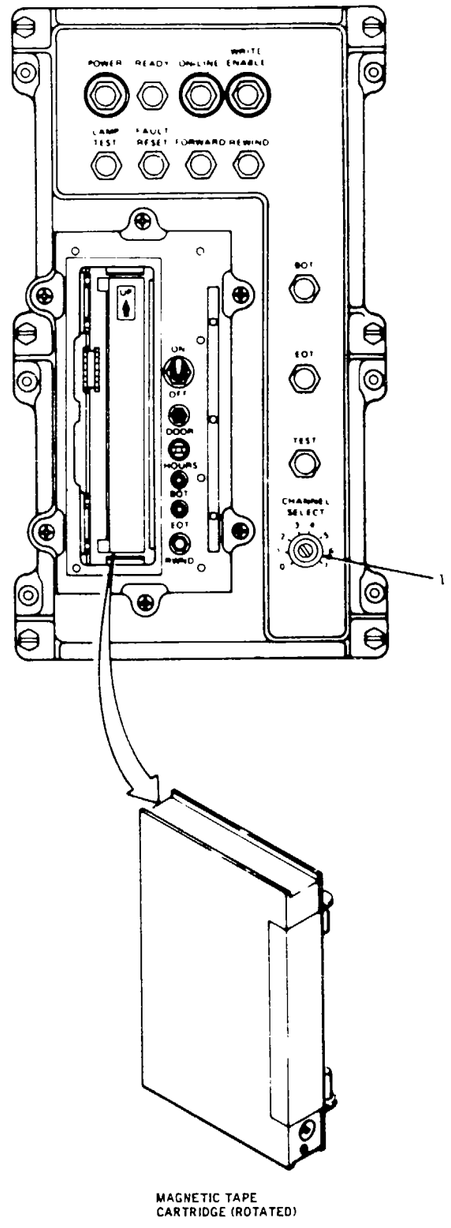


Figure 8-19. DRPP Procedure (Sheet 1 of 2)





NOTES:

1. DATA REDUCTION BE PERFORMED FROM A BOOTLOAD. (REFER TO TABLE 3-9.1).

2. IF REPORT 2, 4, OR 5 IS REQUESTED, KPU OUTPUTS 'DO YOU WANT GEOREF OR STEREO (G/S)? A 'G' ENTRY SUBSTITUTES GEOREF FOR STEREO. AN 'S' ENTRY OUTPUTS STEREO COORDINATES.

3. AT THIS POINT, IF THE RAID TAPE HAS NOT BEEN MOUNTED, THE KPU PRINTS: MOUNT RAID TAPE ON LOGICAL UNIT 3. READY? Y/N

   ENTER FLOW CHART AT (1B).

4. FLIGHT REFERENCE REPORT REQUIRES A RAID TAPE: ALL OTHER REPORTS REQUIRE A DATA RECORDED TAPE.

5. PROCEDURES FOR EACH OF THE REPORTS ARE DIFFERENT AND ARE CONTAINED IN THE REPORT PRINTOUT (SEE FIG. 8-6).

6. ▭ INDICATES EQUIPMENT MARKING.

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Figure 8-19. DRPP Procedure (Sheet 2 of 2)

CHAPTER 9

FIELD UTILITIES FUNCTION

9-1. General. This chapter contains the information and procedures necessary to utilize the field utilities function. The field utilities function allows the operate to dump memory and manipulate magnetic tapes via the KPU.

9-2. Field Utilities Function Operations. The field utilities function provides nine separate operations, as follows:

a. *Spacing*. The spacing operation provides the capability of moving a tape forward or backward by specific number of records or files or to the end-of recorded information (ERI) mark.

b. *Rewind*. The rewind operation provides the capability of rewinding any magnetic tape by KPU command.

c. *Writing*. The writing operation provides the capability of writing an End of File (EOF) or ERI on magnetic tape.

d. *Dumping*. The dumping operation provides the capability of dumping memory (to KPU) in one of three formats: hexadecimal, alphanumeric, and formatted alphanumeric (para 9-7).

e. *Listing*. The listing operation provides the capability of listing magnetic tape contents (on KPU) ii one of three formats shown in d. above.

f. *Copying*. The copying operation provides the capability of directly copying data from one magnetic tape to another.

g. *Matching*. The matching operation provides the capability of comparing the contents of one magnetic tape to another and the results printed out in brief, normal, or extended options (para 9-7).

h. *Altering Card Image Tape*. The altering-tape operation provides the capability of altering raid tape generation inputs, prestored in card image format, on magnetic tape.

i. *KPU-to-Tape*. The KPU-to-tape operation provides the capability of recording information on magnetic tape directly from the KPU. Table 9-1 lists command formats for field utilities operations.

9-3. Special Messages. During the performance of field utilities operations, the KPU will print out special messages which inform the operator of conditions occurring during the operation or that require action by the operator to continue or correct the operation in progress. Table 9-2 lists the messages output along with a description of their meaning and any required operator action.

9-4. Error Printouts. Error printouts during a field utility operation can consist of either a message printout or an error code signifying an input error Table 9-3 lists the error printouts which may encountered, along with a description of their meaning, and any required operator action.

9-5. Field Utilities Function Procedures. The following paragraphs describe the procedures necessary utilize the field utilities function. The listed order operations is irrelevant and each operation may performed as required. All field utility functions may be performed in operational configurations allowing field utilities (refer to table 3-9) or in the non-operational bootload configuration. Figure 9-1 illustrates the procdure required before the field utilities function may be utilized.

9-6. Support Commands. Certain operations in the field utilities function require support commands to enable proper operation and to extend the scope of the field utilities. The commands and their definitions are described below.

a. INP=. Used to assign an input tape for use with either the copy operation (para 9-8.f) or the alter tape operation (para 9-8.i). Immediately after entering INP= on keyboard the tape number is entered.

Example:
INP=5 (tape number 5 designated as input tape; tape to provide information)

b. *OUT*=. Used to assign an output tape for use with either the copy operation (para 9-8.f) or the alter tape operation (para 9-8.i). Immediately after entering OUT= on keyboard, the tape number is entered.

Example:
OUT=6 (tape number 6 designated as output tape; tape to receive information

c *NUM*=. Optional entry used in conjunction with the list operation (para 9-8.e) to specify the number of halfwords that will be listed from each record of the tape. It facilitates the search for a particular record

on a tape without having to list the entire contents of each record. It is entered prior to entering the list command itself. On completion of the list operation, N is turned off so that no other list operation is affected.

Example:

NUM=5
L, 4, H, 21 list the first 5 halfwords (of the 21 records of tape 4) in hex.

NOTE

If a space/blank is entered between the equal sign and desired number of halfwords (X) in the NUM-X format, the NUM processing interprets the blank as a zero, and, disregarding the NUM parameter actually entered, lists all halfwords for the number of records specified. In this event, the operator should manually terminate the operation and begin again.

Table 9-1. Field Utilities Operations Command Format

Operation	Format		Paragraph
Assign Input Tape	INP=n		9-6a
	n =	1-9	
Assign Output Tape	OUT=n		9-6b
	n =	1-9	
Specify Number of Halfwords per Record	NUM=n		9-6c
	n =	number of halfwords per record desired	
Determine Starting Location of Tape Input Buffer	BUF=		9-6d
Spacing	Sa,n,xxxx(,n)		9-8a
	a =	F (Forward) B (Backward)	
	nn =	Tape number	
	xxxx =	no. of records, EOF or ERI	
	(n) =	(optional) EOFs to be spaced	
Rewind	R,n,(,n)		9-8b
	n =	Tape number	
	(n) =	(optional) second tape	
Write	W,n,aaa		9-8c
	n =	Tape number	
	aaa =	EOF or ERI	
Dump	D,a,xxxx,yyyy(,D)		9-8d
	a =	A(Alpha) H (HEX) F (Formatted Alpha)	
	xxxx =	begin location	
	yyyy =	stop location or number of of halfwords to be dumped	
	(D) =	indicates previous field is number of halfwords	
List	L,n,a,xxxx,(nn)		9-8e
	n =	Tape number	
	a =	output format (A,H,F)	
	xxx =	number of records to be listed, EOF or ERI	
	(nn) =	Number of EOFs	
Copy	C,xxxx(,nn)		9-8f
	xxxx =	number of records or EOF or ERI	
	(nn) =	number of EOFs	

Table 9-1. Field Utilities Operations Command Format -Continued

Operation	Format		Paragraph
Match	M,n,m,a,xxxx(,nn)		9-8g
	n =	first tape number	
	m =	second tape number	
	a =	results (B.N,E)	
	xxxx =	number of records EOF or ERI	
	(nn) =	number of EORs	
KPU-to-Tape	TT,n		9-8h
	n =	tape number	
Alter Card Image Tape	AT,a,aa,xxxx		9-8i
	a =	Format (A,H)	
	aa =	procedure (RW,RN, NW,NN)	
	xxxx =	begin location	

Table 9-2. Field Utilities Special Messages

KPU printout	Description	Operator action
KEYIN FUNCTION	Prompt indicating operator keyin action required.	Key in one of the operation commands.
FUNCTION COMPLETE	Indicates that execution of the previously keyed-in operation command is complete.	None.
INTERVENING LINES SAME AS ABOVE LINE	Indicates suppression of duplicate lines during memory dump or tape list.	None.
END-OF-FILE WRITTEN ON TAPE	Indicates an end-of-file was written on the tape during a typewriter-to-tape command in which no data was keyed in for record creation.	None.
OUTPUT SUSPENDED	Indicates an alter tape operation was used in which the output was not written onto the output tape due to an N being keyed in as the second character of field 3 of the alter tape command.	None.
OPERATION COMPLETE	Indicates alteration of tape has taken place in which the record was written onto the output tape due to a W being keyed in as the second character of field 3 of the alter tape command.	None.

Table 9-3. Field Utilities Error Printouts

KPU printout	Description	Operator action
LAST TRANSMISSION FROM THE KPU WAS BAD...REKEY INPUT	The last input from the KPU was erroneously received. KPU is waiting to reaccept input.	Reenter last input.
LAST TRANSMISSION TO KPU WAS IN ERROR. PRESS "C" FOR CONTINUE OR "R" FOR RETRANSMIT.	The last input to the KPU was in error.	Enter C to continue program and ignore error. Enter R to retransmit previous message from computer to KPU.
LOGICAL TAPE NOT MOUNTED. **KEYIN FUNCTION**	The logical tape number requested is not enabled. The program returns to the operation entry point.	Logically enable tape to be used (CC104n n). Reenter command for operation to be performed and continue with operation.
#ERI ENCOUNTERED DURING TAPE READ. TYPE "C" FOR CONTINUE OR "D" FOR DISCONTINUE.	An #ERI was encountered during an operation in which ERI was not specified.	Enter C to continue as if the #ERI record encountered were merely another record. Enter D to terminate the operation. If D is entered, the program will return to the operation entry point and KPU prints **KEYIN FUNCTION**. (Re)enter command for operation to be performed and continue with operation.
READ ERROR ON TAPE. TYPE "C" FOR CONTINUE OR "D" FOR DISCONTINUE.	A read error was encountered on the tape.	Enter C to continue program with the mis-read record being used. Enter D to terminate the operation. If a D is entered, the program will return to the operation entry point and the KPU prints **KEYIN.
ONE OR MORE FIELDS TOO LARGE. HALFWORD NOT TOUCHED. **KEYIN FUNCTION**	An attempt was made to alter tape in hexadecimal format, but one of the fields keyed-in exceeded five characters. The halfword for which the erroneous entry was made was not altered.	(Re)enter alter memory or alter tape command and continue with operation.
INSUFFICIENT BUFFER. XXXXX BYTES. PRESS C FOR CONTINUE OR D FOR DISCONTINUE.	The amount of available buffer is not large enough to accommodate the record length on this tape.	Enter C to continue the program with tape I/O being performed with the number of bytes noted (those bytes on the record that exceed the XXXXX bytes of buffer capacity will be lost). Enter D to terminate operation. If D is entered, program returns to operation entry point and KPU prints **KEYIN FUNCTION**. (Re)enter command for operation to be performed and continue with operation.

Table 9-3. Field Utilities Error Printouts -Continued

KPU printout	Description	Operator action
INSUFFICIENT BUFFER AVAILABLE.OPERATION TERMINATED.**KEYIN FUNCTION**	The amount of available buffer is not large enough to accommodate the record length on this tape. The operation is unconditionally terminated (copy or alter tape operation) and program returns to operation entry point.	Rebootload system without operational configuration and restart operation.
RECORD SIZE UNKNOWN. XXXXX BYTES OF BUFFER AVAILABLE.PRESS C FOR CONTINUE OR D FOR DISCONTINUE.	The record size for this tape is unknown. This message is just a warning notifying operator of the buffer available.	Enter C to continue the program with tape I/O being performed with the number of bytes noted (those bytes on the record exceeding the XXXXX bytes of buffer capability will be lost). Enter D to terminate operation. If D is entered, program returns to operation entry point and KPU prints **KEYIN FUNCTION**. (Re)enter command for operation to be performed and continue with operation.
ERR 0 **KEYIN FUNCTION**	Attempt made to space backwards to ERI.	Reenter command for operation to be performed and ensure entry is correct (ERI not allowable with space backward).
ERR 1 **KEYIN FUNCTION**	Invalid command code used.	Reenter command for operation to be performed and ensure entry is correct.
ERR 2 **KEYIN FUNCTION**	Improper second character in space operation.	Reenter space command with correct second character (F or B).
ERR 3 **KEYIN FUNCTION**	Invalid write command entry.	Reenter write command with correct entry (EOF or ERI).
ERR 5 **KEYIN FUNCTION**	Both tapes in operation have same number.	Reenter command for operation to be performed with correct tape numbers.
ERR 6 **KEYIN FUNCTION**	Improper fourth character in match operation.	Reenter match command with correct fourth character (B, N, or E).
ERR 7 **KEYIN FUNCTION**	Improper second character in first field in alter operation.	Reenter alter command with correct second character (T).
ERR 8 **KEYIN FUNCTION**	For alter tape command only logical tape 2 is legal for INP=	Reenter INP=2
ERR 9 **KEYIN FUNCTION**	Invalid tape number entered.	Reenter command for operation to be performed with correct tape number (1 thru 9).
ERR A **KEYIN FUNCTION**	An attempt was made to modify a character in the tape buffer beyond the 80th character.	Modify fourth field of alter tape command to be less than 28_{16}.
ERR B **KEYIN FUNCTION**	Tape record being modified is greater than 80 characters.	Enter next alter tape (AT) command to process next record or change input tapes.
ERR D **KEYIN FUNCTION**	Invalid word address entered for dump operation.	Reenter dump operation command with correct address limits.

Table 9-3. Field Utilities Error Printouts -Continued

KPU printout	Description	Operator action
ERR E **KEYIN FUNCTION**	Invalid format entry.	Reenter command for operation to be performed with correct format characters (A-alpha, H-hex, F-formatted alpha).
ERR F **KEYIN FUNCTION**	Improper hex number was used.	Reenter command for operation to be performed with corrected hex number.

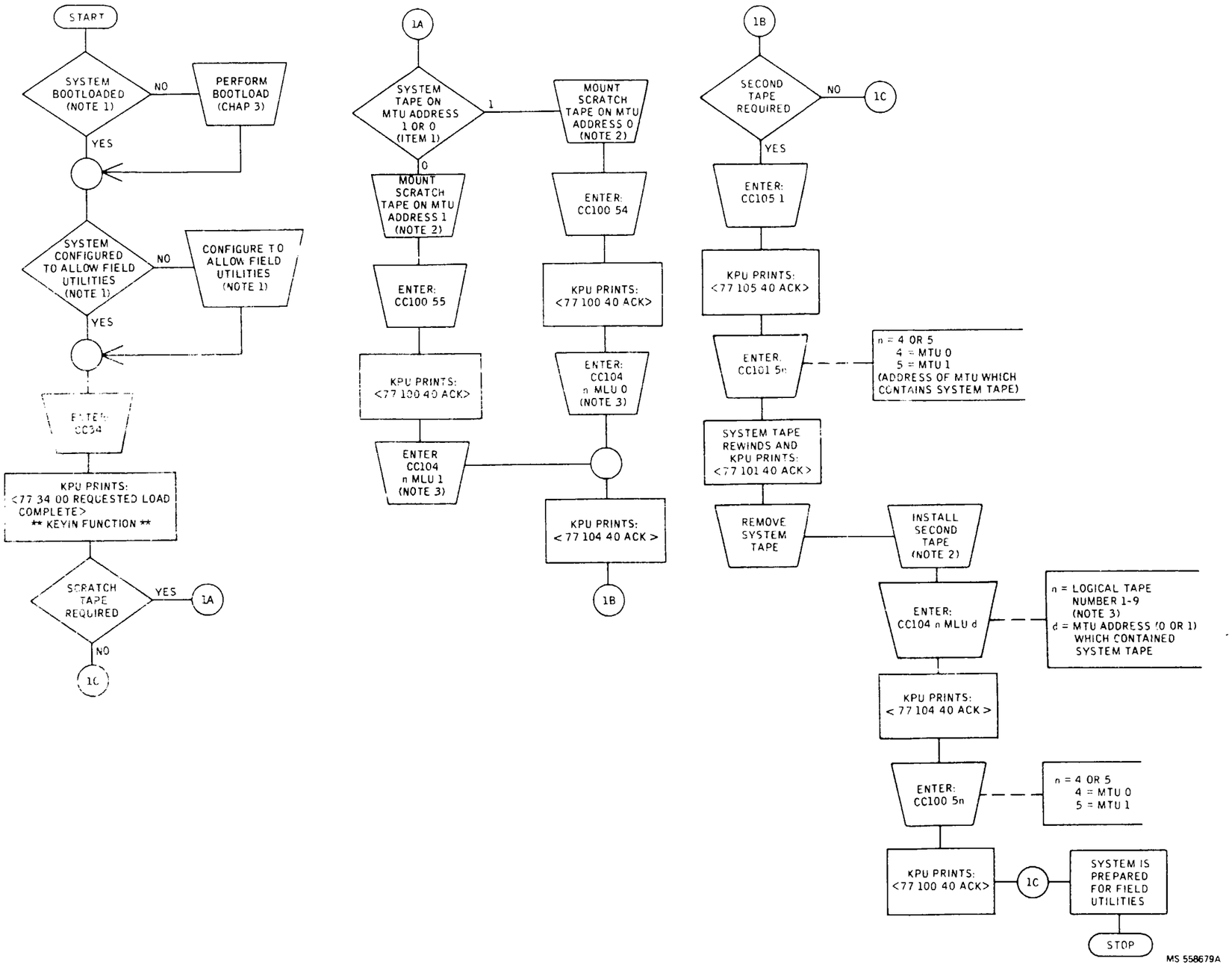
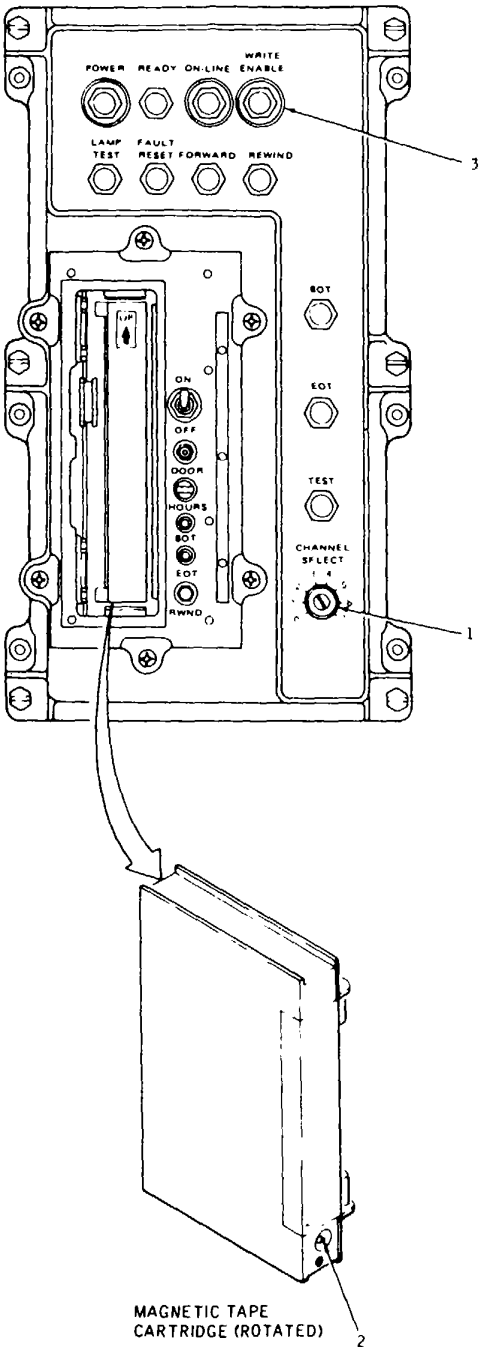


Figure 9-1. Field Utilities Function Preparation (Sheet 1 of 2)



NOTES:

1. THE SYSTEM MAY BE IN EITHER BOOTLOAD OR OPERATIONAL CONFIGURATION ALLOWING FIELD UTILITIES (REFER TO TABLE 3-9.1;
2. IF TAPE IS TO BE USED FOR RECORDING, THE [PROT] SWITCH MUST BE IN THE [BLANK] POSITION (ITEM 2) AND [WRITE ENABLE] INDICATOR IS LIT (ITEM 3)
3. IN FIELD UTILITIES FUNCTION, TAPE NUMBERS ARE ARBITARILY ASSIGNED FOR EACH OPERATION. IT IS NOT RECOMMENDED TO USE THE NUMBER 1, (SYSTEM TAPE NUMBER). HOWEVER, WHEN THE OPERATION IS COMPLETE, THE NUMBER REMAINS ASSIGNED. THE OPERATOR MUST REASSIGN A CORRECT OPERATIONAL LOGICAL TAPE NUMBER PRIOR TO NORMAL OPERATION TO ENSURE CORRECT SYSTEM FUNCTIONS.
4. [ ] INDICATES EQUIPMENT MARKING.

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Figure 9-1. Field Utilities Function Preparation (Sheet 2 of 2)

d. *BUF*=. Optional entry used to determine the address of the tape input buffer to allow dumping (para 9-8.d) of its contents in order to verify the results of alterations after an alter tape operation (para 9-8.i). Only the four characters, BUF=, are entered on the keyboard. The KPU then returns a message containing the starting location of the tape input buffer.

Example:
BUF = (input)

KPU prints-THE TAPE BUFFER
STARTS AT LOCATION

XXXXX (XXXXX = buffer address in hex)

9-7. Output Format Options. KPU printouts during memory dump and tape list operations may be in alpha, formatted alpha, or hex formats, as selected by the operator. In a tape-match operation, comparison results printouts may be in brief, normal, or extended option. The following sub-paragraphs describe the printout options and give an example of memory dump in ea format as well as the command required to initiate the dump.

a. *Alpha Output Format*. The alpha output format is printed out as a string of alpha characters (ea record equals 72 characters) representing the contents of the memory or tape at the selected location. Figure 9-2 illustrates the alpha output format and includes example of an alpha dump.

b. *Formatted Alpha Output Format*. The formatted alpha output format printout breaks the alpha printout into full words for more convenient alteration and also contains the hex halfword location selected Figure 9-3 illustrates the formatted alpha format al includes an example of a formatted alpha dump Formatted alpha outputs (format) are unique to the AN/TSQ-73 system.

```
Output Format:

                          (STRING OF 72 ALPHA CHARACTERS)

          AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA

Example:

Input  =    D,A,47EA,26,D

Output =   AAAABBBBCCCCDDDDEEEEFFFFGGGGHHHHIIIIJJJJKKKKLLLLMMMM
```

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Figure 9-2. Alpha Output Format

```
Output Format:

          (HEX
          HALFWORD
          LOCATION)

          00000     AAAA  AAAA  AAAA  AAAA  AAAA  AAAA  AAAA  AAAA  AAAA  AAAA  AAAA  AAAA


Example:

Input  =    D,F,47EA,64,D

Output =  047EA     AAAA BBBB CCCC DDDD EEEE FFFF GGGG HHHH IIII JJJJ KKKK LLLL

          04802     MMMM NNNN OOOO PPPP QQQQ RRRR SSSS TTTT UUUU VVVV WWWW XXXX

          0481A     YYYY ZZZZ 1111 2222 3333 4444 5555 6666
```

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Figure 9-3. Formatted Alpha Output Format

c. *Hexadecimal Output Format*. The hexadecimal (hex) output format printout contains the hex halfword location selected, its contents (in hex), and subsequent hex halfwords requested. Figure 9-4 illustrates the hex output format and includes an example of a hex dump.

9-8. Field Utilities Functions. Field utilities consists of the following functions which are independent of each other and their sequence is irrelevant. They are used as necessary to perform the desired operation. Before using field utilities, the operator must be familiar with the layout (format) of the tape being used. This format is illustrated in figure 9-5. As each function is completed, the KPU prints: **KEYIN FUNCTION**.

a. *Spacing*. The spacing command moves the tape forward or backward a specified number of records, End-of-file marks (EOFs) or to the End of Recorded Information (ERI).

Format: Sa,n,xxxx(,n)

S = space command
a = F (forward) or B (backward)
n - tape number (in decimal to be spaced (1 thru 9)
xxxx = number of records (in decimal) to be spaced or EOF or ERI (invalid for space-backward operation)
n = (optional) number of EOFs to be spaced; if not entered, assumed to be 1. (Used only when EOF is entered.)

Examples:

SF,7,5264 = space forward tape 7 for 5264 records
SB,2,EOF,4 - space backward tape 2 to the fourth end-of-file mark.

Output Format:

(HEX HALFWORD LOCATION) (10 HEX HALFWORDS)

00000 XXXX XXXX XXXX XXXX XXXX XXXX XXXX XXXX XXXX XXXX

Example:

Input =

D,H,47EA,64,D

Output =

047EA	4141	4141	4242	4242	4343	4343	4444	4444	4545	4545
047F4	4646	4646	4747	4747	4848	4848	4949	4949	4A4A	4A4A
047FE	4B4B	4B4B	4C4C	4C4C	4D4D	4D4D	4E4E	4E4E	4F4F	4F4F
04808	5050	5050	5151	5151	5252	5252	5353	5353	5454	5454
04812	5555	5555	5656	5656	5757	5757	5858	5858	5959	5959
0481C	5A5A	5A5A	3131	3131	3232	3232	3333	3333	3434	3434
04826	3535	3535	3636	3636						

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Figure 9-4. Hexadecimal Output Options

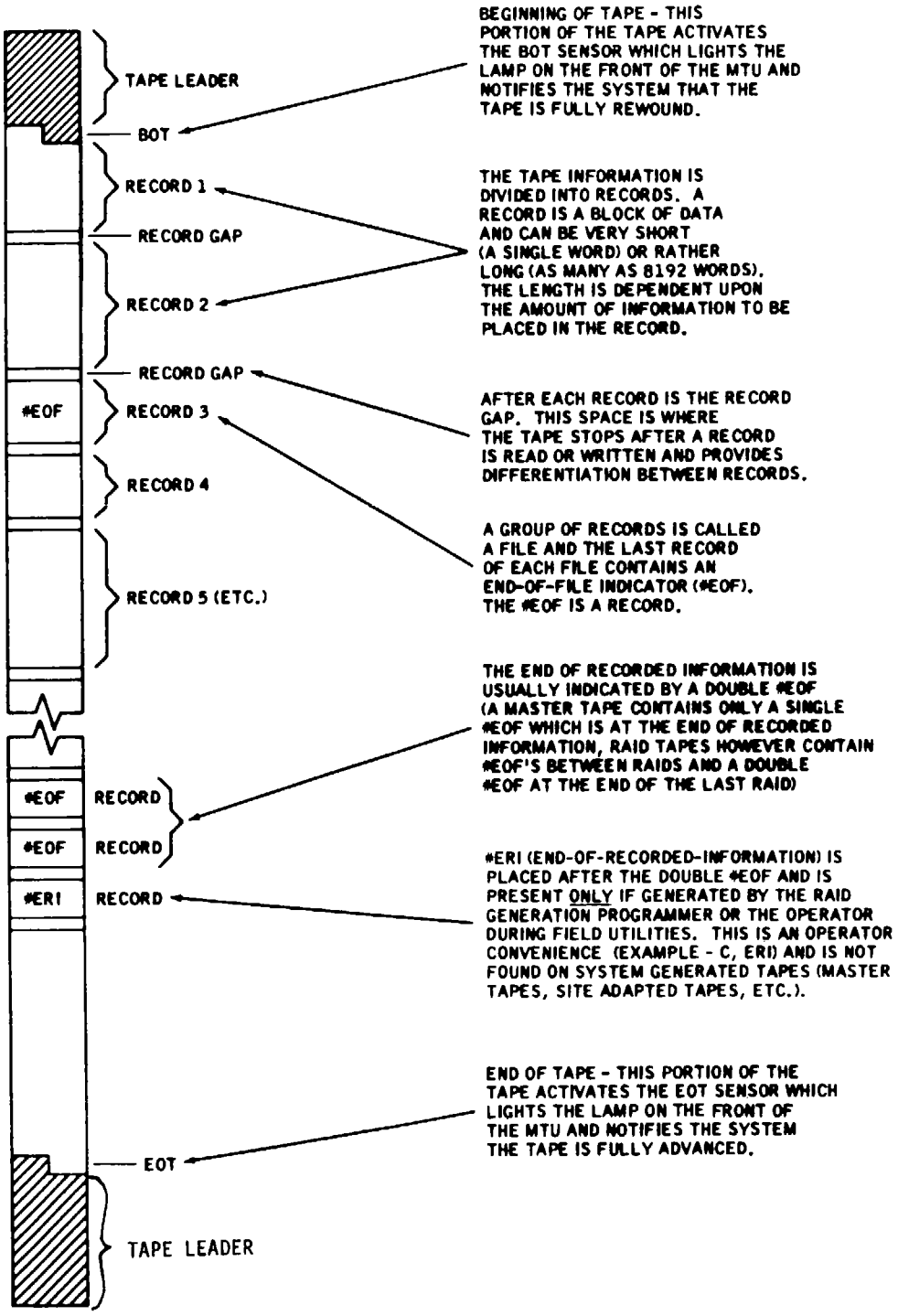

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Figure 9-5. Typical Tape Format and Layout

b. Rewind. The Rewind Command will rewind one or both tapes to the Beginning-of-Tape (BOT).

Format: R,n(,n)
R = rewind command
n = tape number (in decimal) to be rewound (1 thru 9)
(n) = (optional) tape number (in decimal) of second tape to be rewound

Examples:
R,9 = rewind tape 9
R,9,2 = rewind tape 9, then 2

c. *Write*. This command will write an EOF of ER on the designated tape (the tape must be write-enabled).

Format: W,n,aaa
W = write command
n = tape number (in decimal) to be written on (1 thru 9)
aaa = EOF for writing a EOF mark. ERI for writing a ERI mark

Examples:
W,3,EOF write EOF mark on tape 3

W,9,ERI = write a ERI mark on tape 9

d. *Dump*. The Dump command causes the KPU to printout the contents of designated memory location in alpha (fig. 9-2), formatted alpha (fig. 9-3) o: hexadecimal (fig. 9-4). When dumping in alpha (A) o: formatted alpha (F) (if an odd halfword is specified) dumping will begin at the full-word boundary of which the halfword is part. When specifying a decimal number of halfwords to be dumped on A or F, the number: of halfwords listed will be increased by one if the number of halfwords specified is odd. An even number: of halfwords (a series of full words) will always be output. When using this command during Alter Card Image Tape (para 9-8d) operations, the BUF = command (para 9-6) will show the memory location whet the tape input buffer begins.

Format: D,a,xxxx,yyyy(,D)
D = dump command
a = A for alpha, H for hex, F for formatted alpha (output format para 9-7)
xxxx = hex halfword location in memory at which dumping is to stop, or number of halfwords to be dumped (in decimal)
D = (optional) used when previous field (stop location) has specified a number of halfwords to be dumped rather than a hex location where dumping is to stop

Examples: D,H,3BEF,3CED = dump memory in hex, starting at halfword location 3BEF and ending with halfword location 3CED.

D,A,3BE,521,D = dump memory in alpha, starting at halfword location 3BEF and continue dumping until 521 halfwords have been dumped.

D,F,3BEF = dump memory in formatted alpha starting at halfword location 3BEF continue dumping until the end of memory is reached. (Note: there are 131K words of memory.)

e. *List.* The list command causes the contents of the designated magnetic tape to be printed out on the KPU in alpha (fig. 9-2), formatted alpha (fig. 9-3) or hexadecimal (fig. 9-4). If the entire contents of each record are not desired, the List command must be preceded by the NUM = command (para 9-6c).

Format: L,n,a,xxxx,(nn)
L = list command
n = tape number (in decimal) to be listed (1 thru 9)
a = A for alpha, H for hex, F for formatted alpha (output format - para 9-7)
xxxx = (nn) =
(optional) number of EOFs to be listed (if not entered, assumed to be 1). Used only when EOF is used as number of records to be listed.

Examples: L,9,A,5082 = list tape 9 in alpha for 5082 records
L,3,H,ERI = list tape in hex to ERI mark
L,5,F,EOR,3 = list tape formatted alpha to the third EOF mark

NOTE
Refer to the NUM = command (para 9-6c).

f. Copy. This command causes the designated records of one tape to be copied onto another. The copy operation does not contain the input and output tapes to be copied from and recorded on. Input and output tape numbers are specified by support commands INP= and OUT= (para 9-6) prior to copy command.

NOTE

To copy system tapes (master tapes, site adapted tapes), CC37 (Site Adaptation, Chapter 3) is more efficient.

Format: INP=x (input tape number: tape to be copied)
OUT=y (output tape number: tape to be recorded onto)
C,xxxx(,nn)
C= copy command
xxxx= number of records to be copied or EOF or ERI
(nn)= number of EOFs to be copied. (Used only when EOF is entered as number of records to be copied.)

Examples:
INP=3
OUT=2 (specifies tape 3 as input and tape is output)
C,5826 =copy from tape 3 onto tape 2 for 5826 records
C,EOF,4=copy from tape 3 onto tape 2 to the fourth EOF mark

g. Match. The Match command causes the specified records of one tape to be matched with the specified records of the second tape. The results of the match are printed out according to one of three options. Figure 9-6 illustrates the printout options.

(1) Brief option. The brief option printout message contains the record number and states BAD COMPARE for each record that does not compare favorably.

(2) Normal option. The normal option printout message contains the halfwords within the bad comparing record that do not match. Record number, halfword locations, and contents will be printed.

(3) Extended option. The extended option printout message contains the entire contents of both records that do not match.

Format: M,n,m,a,xxxx(,n)
M= match command
n= tape number (in decimal) of first input tape
m= tape number (in decimal) of second input tape
n= match options: B for brief, N for normal, E for extended. Brief option prints out message giving record number and stating BAD COMPARE for each record that does not match. The extended option prints out the entire contents of both records that do not match. See figure 9-6 for examples of Match Operation Output Options.
xxxx= number of records to be matched or EOF or ERI
(n)= number of EOFs to be matched (if blank), assumed to be 1). Used only when EOF is entered as number of record to be matched.

Examples:
M,2,9,b,536 = match tape 2 with tape 9 for 536 records. Printout in brief option for mismatch
M,2,3,E,EOF,4 = match tape 2 with tape 3 for four EOF marks. Printout in extended option for mismatch.

h. *KPU-to-Tape*. The KPU (Typewriter)-to-TAPE command causes a record (maximum 64 characters or one KPU line) to be copied directly from the KPU, in alpha, to the designated tape. This command is used during Card Image Tape generation (fig. 9-7) for the Raid Generation procedure (Chapter 6). The command must be entered only once. To terminate the command, press REQ SEND on the KPU twice in succession. This will cause an EOF to be written on the tape. A 64-character record is written each time regardless of the number of characters input. Any remaining characters needed to make 64 will be filled out in blanks.

Format: TT,n
TT= typewriter-to-tape command
n= tape number (in decimal) that record is being recorded on

Example:
TT,5= create a record for tape via KPU and write record on tape 5

BRIEF OPTION

M,3,4,B,4 (OPERATOR INPUT)

RECORD 1 BAD COMPARE

NORMAL OPTION

M,3,4,N,4 (Operator Input)

RECORD 1	TAPE 03	TAPE 04
HALFWORD # 0005	AAAA	D7E3
HALFWORD # 0006	BBBB	4040
HALFWORD # 0020	ABCD	4040
HALFWORD # 002C		0000
HALFWORD # 002D		000F

EXTENDED OPTION

M,3,4,E,4 (Operator Input)

RECORD 1	TAPE 03	TAPE 04
0000	404040404040404040D6AAAA	404040404040404040D6D7E3
0006	BBBB40C3C1D9C46BE3C1D7F2	404040C3C1D9C46BE3C1D7F2
000C	6BD7D9C9D5E3C5D96BE7D9C5	6BD7D9C9D5E3C5D96BE7D9C5
0012	C66BC4C1E3C16BC2D6D6E340	C66BC4C1E3C16BC2D6D6E340
0018	404040404040404040404040	404040404040404040404040
001E	404040404040404040404040	404040404040404040404040
0024	404040404040404000000000	404040404040404000000000
002A	00000000	000000000000000F

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Figure 9-6. Match Operation Output Options

i. *Alter Tape Command*. This command allows the operator to change a card image tape (Chapter 6 and para 9-8h); figure 9-8 illustrates this procedure.

Format: INP = 2 (2 is raid tape generator input tape)
OUT = y (output tape number 3 thru 9)
AT,a,aa,xxxx
AT= alter tape command
a= altering format (A for alpha, H for hex)
aa= operation procedure: (fig. 9-7)
RW-read input tape, write output tape
RN-read input tape, do not write output tape
NW-do not read input tape, write output tape
NN-do not read input tape, do not write output tape
xxxx= hex halfword location relative to the beginning of the record at which alterations are to begin (fig. 9-7).

Examples:

INP = 2
OUT = 3
AT,A,RW,0010 = alter tape 2 in alpha (read a record from tape 2) beginning at halfword 0010. When alterations are complete, write the record onto tape 3.
AT,H,NN,0003 - alter the record presently in memory. Do not read tape 2. Start alterations at halfword location 0003. When alterations are complete, do not write the record on tape 3.

NOTE

To determine address of tape input buffer, enter BUF = (para 9-6). Use the Dump command (para 9-8d) to determine contents of record in memory.

9-9. Field Utilities Function Uses and Typical Operations. Following are some typical Field Utilities operations. They are by no means all the possible operations, but are given as examples and as an aid in performing specific operations.

a. Generate Card Image Tape. Chapter 6 mentions that a card image tape may be used to generate a complicated scripted raid. This makes possible the correction of individual entries (using para 9-8i). Figure 9-7 illustrates the procedure for generating a card image tape.

b. Alter Card Image Tape. By combining the operations in paragraph 9-8, the operator is able to manipulate system tapes, raid tapes, read the contents of memory and, in the case of Alter Card Image Tape, manipulate the contents of memory. Figure 9-8 illustrates this procedure.

c. Transferring Maps from Tape to Tape. It may be desired to transfer the maps from one tape to another without site adapting the new tape; i.d., it is already site adapted with different information or a master map tape is being used. This is possible with the use of field utilities. Before this can be accomplished, however, the tape order for each tape must be printed out as different tape versions have the maps in different records. Figure 9-9 illustrates the procedure for transferring maps.

9-10. Terminate Field Utilities Function. To terminate the field utilities function, enter CC17.

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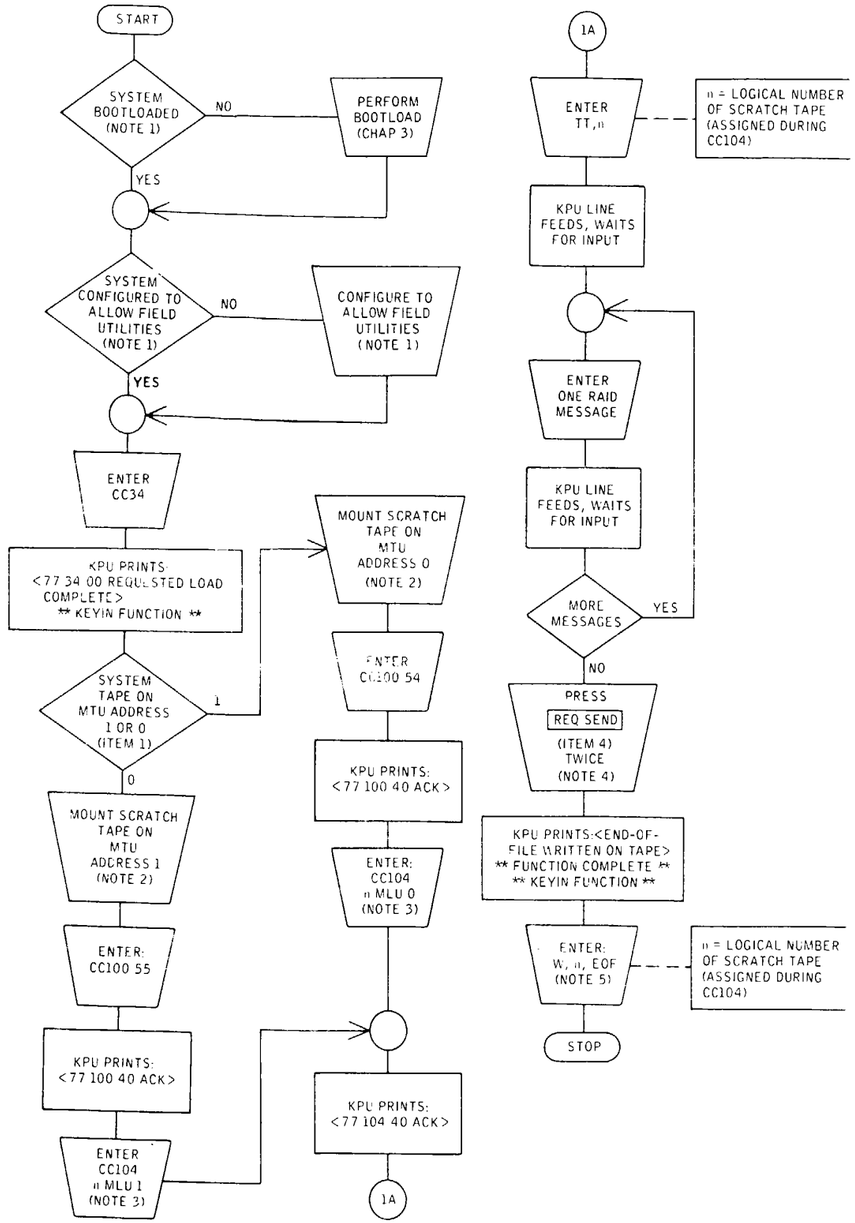

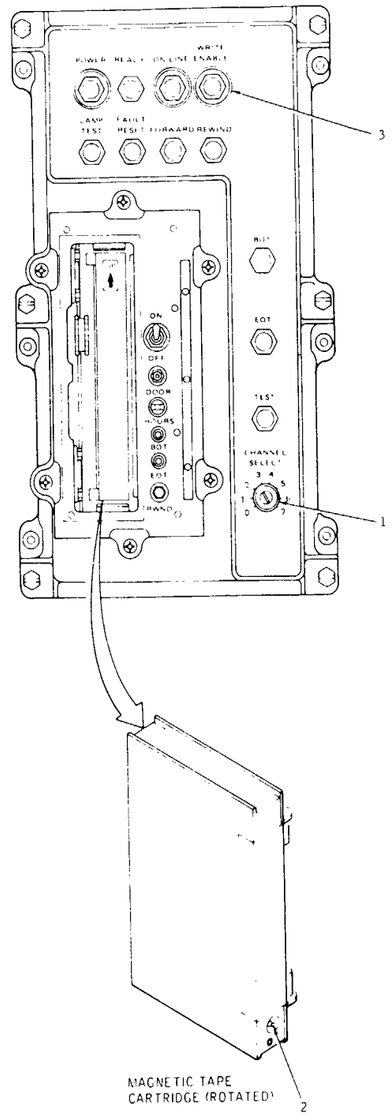

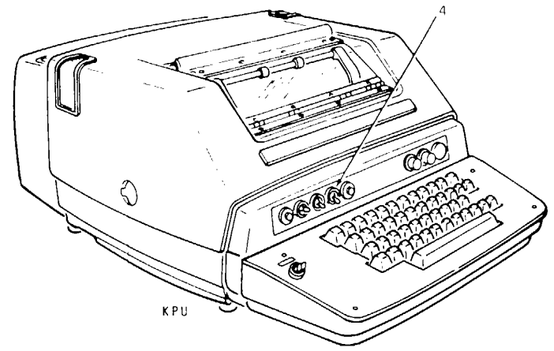

NOTES:

1. THE SYSTEM MAY BE IN EITHER BOOTLOAD OR OPERATIONAL CONFIGURATION ALLOWING FIELD UTILITIES (REFER TO TABLE 3-9.1)
2. THE [PROT] SWITCH MUST BE IN THE [BLANK] POSITION (ITEM 2) AND [WRITE ENABLE] INDICATOR IS LIT (ITEM 3)
3. IN FIELD UNTILITIES, TAPE NUMBERS ARE ARBITARILY ASSIGNED FOR EACH OPERATION. IT IS NOT RECOMMENDED TO USE THE NUMBER 1 (SYSYEM TAPE NUMBER).
4. IF THIS IS DONE ACCIDENTALLY, RECOVERY IS ACCOMPLISHED BY ENTERING: SB, n, 1 AND REENTERING FLOW CHART AT (1A)
5. IT IS GOOD PRACTICE TO ADD AN EXTRA EOF AT THE END OF RECORDED INFORMATION. AT THIS POINT W, n, ERI MAY ALSO BE ENTERED
6. [ ] INDICATES EQUIPMENT MARKING

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Figure 9-7. Card Image Tape Generation

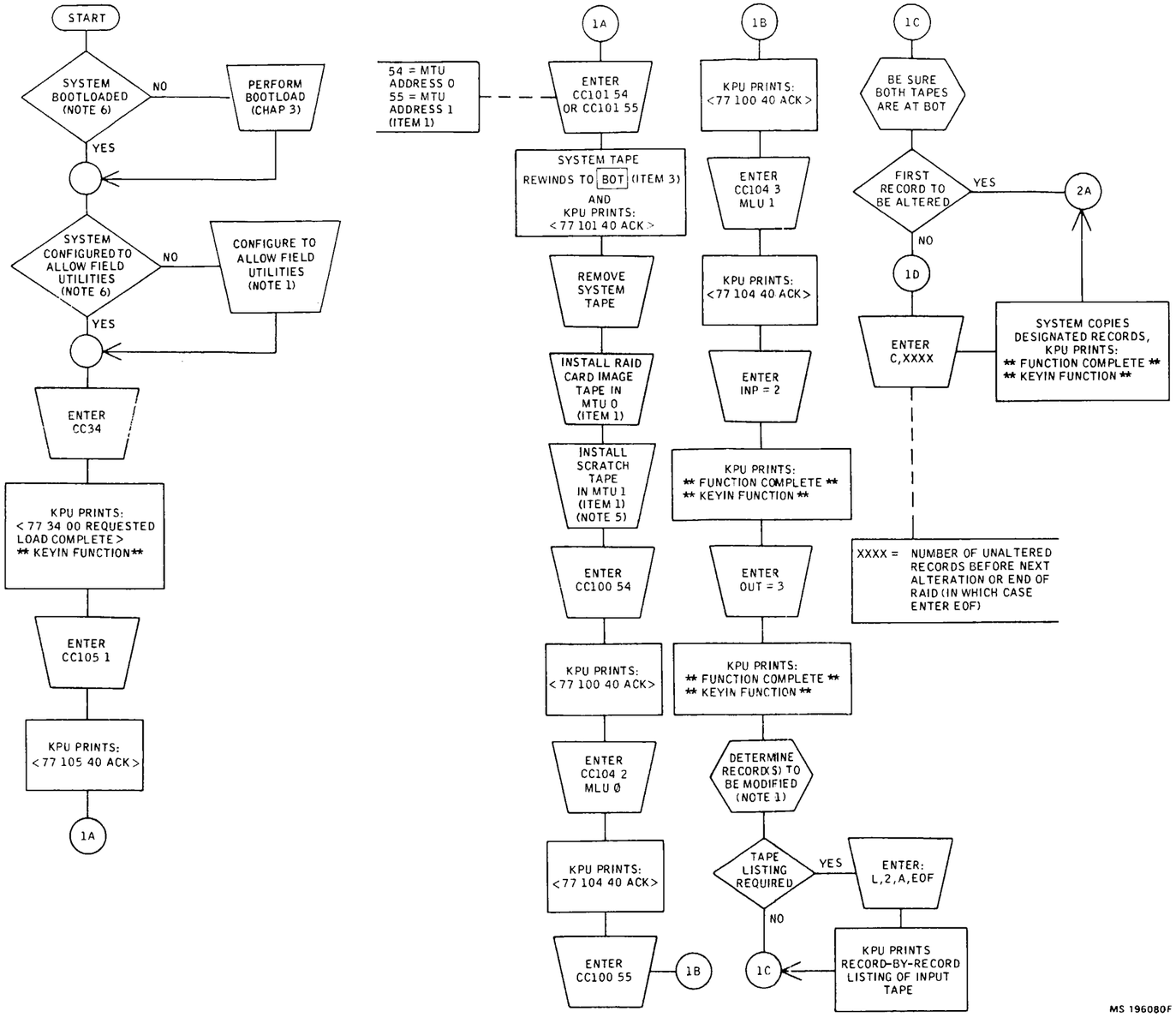
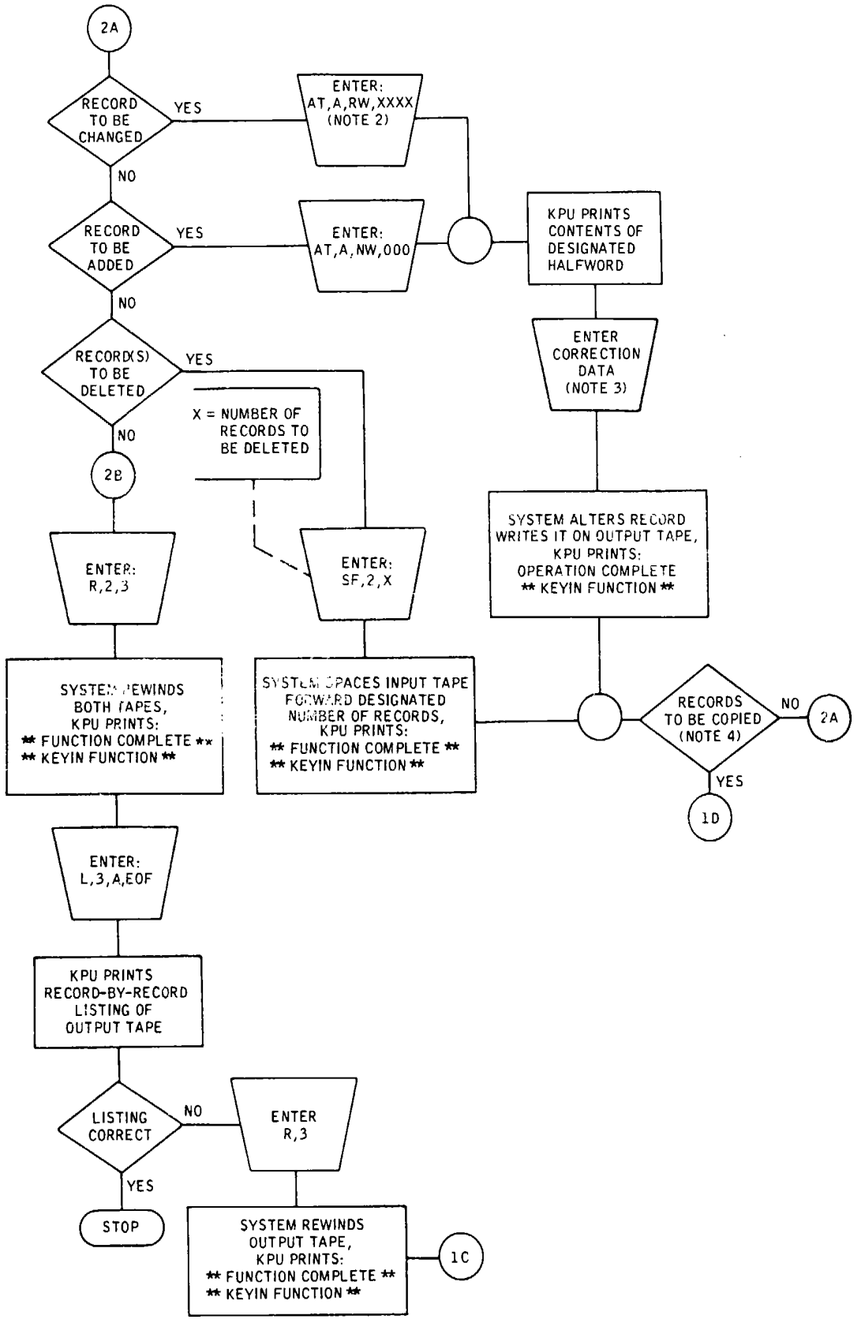
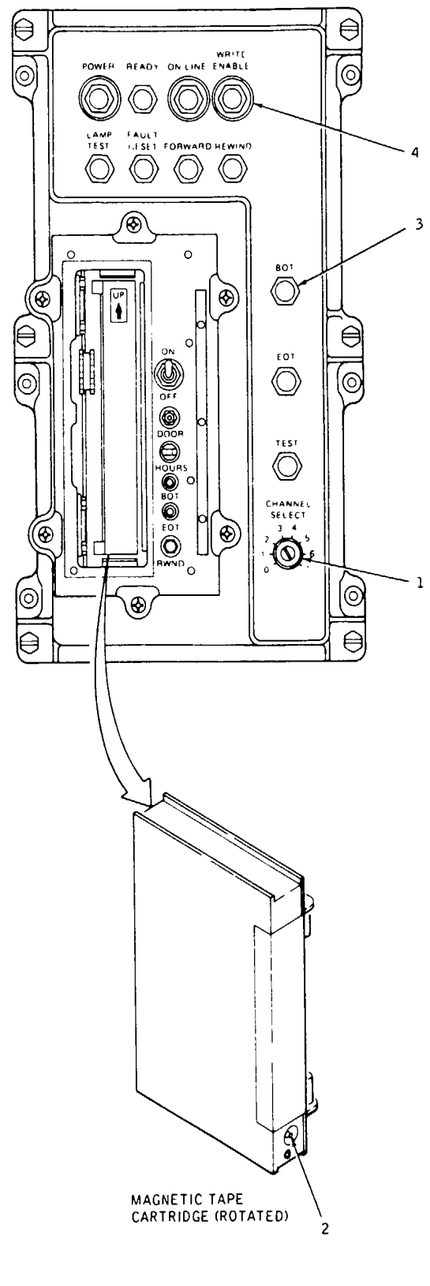


Figure 9-8. Alter Card Image Tape Operation (Sheet 1 of 2)





NOTES:

1. EACH MESSAGE ON THE RAID CARD IMAGE TAPE IS A RECORD. EACH TWO CHARACTERS ARE A HALFWORD. EXAMPLE: 1, 0100, 1, 250, -100, 500, 1;
   HALFWORDS = 0 1 2 3 4 5 6 7 8 9 A B
   HALFWORDS ARE NUMBERED IN HEXADECIMAL, AND MUST BE SPECIFIED AS A 4-DIGIT NUMBER, USING LEADING ZEROES IF NECESSARY (EXAMPLE: 0004).
2. XXXX = HALFWORD LOCATION WHERE ALTERATIONS ARE TO BEGIN.
3. ENTIRE HALFWORD(S) MUST BE ENTERED
   EXAMPLE - 0300 TO BE CHANGED TO 0301= ENTER 0301.
   IF MORE THAN ONE HALFWORD IS INVOLVED, INSURE MESSAGE IS FULL HALFWORDS.
4. IF LAST RECORD ALTERED, ADDED OR DELETED WAS LAST RECORD OF RAID, ENTER W, 3, EOF. PROCEED TO (2B)
5. THE PROT SWITCH (ITEM 2) MUST BE IN THE BLANK POSITION AND WRITE ENABLE INDICATOR (ITEM 4) IS LIT.
6. THE SYSTEM MAY BE IN EITHER BOOTLOAD OR OPERATIONAL CONFIGURATION ALLOWING FIELD UTILITIES (REFER TO TABLE 3-9.1).
7. [ ] INDICATES EQUIPMENT MARKING.

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Figure 9-8. Alter Card Image Tape Operation (Sheet 2 of 2)

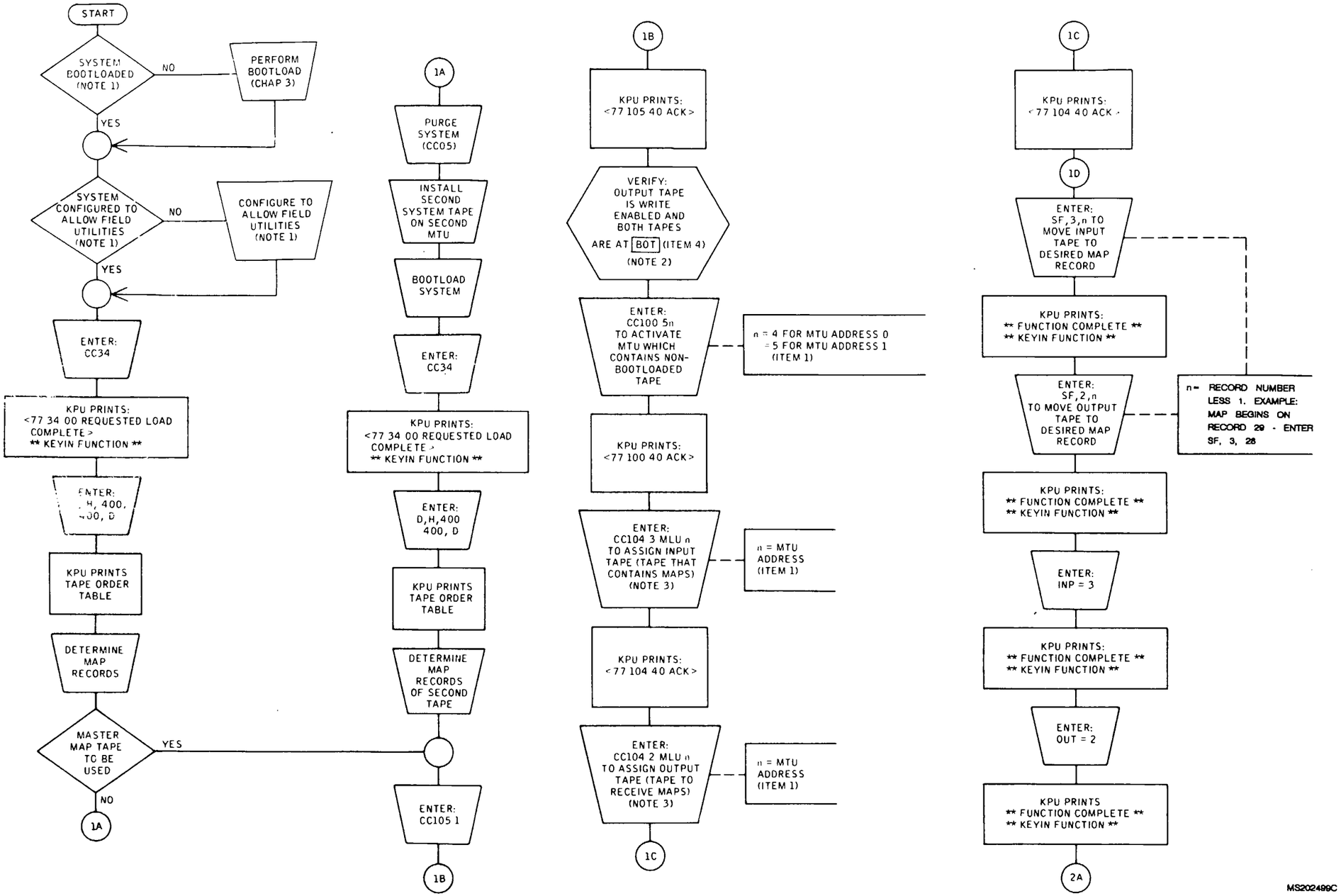
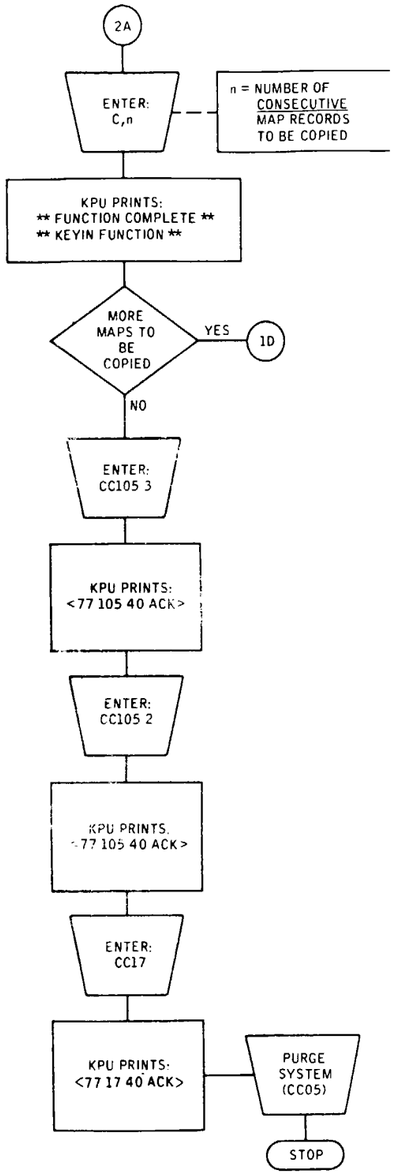


Figure 9-9. Map Transfer Operation (Sheet 1 of 2)



KEYIN FUNCTION

D,H,400,400,D

	RECORD 1			RECORD 2			
00400	DB58 0000	0000 0000		FCA0 0000	0108 0001	12B8 E000	
0040A	3000 1304	6548 F000		3000 2304	1809 2000	3000 3304	
00414	01E8 0000	090C 0203		BC88 1000	0000 1202	3D10 7000	
0041E	0000 2202	0468 0000		0400 0803	FFC8 7F90	0000 1802	
00428	FFC8 BF80	0000 2802		FFC8 FF70	0000 3802	C659 3F60	
00432	0000 4802	1BD9 7820		0000 5802	1F81 7820	0000 6802	
0043C	1829 7820	0000 7802		1B79 7820	0000 8802	00A8 0000	
00446	1000 0103	B119 D000		0000 1102	00D0 0000	1300 0103	
00450	C339 CF30	0000 1102		03C8 0000	0200 0803	FFC8 7F90	
0045A	0000 1802	FFC8 BF80		0000 2802	FFC8 FF70	0000 3802	
00464	1D89 3F60	0000 4802		1BD9 4820	0000 5802	1F81 4820	
0046E	0000 6802	1829 4820		0000 7802	1B79 4820	0000 8802	
00478	0300 0000	0800 0803		FFC8 7F90	0000 1802	FFC8 BF80	
00482	0000 2802	FFC8 FF70		0000 3802	0CC1 3F60	0000 4802	
0048C	1BD9 4820	0000 5802		1F81 4820	0000 6802	1829 4820	
00496	0000 7802	1B79 4820		0000 8802	0300 0000	0500 0703	
004A0	FFC8 7F90	0000 1702		FFC8 BF80	0000 2702	BB90 FF70	
004AA	0000 3702	1BD9 3820		0000 4702	1F81 3820	0000 5702	
004B4	1829 3820	0000 6702		1B79 3820	0000 7702	0300 0000	
004BE	0300 0803	FFC8 7F90		0000 1802	FFC8 BF80	0000 2802	
004C8	FFC8 FF70	0000 3802		0CC1 3F60	0000 4802	1BD9 4820	
004D2	0000 5802	1F81 4820		0000 6802	1829 4820	0000 7802	

	RECORD 57 (NOTES 4, 5, 6) MAP A			RECORD 58 MAP B (NOTE 6)	
004DC	1B79 4820	0000 8802	0811 3000	3200 1204	0811 3202

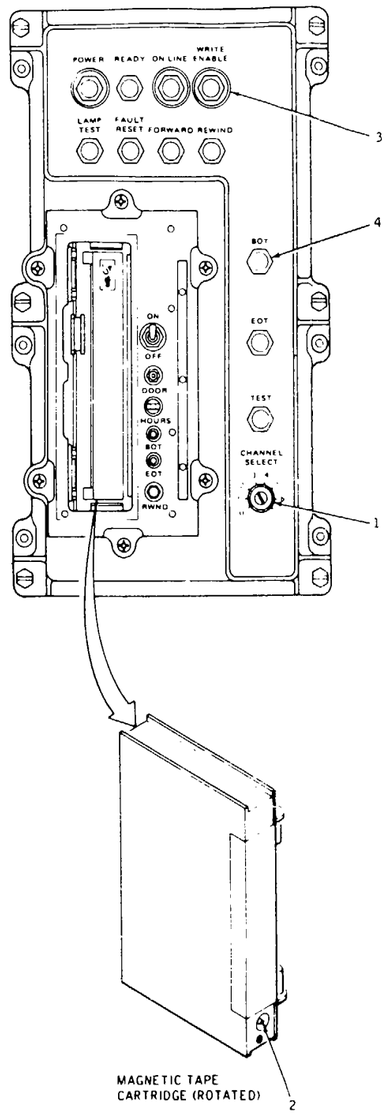
	RECORD 58 MAP A (NOTE 5)	MAP B		MAP C		MAP D
004E6	3200 2204	0811 3404	3300 1204	0811 3606	3300 2204	
004F0	0811 3000	3400 1204	0811 3202	3400 2204	0811 3404	
004FA	3500 1204	0811 3606	3500 2204	0811 3800	3600 1204	

	MAP D	MAP D	MAP E	MAP E	MAP F	MAP F
00504	0811 3A02	3600 2204	0811 3C04	3700 1204	0811 3E06	
0050E	3700 2204	0811 3008	3800 1204	0811 320A	3800 2204	
00518	0811 340C	3900 1204	0811 360E	3900 2204	0811 3810	

	MAP F	MAP G	MAP G	MAP H	MAP H	MAP I
00522	3A00 1204	0811 3A12	3A00 2204	0811 3C14	3B00 1204	

	RECORD 76 MAP J			RECORD 75 MAP J		
0052C	0811 3E16	3B00 2204	0030 0000	1500 0103	3AF1 D000	
00536	0000 1102	0030 0000	1200 0303	F0C9 6000	0000 1302	
00540	FFC9 A000	0000 2302	7801 DFF0	0000 3302	0030 0000	
0054A	1400 0103	6511 E000	0000 1102	0030 0000	1700 0303	
00554	2189 A000	0000 1302	2009 B000	0000 2302	FC09 C000	
0055E	0000 3302	0030 0000	1600 0203	A929 9000	0000 1202	
00568	FC09 C000	0000 2202	0030 0000	1100 0203	FFC9 A000	
00572	0000 1202	5BD9 DFF0	0000 2202	0030 0000	2000 0203	
0057C	FFC9 B000	0000 1202	0061 EFF0	0000 2202	0030 0000	
00586	2800 0103	EC31 B000	0000 1102	0030 0000	2900 0103	

FUNCTION COMPLETE
KEYIN FUNCTION**



NOTES:

1. THE SYSTEM MAY BE IN EITHER BOOTLOAD OR OPERATIONAL CONFIGURATION ALLOWING FIELD UTILITIES (REFER TO TABLE 3-9.1).
2. THE [PROT] SWITCH (ITEM 2) ON THE OUTPUT TAPE MUST BE IN THE [BLANK] POSITION AND [WRITE ENABLE] INDICATOR (ITEM 3) OF THE OUTPUT MTU MUST BE LIT.
3. IN FIELD UNTILITIES, TAPE NUMBERS ARE ARBITRARILY ASSIGNED FOR EACH OPERATION. IT IS NOT RECOMMENDED TO USE THE NUMBER 1 (SYSTEM TAPE NUMBER).
4. MAP RECORDS ARE IDENTIFIED BY THE FIRST HALF WORD = 0811.
5. THE 4TH HALF WORD OF A MAP RECORD IDENTIFIES THE FIRST (1204) OR SECOND (2204) RECORD OF THAT MAP.
6. THE FIRST TWO MAP RECORDS ENCOUNTERED ARE MAP A, THE SECOND TWO MAP RECORDS ARE MAP B, ETC., FOR A TOTAL OF TWENTY MAP RECORDS (10 MAPS).
7. [ ] INDICATES EQUIPMENT MARKING.

MS 558799

Figure 9-9. Map Transfer Operation (Sheet 2 of 2)

By Order of the Secretary of the Army:

JOHN A. WICKHAM, JR.
General, United States Army
Chief of Staff

Official:
ROBERT M. JOYCE
Major General, United States Army
The Adjutant General

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P.S.--IF YOUR OUTFIT WANTS TO KNOW ABOUT YOUR RECOMMENDATION MAKE A CARBON COPY OF THIS AND GIVE IT TO YOUR HEADQUARTERS.

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

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