Army TB 11-5820-1130-10-1

Air Force TO 31R2-2PSC5-8-1

TECHNICAL BULLETIN
OPERATOR'S GUIDE

RADIO SET,
AN/PSC-5
(SPITFIRE)
(NSN 5820-01-366-4120)
(EIC: N/A)

This bulletin supersedes TB 11-5820-1130-10-1 dated 1 July 1999, which shall be destroyed in accordance with applicable security regulations.

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HEADQUARTERS, DEPARTMENT OF THE ARMY AND AIR FORCE

31 DEC 2002

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INTRODUCTION

SCOPE This manual is a quick reference guide for trained users of Radio Set, AN/PSC-5. Refer to TM 11-5820-1130-12&P for more detailed instructions.

WARRANTY This equipment is warranted by the manufacturer for three years. See TB 11-5820-1130-30 for complete information.

WEB SITE PM-TRCS maintains a web site that contains the latest in technical and reference information regarding the AN/PSC-5. The address is http://www.monmouth.army.mil/peoc3s/trcs/mainfram.htm. From this page select Programs then on next page select Spitfire then on the next page Technical Home Page link.

SECURITY INFORMATION The Receiver-Transmitter (RT) is a Controlled Cryptographic Item (CCI). Handling of CCI equipment shall be in accordance with DA PAM 25-380-2.

SAFETY Refer to TM 11-5820-1130-12&P for a complete list of safety precautions related to this equipment.

HOW TO USE THIS MANUAL The following conventions apply throughout this manual:

- Each major topic (e.g., 5k-Hz DAMA, 25k-Hz DAMA) is formatted in separate sections so they can be easily removed for convenience.
- Lookup up the footnotes {1} in Appendix A for additional information.
- In the electronic version of this TB, the Table of Contents, footnotes {1} and Table #s are hyperlinked throughout the document.
- In the textboxes at the bottom of each page, the first line of darker text indicates the topic on that page while the second line of lighter text indicates the topic on the back of that page (if it is a new topic).
- Use the following radio keys as identified to navigate the radios menu:
  - **SELECT**—Use the arrow keys to step through available selections or use keypad to enter numeric value and press ENT.
  - **ENTER**—Enter is used to save the change made.
  - **NEXT** and PREV—Move through fields without making changes.
  - **ESC** (Escape) – Up to the next higher menu.

The following procedure covers using the AN/CYZ-10 with CT3 Software to load COMSEC variables. See TM 11-5820-1130-12&P for other devices.

NOTE: Do not connect fill device before power-up of radio set.

NOTE: If display shows the message "COMSEC Alarm," Press ENT or PTT to clear the alarm.

NOTE: Position 6 contains the KEK or may be used for a TEK, if desired.

1. **AN/CYZ-10 in platform Manual mode.**

a. Turn on AN/CYZ-10.

b. Select XMIT and press ENT.

c. Select PLATFORM and press ENT.

d. Page-up or down to select your platform and press ENT.

e. Select MANUAL and press ENT.

f. Page-up or down to select equipment and press ENT.

g. Select MANUAL and press ENT.

h. Page-up or down to select Fill location and press ENT.

i. Page-up or down to select the Key and press ENT.

j. Connect fill cable from AN/CYZ-10 to AN/PSC-5 FILL connector.

k. Arrow down on AN/CYZ-10.

l. Set mode switch on AN/PSC-5 to F1 and press ENT twice when directed then arrow down on AN/CYZ-10.

COMSEC Randomize
Proceed to F1
Press ENT Twice
(0)

m. Select fill location on AN/PSC-5 then arrow down on AN/CYZ-10.

n. Select key type on AN/PSC-5 then arrow down on AN/CYZ-10.

F1: COMSEC	
COMSEC Key:	**1**
Key Type:	**VINSN**

o. Press ENT on AN/PSC-5 to initiate key fill and turn mode switch quickly to F2 or CT and back to F1.

p. The AN/PSC-5 display will indicate "Key Filled." If "Key Fill Failure," check equipment, then repeat steps a – o.

q. To load additional keys, repeat steps b – i, k and m – o.

LOAD COMSEC KEY(s)

LOAD COMSEC KEY(s)

2. **AN/CYZ-10 in key management mode.**

a. Turn on AN/CYZ-10.

b. Select XMIT and press ENT.

c. Select KEY and press ENT.

d. Page-up or down to select User Key and press ENT.

e. Select DONE and press ENT.

f. Select KYK-13 and press ENT.

g. Set mode switch on AN/PSC-5 to F1 and press ENT twice when directed.

h. Select fill location (1-6) on AN/PSC-5.

i. Select key type on AN/PSC-5.

j. Connect fill cable from AN/CYZ-10 to AN/PSC-5 FILL connector.

k. Arrow down on AN/CYZ-10.

l. Press ENT on AN/PSC-5 to initiate key fill and turn mode switch quickly to F2 or CT and back to F1.

m. The AN/PSC-5 display will indicate “Key Filled." And the numbered position where it is loaded. If “Key Fill Failure," check equipment, then repeat steps a – l.

n. To load additional keys, repeat steps b – f, h, i, k and l.

3. AN/CYZ-10 in platform Automatic mode.

a. Turn on AN/CYZ-10.

b. Select XMIT and press ENT.

c. Select PLATFORM and press ENT.

d. Select SEL-PLT and press ENT.

e. Select AUTOMATIC and press ENT.

f. Connect fill cable from AN/CYZ-10 to AN/PSC-5 FILL connector then arrow down on AN/CYZ-10.

g. Set mode switch on AN/PSC-5 to F1 then arrow down on AN/CYZ-10.

h. Select fill location (1-6) on AN/PSC-5 then arrow down on AN/CYZ-10.

i. Select key type on AN/PSC-5 then arrow down on AN/CYZ-10.

j. Press ENT on AN/PSC-5 to initiate key fill and turn mode switch quickly to F2 or CT and back to F1.

k. The AN/PSC-5 display will indicate “Key Filled." If “Key Fill Failure," check equipment, then repeat steps a – j.

l. To load additional keys, repeat steps b – e and h – j.

The following procedure covers using the AN/CYZ-10 with CT3 software to load an orderwire key in position F2. See TM 11-5820-1130-12&P for other devices.

NOTE: Do not connect fill device before power-up of radio set.

NOTE: If display shows the message “COMSEC Alarm," press ESC to clear the message. Then press ENT or PTT to clear the alarm.

1. **AN/CYZ-10 in platform Manual mode.**

a. After loading COMSEC keys in F1 on AN/PSC-5, set mode switch on AN/PSC-5 to F2 and AN/CYZ-10 will return to the select location menu.

F2: FILL ORDERWIRE
KEYS: _____
LOAD: 1

b. Page-up or down to select Key and press ENT.

NOTE:

Orderwire Key #’s	Satellite Footprint	NCTAMS
1 and 2	CONUS & IO	LANT & NCTS GUAM
3 and 4	LANT and PAC	PAC and EURCENT

c. Select fill location (1-4) on AN/PSC-5.

d. Arrow down on AN/CYZ-10.

e. Press ENT on AN/PSC-5 to initiate key fill.

f. The AN/PSC-5 display will indicate “Key Filled." And the numbered position where it is loaded. If “Key Fill Failure," check equipment, then repeat steps b - e.

2. **AN/CYZ-10 in key management mode.**

a. After loading COMSEC keys in F1 on AN/PSC-5, set mode switch on AN/PSC-5 to F2 and AN/CYZ-10 will return to the select location menu.

b. Select XMIT and press ENT.

c. Select KEY and press ENT.

LOAD ORDERWIRE KEY

d. Select DONE and press ENT.

e. Select KYK-13 and press ENT.

f. Select fill location (1-4) on AN/PSC-5.

g. Arrow down on the AN/CYZ-10

h. Press ENT on AN/PSC-5 to initiate key fill.

i. The AN/PSC-5 display will indicate “Key Filled." And the numbered position where it is loaded. If “Key Fill Failure," check equipment, then repeat steps b - h.

3. **AN/CYZ-10 in platform Automatic mode.**

a. After loading COMSEC keys in F1 on AN/PSC-5, the AN/CYZ-10 will prompt to change the mode switch to F2 in order to load orderwire key.

b. Select fill location (1-4) on AN/PSC-5.

c. Press ENT on AN/PSC-5 to initiate key fill.

d. The AN/PSC-5 display will indicate “Key Filled." If “Key Fill Failure," check equipment, then repeat steps b and c.

Note: To check Orderwire Status, you must return to the F2 Position of the mode switch to view the positions loaded.

The following procedure updates a key. A key update is irreversible.

NOTE: If the update count was exceeded the original key must be reloaded and the update procedure must be repeated until the desire update number is reached.

1. Set AN/PSC-5 to LOS operating mode (only necessary the first time).
2. Set mode switch to UPD.
3. ENTER the COMSEC key number to update (1-5).

COMSEC KEY UPDATE	
COMSEC Key:	**1**
Key Type:	**VINSN**
Update	**000**

NOTE: Updates past 254 will cause a COMSEC alarm.

4. Carefully Press ENT. (Pressing too heavily on the ENT key may cause the AN/PSC-5 to update more than once)
5. The display will indicate “Working."
6. The display will indicate “Updated." The update count will increment to reflect how many times the ENT key was pressed which is not necessarily the total key update.
7. Repeat steps 2 thru 6 as required.
8. To confirm COMSEC key update:

a. Set mode switch to CT.
b. Press ESC until the main menu is displayed.
c. Press 2. (Database Options)
d. Press 7. (COMSEC Key States)
e. Observe the key type and update count.
f. Press ESC when done to return to the main menu.

CONNECT DATA DEVICES

Use the following section to assist in configuring the KL-43 to interface with the AN/PSC-5. Use the W1 cable between P2 of KL-43 to Aux Connector of AN/PSC-5.

Table 1 KL-43 Recommended Settings

	LOS	5-kHz SATCOM	25-kHz SATCOM	5-kHz DAMA
Data Rate	9.6K	2400 digital	2400 digital	2400 digital
Data Rate*	16K	N/A	16K	N/A

*In Vinson mode using SL-3 cable in audio data mode.

Table 2 **ViaSat Recommended Settings** (PDC ViaSat V-eMail with PDC-400 card via User provided cable between PDC card and Aux Connector of AN/PSC-5)

Recommended Settings	LOS Dedicated DASA	5 kHz DAMA w/ADC ON	5 kHz DAMA w/ADC OFF	25 kHz DAMA w/ADC ON	25 kHz DAMA w/ADC OFF	5 kHz Message Service
Communications Configuration (F7)						
COM Port Baud Rate (External Data Controllers)				**19200 all cases**		
Compression	ON	ON	N/A	ON	N/A	N/A
CSMA	ON	OFF	N/A	ON	N/A	N/A
Probe Retries	10	N/A	N/A	10	N/A	N/A
Channel Mode	Duplex	Duplex	N/A	Duplex	N/A	N/A
Burst Retries	10	10	N/A	10	N/A	N/A
FEC Code Rate	½	1	N/A	½	N/A	N/A
Adaptive	ON	ON	N/A	ON	N/A	N/A
Channel Access Speed	Normal	N/A	N/A	Normal	N/A	N/A
Use ALE	OFF	OFF	N/A	OFF	N/A	N/A
Rekey After (x) Minutes			**N/A all cases**			
Add'l ACK Delay	5	45	N/A	5	N/A	N/A
Turn Around Delay	2.5	2.5	N/A	2.5	N/A	N/A
Max Packets (Per Burst)	256	256	N/A	256	N/A	N/A
TX Start Delay	0	0	N/A	0	N/A	N/A
TX End Delay	0	0	N/A	0	N/A	N/A
Direct Mode Parameters	N/A	N/A	Default Settings	N/A	Default Settings	Default Settings
ViaSat eMail Configuration (F8)						
Network	ADC/PDC	DAMA	DAMA	DAMA	DAMA	DAMA
For small items, prefer	N/A	Message	Message	Message	Message	Message
For large items, prefer	N/A	Circuit	Circuit	Circuit	Circuit	Message
For reliable delivery	N/A	Circuit	Circuit	Circuit	Circuit	N/A
Reliable retry method	ADC/PDC ACKs	ADC/PDC ACKs	Retries	ADC/PDC ACKs	Retries	N/A
Reliable						
Wait (x) seconds for ACK from recipient	N/A	N/A	60	N/A	60	N/A
Retry a maximum of (X) times	N/A	N/A	100	N/A	10	N/A
Block Size (1K, 5K, 10K)	N/A	N/A	10K	N/A	1K	N/A
Timeouts						
Pause (x) seconds between transmitting items			32 seconds all cases			
Pause (x) seconds after receive before transmitting			5 seconds all cases			
Connections (F6)						
Active Connection	N/A	Half-Duplex	Half-duplex	Half-Duplex	Half-duplex	Simplex
Use ADC Mode	N/A	ON	OFF	ON	OFF	OFF

CONNECT DATA DEVICES

Use the following procedure as an alternate method of obtaining ViaSat Recommended Settings:

1. When first accessing, go to Setup and then User Mode. Select Expert.

2. Go to Setup and select "Select A Communications Driver." Select dts6.dll – PDC Win95 driver, version 1.3 (or whatever version is available).

3. Go to Setup and select Presets. Select the option for the type of channel being used. The options, taken directly from the menu, are indicated below with their application to the AN/PSC-5 in parenthesis.

a. Line of Sight –Dedicated/Demand Assigned Single Access (DASA)

b. 25-kHz DAMA Circuit with ADC Mode On (use for 25-kHz DAMA)

c. 25-kHz DAMA Circuit with ADC Mode OFF (not used)

d. 5-kHz DAMA Circuit with ADC Mode ON (use for 5-kHz DAMA circuit services)

e. 5-kHz DAMA Circuit with ADC Mode OFF (not used)

f. 5-kHz DAMA Message Service (use for 5-kHz DAMA when sending small data messages less than 14k and selecting Message Queue on AN/PSC-5)

4. Go to Message and select Active Connections, except for Message Service. Other than Message Service Highlight Broadcast and select Half-Duplex Circuit then Apply. (Pressing the right arrow button on the tool bar will also confirm this selection.)

   For Message service Go to Setup and Select Expert Mode. Go to Communications and ensure SIMPLEX is checked. Go to Active Connections and select Message and address to be sent. **Note**: You must go to Active Connections and select Message and address for each Message service. Program automatically goes to No Active Connection when Message is sent.

Perform the following to load terminal data.

NOTE: Current mode must be LOS to change the terminal address.

1. Press ESC until the main menu is displayed.
2. Press 2. (Database Options)
3. Press 3. (Terminal Data)

TERMINAL DATA
Address: #####
Backlight Timer: 10
Msg Release: MANUAL

NOTE: Once the Address is entered, ESC then enter back into Terminal Data to check the address. Re-enter if required.

NOTE: Time is zeroed each time the terminal is powered down. Time is required in ZULU only for passive ranging; otherwise it can be set as desired.

4. ENTER terminal address.
5. ENTER backlight timer shut-off timer delay (02-60 seconds).
6. SELECT 5-kHz message release option (MANUAL or AUTO). {1}
7. SELECT latitude (N or S).
8. ENTER latitude in degrees (00-89) and minutes (00-59).
9. SELECT longitude (E or W).

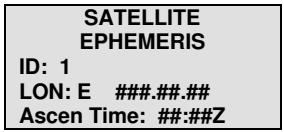
LAT: N ##:##
LON: E ###.##
Time: ##:##Z
Platform: STATIONARY

10. ENTER longitude in degrees (000-179) and minutes (00-59).
11. ENTER current time (ZULU) in hours (00-23) and minutes (00-59). {2}
12. SELECT platform (Stationary or Mobile for airborne operations).
13. Press ESC when done to return to the Database menu.

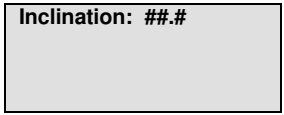
SATELLITE EPHEMERIS

Perform the following to enter satellite ephemeris data, which is required for passive ranging.

1. Press ESC until the main menu is displayed.
2. Press 2. (Database Options)
3. Press 5. (Sat. Ephemeris)
4. ENTER satellite ID number (1-8).



5. SELECT longitude (E or W).
6. ENTER longitude in degrees (000-179), minutes (00-59), and seconds (00-59).
7. ENTER Ascension time (ZULU) in hours (00-23) and minutes (00-59).
8. ENTER angle of inclination (00.0-10.0).
9. Press ESC when done to return to the Database menu.



Use the list below as a reference of data required for 5-kHz DAMA. If you are missing any of the information, contact your supervisor.

Table 3 5-kHz DAMA Checklist

ITEM	OPTIONS
Modulation	☐ PSK
Encryption	☐ ANDVT ☐ 3KG-84 ☐ 4KG-84 ☐ External
Mode	☐ V ☐ D
Data Rate	☐75 ☐300 ☐600 ☐1200 ☐2400 ☐9600 ☐16K
Transmit Power {3}	23-43 dBm
Channel Number	_____ (129-191,194-239)
Configuration Code	_____ (000-511 (use 060 for 2400bps))
Orderwire Encryption {4}	☐ PT ☐ CT
Operation Mode	☐ Normal ☐ Silent ☐ EMCON
Ranging {5}	☐ Passive ☐ Active ☐ (Maint)
Satellite ID {6}	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8
Satellite Ephemeris	Longitude: ___° (0-180°) Ascension Time: ___:__ Zulu Inclination: _____° (0-10°)
Terminal Position	Latitude: N/S _____° (00-90°) Longitude: E/W _____° (00-180°)
Terminal Time {2}	__:__ Zulu
Terminal Address {8}	_____ (00000-65535)
Platform	☐ Stationary ☐ Mobile
Message Release {1}	☐ Manual ☐ Auto

5-kHz DAMA CHECKLIST

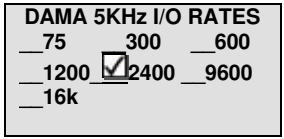
Guard List {9}	1:____ 2:____ 3: ____ 4:____ 5:____ 6:_____ 7: ____ 8:____ 9:____ 10:____ 11:____ 12:____ 13:____ 14:____ 15:____
Demarcation Number	49999
COMSEC Key	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6
Orderwire Key	☐ 1 ☐ 2 ☐ 3 ☐ 4
LOGIN {10}	☐ Pre-assigned ☐ Over the Air
Call Precedence {11}	☐ FO ☐ F ☐ I ☐ P ☐ R
Destination {12}	Five-digit address _____
Type Service	☐ DASA ☐ Circuit ☐ Message

Table 4 5-kHz DAMA I/O Data Rates

Baud	KG-84 Data	ANDVT Data	ANDVT Voice
75	X	X	
300	X	X	
600	X	X	
1200	X	X	
2400	X	X	X
9600	X		
16k	X		

Perform the following to select 5-kHz I/O rates.

1. Press ESC until the main menu is displayed.
2. Press 2. (Database Options)
3. Press 4. (5-kHz I/O Rates)
4. Use NEXT/PREV to select a field.
5. Use arrow keys to select or deselect each option then press ENT. If voice is used, 2400 will be checked by default.



6. Repeat steps 4 and 5 as required.
7. Press ESC when done to return to the Database menu.

GUARD LIST

The guard list is a set of addresses for which a terminal receives services (do not enter your terminal address). The guard number is the address of a single terminal or network. Network addresses (common guard, private guard, or subnet) must be placed in the guard list so the terminal will receive communication for that address. Terminal Addresses may be placed in the Guard List if communications directed to that address need to be received by your terminal.

NOTE: Placing any terminal address in the Guard List is not recommended in 5-kHz DAMA. Placing a Terminal Address in the Guard List causes that address to be logged in to the network by the control station. Ensure in 5-kHz that Terminal Addresses placed in the Guard List are not being used by another active terminal. The Demarcation Point divides addresses between single terminals and networks. Addresses below the demarcation point (single terminals) should usually be left off the guard list. To add to or change your guard list, follow the procedure below.

1. Press ESC until the main menu is displayed.
2. Press 2. (Database Options)
3. Press 2. (Guard List)
4. SELECT desired action (Add, Delete Modify or View).
5. Perform the following as required:

   a. ADD. ENTER address.

   b. DELETE. Use NEXT/PREV to move to the desired address. Press ENT.

   c. MODIFY. Use NEXT/PREV to move to the desired address. ENTER the new address.

   d. VIEW. Use NEXT/PREV to scroll through the list.

6. Press ESC when done to return to the Database menu.

GUARD LIST

VIEW

1	**64000**	**------**	**-----**
4	**-----**	**------**	**-----**
7	**-----**	**------**	**-----**
10	**-----**	**------**	**-----**
13	**-----**	**------**	**-----**

Perform the following procedure to enter a DAMA preset.

1. Press ESC until the main menu is displayed.
2. Press 3. (Set Presets)
3. Press 1. (Set Mode Presets)
4. SELECT DAMA.
5. ENTER Preset number (1-6).

```
SET PRESET
DAMA -P#
TEK#  PSK  ANDVT V2400
5 KHz        Tpwr 35 dbm
```

NOTE: Modulation is not selectable

6. ENTER the COMSEC key number (1-5).
7. SELECT encryption type (ANDVT, 3KG-84, 4KG-84).
8. SELECT mode (V or D).
9. SELECT data rate (75-2400).
10. SELECT DAMA type (5-kHz).
11. ENTER/SELECT power level (23-43dBm).
12. ENTER channel number (129-239). Corresponding frequencies are displayed on the next line.

```
Channel Number: ###
R###.###          T###.###
Code:##            OW:CT
Normal  Range: Active
```

13. ENTER configuration code.
14. SELECT orderwire encryption (PT or CT).
15. SELECT mode of operation (Normal, EMCON, Silent).
16. SELECT ranging (Passive, Active, MAINT).
17. If passive ranging, ENTER satellite number (1-8).
18. For 5-kHz DAMA, SELECT login (Preassigned, Over the Air).
19. If Preassigned, SELECT precedence (FO, F, I, P, R).
20. If Preassigned, ENTER demarcation number 49999. If demarcation number is not entered in preset, the radio will default to 16384.

```
Channel Number: ###
R###.###          T###.###
Code:##            OW:CT
Normal  Range: Passive
Satellite ID: 4
Login: Preassigned
Prec:R      Dmark:49999#
```

5-kHz DAMA PRESET(s)

Perform the following procedure to enter a 5-kHz Service preset.

1. Press ESC until the main menu is displayed.
2. Press 3. (Set Presets)
3. Press 2. (5K Service)
4. ENTER preset number (01-20).

```
SET PRESET 5K      P01
CIR  EN   SYN  V2400
Prec:R           D:#####
Code:###
```

5. SELECT type of service (CIR or DASA).
6. SELECT encryption (EN or UN).
7. SELECT data communications (SYN or ASYN). Use Synchronous unless sending Asynchronous data in PT.

Table 5 SYN/ASYN

Data Device Type	Mode Switch	Selection
Synchronous	PT or CT	SYN
Asynchronous	PT	ASYN
Asynchronous	CT	SYN

8. SELECT mode (V or D).
9. SELECT data rate (75-16k). For data, data rate must have been selected in the 5-kHz I/O Rates menu.
10. SELECT precedence (FO, F, I, P, R). {11}
11. ENTER destination address.
12. ENTER configuration code.
13. For DASA only, ENTER time requested in hours and minutes or SELECT INDEFINITE. Maximum time is 85 hrs 15 mins, in five-minute increments. Indefinite is 85 hrs 15 mins.

```
SET PRESET 5K      P01
DSA  EN   SYN  V2400
Prec: R          D:#####
Code:###
INDEFINITE
```

14. To load additional presets, repeat steps 4 thru 13.

Perform the following to enter a 5-kHz Message preset.

1. Press ESC until the main menu is displayed.
2. Press 3. (Set Presets)
3. Press 4. (5K Message)
4. ENTER preset number (01-20).

5. ENTER the COMSEC key number (1-5).
6. SELECT encryption type (3KG-84, 4KG-84, ANDVT).
7. SELECT precedence (FO, F, I, P, R). {**11**}
8. SELECT encryption (EN or UN).
9. ENTER destination address.
10. To load additional presets, repeat steps 4 thru 9.

5-kHz DAMA MESSAGE SERVICE PRESET(s)

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Perform the following to quickly start a 5-kHz DAMA network service.

1. SELECT DAMA.
2. ENTER preset (even if already displayed).

```
CURRENT MODE
DAMA -P1        - -060
TEK1 PSK ANDVT V2400
5KHz        Tpwr 35 dbm
```

3. ENTER the service preset number (01-20)

   NOTE: Verify your DAMA Address is Correct before Continuing.

4. Press ENT on Start DAMA.

```
Channel Number: 136
R248.900        T302.500
Code: 060         OW:CT
Normal Range: Active
Login: Over The Air

Service Preset: 01
Start DAMA for 01000
```

5. Observe display. See **Table 9** if LOGIN is rejected by controller.

```
 DAMA          SQ - - 045
5K        Acquiring   N
SRV-Idle
1-Service Setup
```

Acquiring – Acquisition in process
Range – Wait while ranging in process
Login – Manual login required
Login-Pnd – Login pending
Connected – Login successful

6. At SrvcAsgnd popup message, ENTER on ACCEPT. However if you wish to Reject the Service, use the arrow keys to select REJECT and press ENT key.

When a Warning or Error Message is displayed refer to **Table 7** for proper corrective action.

```
SrvcAsgnd
CIR TEK ANDVT V2400
Prec:R      EN  D:01000
SYN S:02000 {ACCEPT}
```

7. SRV-RX/TX appears on the display and terminal is ready for normal communications. See **Table 6** for Hot Keys to access additional tasks.

5-kHz DAMA HOT KEYS

Table 6 5-kHz DAMA Hot Keys

#	FUNCTION	
1	**Service Setup.** Provides controller with information on the type of service requested in order to set up communication with another party. Requests time on the satellite for communication services, i.e., dials the phone.	**SERVICE SETUP P## CIR EN SYN V2400 Prec: R D: ##### Code:### {SEND}**
2	**Teardown.** Ends current service although the terminal remains logged into network, i.e., hangs up the phone. (Hot key 1 in DASA).	**TEARDOWN 1/3 DESTIN ADD 02000 CIR D PT PREC:R LOCAL ACTIVE {SEND}**
3	**Service State.** Indicates status of up to three services.	**SERVICE STATE 1/3 DESTIN ADD 02000 CIR D PT PREC:R LOCAL ACTIVE**
4	**Network State.** Indicates status of current network. LQ should be greater than 36.0	**NETWORK STATE PCC: ##### MHOP LIO FOW miss ### LQ: ##.# Prec Min/Max: R/FO**
5	**Status Messages.** Displays last 10 stored messages. (This is hot key 2 when using dedicated service). {13}	**Msg ##:##Z 01 of 10 Network Acquired 02**
6	**Logout.** Removes terminal from network.	**LOGOUT Over the Air {SEND}**
7	**Contention Ranging.** Ranges satellite when operating in silent mode. Contention Ranging should be performed initially and once every 4.5 hours thereafter.	**CONTENTION RANGING {SEND}**
8	**Message Queue.** Accesses queue to send or receive data messages.	**MESSAGE QUEUE XMIT P## 1 IN QUE TEK# ANDVT D2400 Prec:R EN D:##### {SEND}**

Perform the following to manually setup a 5 kHz DAMA network.

1. SELECT DAMA.
2. ENTER preset (even if already displayed).

```
CURRENT MODE
DAMA -P1    Sq-  -045
TEK1 PSK ANDVT V2400
5KHz        Tpwr 35 dbm
```

NOTE: For manual service setup, ensure service preset is set to 00.

3. Press ENT on Start DAMA.

```
Channel Number: 136
R248.900          T302.500
Code: 060         OW:CT
Normal Range: Active
Login: Over The Air
Service Preset: 00
Start DAMA for 01000
```

4. Observe display.

```
 DAMA          Sq-  -045
5K        Acquiring   N
SRV-Idle
1–Service Setup
```

Acquiring – Acquisition in process
Range – Wait while ranging in process

5. Resulting display.

```
 DAMA          Sq -  - 045
5K        LOGIN
SRV-Idle
LOGIN
```

6a. SELECT login type (Over the Air or Preassigned).

```
          LOGIN
Over The Air
                    {SEND}
```

6b. For Preassigned, SELECT maximum assigned precedence (FO, F, I, P, R) and ENTER demarcation address (49999).
7. Press ENT on SEND.

```
          LOGIN
Preassigned
Prec: R     Dmark:#####

                    {SEND}
```

8. "Connected" appears on display and terminal is ready for service setup. To setup a service, proceed to manual service setup by pressing Hot Key #1. See **Table 6** for Hot Keys to access additional tasks.

```
 DAMA          Sq-  -045
5K       Connected  N
SRV-Idle
1-Service Setup
```

5-kHz DAMA CIRCUIT/DASA SERVICE SETUP

NOTE: Ensure current service state is idle (SRV-Idle).

Circuit/DASA Service Setup. Hot Key #1.

```
 SERVICE SETUP   P##
DSA  EN   SYN   V2400
Prec: R ANDVT D: #####
Code:###    ##hr ##min

                {SEND}
```

a. ENTER on preset number 00 for manual service setup. Otherwise ENTER the service preset number and proceed to step k.

b. SELECT type of service CIR or DSA.

c. SELECT encryption (EN or UN).

d. If using data service, SELECT data type (SYN or ASYN).

e. SELECT mode (V or D).

f. SELECT data rate if applicable.

g. SELECT precedence (FO, F, I, P, R).{11}

h. ENTER destination address.

i. ENTER configuration code if required.

j. If using DASA, specify length of service.

1. For INDEFINITE, press ENT on INDEFINITE and then press ENT on SEND. (Actually INDEFINITE for DASA = 85 hrs 15 mins).
2. For timed service, with INDEFINITE highlighted press right or left arrow key. With hr highlighted press ENT. Move cursor to ## field and input number of hours, if applicable, and press ENT. Move cursor to ## field and input number of minutes and press ENT.

k. Press ENT on SEND.

```
Srvc Asgnd
DSA  TEK1  KG-84 D2400
Prec: R    UN     D: 01320
SYN  S:02000   {ACCEPT}
```

l. At SrvcAsgnd popup message, ENTER on ACCEPT. However if you wish to Reject the Service, use the arrow keys to select REJECT and press ENT key.

m. When a Warning or Error Message is displayed refer to **Table 7** for proper corrective action.

n. "SRV-Rx/Tx" appears on display, terminal is ready for communications.

Send a Message. Hot Key #8.

MESSAGE QUEUE
XMIT P## 0 IN QUE
TEK 1 4KG-84 D2400
Prec: R EN D:#####
{SEND}

a. Ensure service is idle. SELECT XMIT. The display will indicate how many messages are in the queue.

b. ENTER 00 if not using a service preset. Otherwise, enter the preset number and proceed to step h.

c. ENTER the COMSEC key (1-5).

d. SELECT encryption type (4KG-84, 3KG-84, VINSN, ANDVT) same as Current Mode.

e. SELECT precedence (FO, F, I, P, R).

f. SELECT encryption (EN or UN).

g. ENTER address of party to whom you are sending the message.

h. Press ENT on SEND and observe display. See **Table 8** if an error message is displayed.

i. After "Enter Message Now" is displayed, key data device. Message input from the data device will be confirmed by the message prompt "Msg Input Done" briefly displayed on line 5 of the Msg Queue Display.

j. If sending a message to a terminal address with manual or automatic release selected and the receiving operator downloads the message to their data device within 60 seconds, two popup Acknowledgement messages will be displayed. No acknowledgement is displayed if the message is sent to a Network Address or if the message wasn't downloaded to the data device within 60 seconds.

NOTE: If using AUTO message release, messages are automatically sent to the data device and the following procedure is not applicable.

Receive a Message. Hot Key #8

MESSAGE QUEUE
RCV 1 IN QUE
TEK 1 4KG-84 D2400
Prec: R EN D:#####
{RELEASE}

a. Ensure service is idle. SELECT RCV. The display will indicate how many messages are in the queue.

b. ENTER your COMSEC key number (1-5)

c. SELECT encryption type (3KG-84, 4KG-84, ANDVT) same as Current Mode. See **Table 8** if an error message is displayed.

d. SELECT RELEASE to send the message to the data device or DELETE to erase the current message.

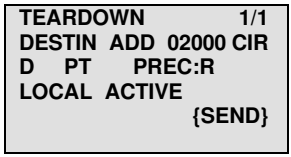
5-kHz DAMA TEARDOWN AND LOGOUT

Teardown. Hot Key #2. Hot Key #1 for DASA.

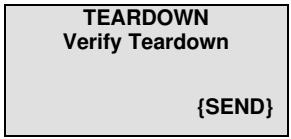
a. SELECT service (# / #) to teardown.

b. VIEW DESTIN or SOURCE address. ENTER.

c. Press ENT on SEND.

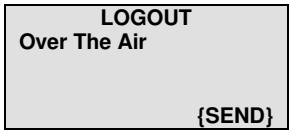


d. Press ENT to verify teardown. The display will change to the network menu. A status message will confirm the result of the teardown.



Logout. Hot Key #6. (See Note below)

a. SELECT Over the Air if you will be down for 30 minutes or longer. Select Force Locally if less than 30 minutes.



b. Press ENT on SEND. A status message will confirm the result of the logout. If you forget to logout or if you are down for more than 30 minutes after a Force Locally Logout, the JMINI will log you out of the network.

NOTE: When Logging out and back in later use the following as a rule of thumb:

Logout Over the Air - Log back in Over the Air.
Logout Forced Locally – Log back in Preassigned

Table 7 Service Assigned Errors and Warnings

MESSAGE	ACTION
Verify I/O Device	a. ERROR. Attach asynchronous data device and accept service. b. WARNING. Attach synchronous data device and accept service.
I/O Device Present?	Attach data device and accept service.
Check PT/CT Switch	Set mode switch to other setting (PT or CT) and accept service.
Illegal Mode	Reject service.
Assuming Ext Encrypt	If using external encryption, accept service. Otherwise reject service.
I/O Rate Invalid	Check for proper rate selection on the 5K DAMA I/O Rates menu.

Table 8 Message Queue Errors

MESSAGE	ACTION
No Ext Dev ?	Attach data device.
Ext Encrypt ?	If using external encryption, continue. Otherwise, set mode switch to CT and send encrypted data.
PT/CT ?	If message is not encrypted, set mode switch to PT.
Sync Dev ?	Attach synchronous device or set mode switch to PT.
Inv I/O Rate ?	Check for proper data rate selection on 5K DAMA I/O rates menu.

5-kHz DAMA MESSAGES

Table 9 5-kHz DAMA Messages

MESSAGE	ACTION
A	
Acquisition Failed	Your terminal is not receiving OW. Check azimuth, power out and reposition antenna.
C Circuit	
Aborted	Check previous status messages. If you were logged out, login Over the Air. Other messages include circuit not available (especially DASA) and the reason. Attempt to reestablish or establish a different type of service.
Denied (Reason)	Circuit service request has been denied for the stated reason. If condition is correctable take appropriate action, or try again later.
Mismatch Detected	An incoming service has been established but a mismatch has been detected between the service and your current mode settings. Check setting of PT/CT mode and type of attached data device.
Preempted	The channel controller has preempted the circuit. Wait for it to resume before transmitting any more messages. Or, you have temporarily lost contact with the controller – wait for it to resume.
Receive Buffer Overflow	Check data device for incomplete message or errors in message. If needed, request source to retransmit message.
Setup Queued (Reason)	**Service is queued** for the reason supplied. Local: terminal called is logged in but time slot is not available. **MHOP** – terminal called is not logged in with controller. If it is in another footprint, wait. If it is supposed to be in your footprint, teardown and try again later.

C Circuit	
Setup Rejected (Reason)	Service request is denied for the stated reason. Try again later unless one of the reasons below is displayed. **Data rate**. Requested a DASA service at higher than 2400 bps – no 25-kHz DASA channel available. **Not assignable**. The LQ from your terminal or the destination terminal is poor. Check your LQ. If LQ is low, check your antenna or raise power. **Prec. Violation**. The precedence entered is not allowed. Check Network State menu for assigned values. Ensure previous messages do not state Logged Out. If so, log back in over the air and re-attempt service setup at lower precedence. **Service Restrict**. Request for a 2400 bps circuit denied due to network traffic. Reduce data rate or wait until LIO no longer displayed in Network State.
Terminated (Reason)	An existing service has been terminated for the stated reason. Try again later.
COMMAND	
Rejected	Check parameters and network state. Try again.
Rejected Port is busy (Check Current Mode)	Your request is rejected because of an existing active service. Ensure you are idle before setting up a service.
CTIC	
Alarm Invalid key	Invalid OW key. Reload OW key in correct position.
Alarm Invalid TSN	Invalid time slot number detected. Reload OW key in correct position.
Alarm Unknown Cause	Reload OW key in correct position.
I	
Incoming Message From:xxxxx Aborted	Message from another terminal aborted.

5-kHz DAMA MESSAGES

5-kHz DAMA MESSAGES

L	
Logged Out (Reason)	The controller has logged your terminal off the network for the reason supplied. Correct the error and perform an Over the Air Login. **Invalid Address On Guard**. Check the addresses in your Guard List. **Not Authorized**. Your Terminal Address is not in the database – contact the controller if correcting it fails. **200 Missing FOWs**. Once the terminal accumulates 200 FOWs the terminal automatically logs itself off. Check antenna and radio. To clear count change Current Mode to LOS and then return to DAMA. Start DAMA and perform a Preassigned Login. **Invalid Service Request**. The terminal is not logged into the network. Login and resend the service request.
LOGIN	
Command Rejected	You have attempted to login more than once; wait for the controller to respond.
Failed No PCC Response	Try again. If you receive no response, the control station is down. Contact control station.
Rejected, Invalid Login Address	Your terminal address must be in the range of 1 to the demarcation address (49999). Or, you have already logged in; you were on a 25-kHz channel and are attempting to log in on a 5-kHz channel; someone else has your terminal address in their guard list; or you are trying to login Over-the-Air in Silent/EMCON mode. To resume Login Preassigned.
Rejected, No Capacity	The current channel has no capacity. Call the controller.
Rejected, Not Authorized	Your terminal is not authorized to participate in the network. Call the controller.
LOGOUT	
Command Rejected	You have attempted to logout more than once – wait the 18 seconds for response.
Failed No PCC Response	The controller has not responded to your Logout request. Shut down the system anyway.
MESSAGE	
Aborted To:xxxx (Reason)	Your message has been aborted for the stated reason. Try again.
From:xxxx Encrypt Mismatch Detected	Your mode switch (PT/CT) setting is different than the transmitting terminal. Contact distant end to correct.

MESSAGE	
Input Rejected	Transmission rejected. Someone else is transmitting - try again later. Or, radio is in idle – set up a service.
Output Rejected	Transmission rejected. Someone else is transmitting - try again later. Or, radio is in idle – set up a service.
Setup Rejected, (Reason)	Message setup is rejected for the stated reason.
Terminated Frm:xxxx to:yyyy (Reason)	Message is terminated for the stated reason. Try again later.
Mode Command Rejected, Node Address is Zero	Your terminal address is entered as zero. This is reserved for the controller. Enter a valid terminal address.
Msg Setup Rejected Precedence Violation	Precedence entered is not allowed. Check network state menu for allowed values and re-enter.
No Resources for Message From:xxxx	Your terminal is busy and cannot receive a message from the other terminal.
R RANGING	
Failed	Check current mode entries and antenna. Run BIT to verify terminal operation.
Overdue Transmit Inhibited	A successful ranging attempt has not been completed as scheduled. Transmission is denied. Check antenna. Transmit a ranging burst using the contention ranging menu.
S SERVICE SETUP	
Command Rejected	Verify you are connected and logged in and try again.
Rejected, Invalid Data Rate	Ensure a valid data rate is selected.
T	
Teardown Command Rejected	The terminal has rejected your teardown request. Check to see if you are Idle.
Transmission Rejected Re-Transmit	Transmission rejected. Someone else is transmitting - try again later. Or, radio is in idle – set up a service.
Tx Rejected, Check Mode & Status Msgs Retransmit	Transmission rejected. Someone else is transmitting - try again later. Or, radio is in idle – set up a service.

5-kHz DAMA MESSAGES

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Use the list below as a reference of data required for 25-kHz DAMA. If you are missing any of the information, contact your supervisor.

Table 10 25-kHz DAMA Checklist

ITEM	OPTIONS
Service Type	☐ AC ☐ DC
Modulation	☐ PSK
Encryption	☐ ANDVT ☐ 3KG-84 ☐ 4KG-84 ☐ VINSON ☐ External
Mode	☐ V ☐ D
Data Rate	☐ 75 ☐ 300 ☐ 600 ☐ 1200 ☐ 2400 ☐ 4800 ☐ 9600 ☐ 16K
Transmit Power {3}	23-43 dBm
Channel Number	009-128, 192, 193 _____
Configuration Code	01-99 (Must use Code assigned in SAA)
Orderwire Encryption {4}	☐ PT ☐ CT
Operation Mode	☐ Normal ☐ EMCON
Ranging {5}	☐ Active ☐ Passive ☐ (Maint)
Satellite ID {6}	1-8
Satellite Ephemeris	Longitude: ___° (0-180°) Ascension Time: ___:__ Zulu Inclination: _____° (0-10°)
Terminal Position	Latitude: N/S _____° (00-90°) Longitude: E/W _____° (00-180°)
Terminal Time {2}	___:__ Zulu

25-kHz DAMA CHECKLIST

25-kHz DAMA CHECKLIST

Terminal Address {8}	_____ (00000-65535)
Guard List {9}	Up to fifteen five-digit addresses
COMSEC Key	1-6
Orderwire Key	1-4
Call Precedence {11}	☐ EA ☐ FO ☐ F ☐ I ☐ P ☐ R
Destination {12}	Five-digit addresses _____ _____ _____ _____ _____
Circuit Number	000-999 (DC Mode only)

Table 11 25-kHz DAMA I/O Data Rates

Baud	KG-84 Data	ANDVT Data	ANDVT Voice	VINSON VOICE
75	X	X		
300	X	X		
600	X	X		
1200	X	X		
2400	X	X	X	
4800	X			
16K	X			X

16K not typically used due to limitation of DAMA Controller

The guard list is a set of addresses for which a terminal receives services (do not enter your terminal address). The guard number is the address of a single terminal or network. Network addresses (common guard, private guard, or subnet) must be placed in the guard list so the terminal will receive communication for that address. Terminal Addresses may be placed in the Guard List if communications directed to that address need to be received by your terminal.

NOTE: Placing any terminal address in the Guard List is allowed in 25-kHz DAMA (AC or DC). Placing a Terminal Address in the Guard List causes that address to be logged in to the network by the control station. The Demarcation Point divides addresses between single terminals and networks. Addresses below the demarcation point (single terminals) should usually be left off the guard list. To add to or change your guard list, follow the procedure below.

1. Press ESC until the main menu is displayed.
2. Press 2. (Database Options)
3. Press 2. (Guard List)
4. SELECT desired action (Add, Delete Modify or View).
5. Perform the following as required:

   a. ADD. ENTER address.

   b. DELETE. Use NEXT/PREV to move to the desired address. Press ENT.

   c. MODIFY. Use NEXT/PREV to move to the desired address. ENTER the new address.

   d. VIEW. Use NEXT/PREV to scroll through the list.

6. Press ESC when done to return to the Database menu.

GUARD LIST

VIEW			
1	64000	------	-----
4	-----	------	-----
7	-----	------	-----
10	-----	------	-----
13	-----	------	-----

25-kHz DAMA PRESET(s)

Perform the following procedure to enter a DAMA preset.

1. Press ESC until the main menu is displayed.
2. Press 3. (Set Presets)
3. Press 1. (Set Mode Presets)
4. SELECT DAMA.
5. ENTER Preset number (1-6).

```
SET PRESET
DAMA -P#
TEK#  PSK  ANDVT V2400
25 KHz      Tpwr 35 dbm
```

NOTE: Modulation is not selectable.

6. ENTER the COMSEC key number (1-5).
7. SELECT encryption type (ANDVT, VINSN, 3KG-84, 4KG-84).
8. SELECT mode (V or D).
9. SELECT data rate (75-16k) normally data rate is 2400bps ANDVT.
10. SELECT DAMA type (25 kHz).
11. ENTER/SELECT power level (23-43dBm).
12. ENTER channel number (009-128. 192, 193). Corresponding frequencies are displayed on the next line.

```
Channel Number: ###
R###.###      T###.###
Code:##       OW:CT
Normal  Range: Active
```

13. ENTER configuration code.
14. SELECT orderwire encryption (PT or CT).
15. SELECT mode of operation (Normal, EMCON).
16. SELECT ranging (Passive, Active, MAINT).
17. If passive ranging, ENTER satellite number (1-8).
18. For 25-kHz DAMA, SELECT Yes on Send Status B unless EMCON.
19. To load additional presets, repeat steps 4 thru 18.

```
Channel Number: ###
R###.###      T###.###
Code:##       OW:CT
Normal  Range: Active
Send Status B: Yes
```

Perform the following to enter a 25-kHz AC Service preset.

1. Press ESC until the main menu is displayed.
2. Press 3. (Set Presets)
3. Press 3. (25K AC Service)
4. ENTER preset number (01-20).

```
 SET PRESET 25K    P01
Prec:R
#####,  #####,  #####
#####,  #####,  #####
```

5. SELECT precedence (EA, FO, F, I, P, R). {**11**}

6. ENTER up to six terminal addresses (only one may be a network address). When a network address is listed, only four additional terminal addresses (for a total of five) may be entered.

7. ENTER 00-60 and SELECT timeframe (sec, min, hrs, day) or press NEXT for indefinite (ind). {**14**}

```
##min
```

8. To load additional presets, repeat steps 4 thru 7.

QUICK START 25-kHz DAMA SERVICE

Perform the following to quickly start a 25-kHz DAMA service.

1. SELECT DAMA.

2. ENTER preset (even if already displayed).

```
CURRENT MODE
DAMA P1          - -030
TEK1 PSK ANDVT V2400
25KHz        Tpwr 35 dbm
```

3. ENTER the service preset number (01-20) if not already loaded with above DAMA operating preset.

4. Press ENT on Start DAMA.

```
Channel Number: 036
R267.050          T308.050
Code: 60           OW:CT
Normal Range: Active
Send Status B: YES
Service Preset: 00
Start DAMA for 01000
```

5. Observe display. (M is always temporarily displayed.)

Acquiring – Acquisition in process {**16**}
Range – Wait while ranging in process
Connected – Send Status B successful {**15**}

```
DAMA            SQ- -134
25K AC     Acquiring  M
SRV-Idle
Send Status B
```

6. "Service Connected" appears on the display and terminal is ready for normal communications. See **Table 12** for Hot Keys to access additional tasks.

Table 12 25-kHz AC DAMA Hot Keys

#	FUNCTION	SCREEN
1	**Service Setup**. Provides controller with information on the type of service requested in order to set up communication with another party.	**SERVICE SETUP** **Prec: R** **#####, #####, #####,** **#####, #####, #####** **##min {SEND}**
2	**Teardown.** Ends current service. (Hot Key 1 for DASA.)	**TEARDOWN** **{SEND}**
3	**Service State. Indicates** status of current service and displays up to 2 addresses of connected parties. When connected to the network, only the network addresses will be displayed.	**SERVICE STATE** **SRV- Rx/Tx** **02000, 01400**
4	**Network State**. Indicates status of DAMA Channel. (Not the terminal network.)	**NETWORK STATE** **Ctrl: Auto** **CCOW miss ###** **Prec Min: R FF:###**
5	**Status Messages**. Displays last 10 stored messages. (Hot key 2 for DASA.) {**13**}	**Msg ##:##Z 01 of 10** **Transmission Enabled**
6	**Data Transfer**. Used to send three-digit, user-defined numeric codes between terminals.	**DATA TRANFER** **Prec: R** **Party: ####** **Data:** **###, ###, ###, ###** **{SEND}**
7	**Link Test**. Performs a link test to the satellite.	**LINK TEST** **Rate: 9.6 kbps** **{SEND}**
8	**Information Report**. Sends information report to channel controller.	**INFORMATION REPORT** **Report Code: #####** **{SEND}**
9	**Paging.** Pages other terminals.	**PAGING** **#####, #####, #####** **{SEND}**
0	**Out of Service**. Notifies controller of terminal leaving DAMA Mode for specified time length. Use Code 99.	**OUT-OF-SERVICE** **Prec: R** **Reason: ## ## min** **{SEND}**

25-kHz AC DAMA MANUAL SERVICE SETUP

Service Setup. Hot Key #1.

a. ENTER on preset number 00 for manual service setup. Otherwise ENTER the service preset number and proceed to step e.

```
   SERVICE SETUP  P00
Prec:  R
 #####,  #####,  #####,
 #####,  #####,  #####
##min              {SEND}
```

b. SELECT precedence (FO, F, I, P, R, EA).

c. ENTER addresses of terminals/network to be called.

d. To specify length of service ENTER requested length of connection (01-59), then SELECT sec, min, hrs or day. Or to select indefinite time, use NEXT to bypass "##," then SELECT ind. {14}

e. Press ENT on SEND.

f. "Service Connected" appears on the display and terminal is ready for normal communications.

```
Msg  ##:##Z        05of05
  Service Connected

                      01
```

Check Terminal Status

Send a Status B whenever you desire to check if your radio is still connected.

a. Press ENT on SEND. A status message from the controller, displayed as either a popup message or stored in the terminal's message queue, will report the terminal's status. The display returns to the DAMA operations menu.

```
     SEND STATUS B


                {SEND}
```

Teardown. Hot Key #2. (Hot Key #1 for DASA.)

a. Press ENT on SEND. The network menu will indicate Idle when complete.

TEARDOWN

{SEND}

Data Transfer. Hot Key #6.

a. SELECT precedence (FO, F, I, P, R, EA).

b. ENTER address of destination terminal.

c. ENTER up to four three-digit groups (001-255).

d. Press ENT on SEND. {17}

DATA TRANSFER
Prec: R
D: #####
Data:
###, ###, ###, ###
{SEND}

e. The receiving terminal will observe the screen at right. 000 will be displayed in unused groups.

MSG: 00:00Z –of–
Data From: #####
###, ###, ###, ###
ROUTINE 01

Link Testing. Hot Key #7.

a. SELECT burst rate (9.6, 19.2, 32 kbps).

b. Press ENT on SEND. Wait for results. A flashing M indicates test is running.

LINK TEST
Rate: 9.6 kbps
{SEND}

NOTE:

9.6 kbps	6-7 minutes
19.2 kbps	2 minutes
32 kbps	1 minute

Remember once the test is initiated it can NOT be stopped. However it does NOT interfere with other Communications.

c. Observe display. Symbol errors should be less than 30 for data or 100 for voice. Missed acquisitions should be 0. **Note:** Operationally it is found that < 100 good for data & < 500 good for Voice.

Msg 00:01Z –of–
9.6 KBPS Link Test
Symbol Err: #####
Missed Acq ###

25-kHz AC DAMA
PAGING, INFO REQUESTS AND OUT OF SERVICE

Paging. Hot Key #9.

a. ENTER up to three terminal addresses to page.

b. Press ENT on SEND. {17}

c. The receiving terminal will observe the screen at right.

```
PAGING

#####, #####, #####
                {SEND}
```

```
MSG: 00:00Z      –of–
Call Waiting
Party: #####
Prec: Routine
```

Information Request Codes are two digit codes sent from the controller that appear as pop up messages on your terminal. Information Report Codes are your response to the request. These can be preprogrammed and stored in your terminal database. If none are preprogrammed, 00001 will appear. {18}

Receipt of Information Request Code

a. When an Information Request Code is received check the code in your call directory (or SOI).

b. Press ENT on SEND.

c. The display returns to the last active menu.

```
INFORMATION
  REQUEST
Code: ##
Report Code: 00001

                {SEND}
```

Information Report. Hot Key #8

a. ENTER the report code. {18}

b. Press ENT on SEND.

```
INFORMATION REPORT

Report Code: 00001

                {SEND}
```

Out of Service. Hot Key #0.

a. SELECT precedence (FO, F, I, P, R, EA).

b. User Reason Code 99.

c. ENTER 01-59 and then SELECT sec, min, hrs, day or ind.
d. Press ENT on SEND.

```
OUT-OF-SERVICE
Prec: R
Reason: 00      ## min

                {SEND}
```

Table 13 25-kHz DAMA Messages

MESSAGE	ACTION
C	
Call Waiting Party: #### Prec Routine	You have been paged – notify the sender that you received the page. Teardown from a current service if you wish to talk to the sender.
CTIC	
Alarm Invalid Key	Invalid OW key. Reload OW key in correct position
Alarm Invalid TSN	Invalid time slot number detected. Reload OW key in correct position.
Alarm Unknown Cause	Invalid OW key. Reload OW key in correct position.
Alarm Zeroized by Controller	The controller has zeroized your keys. Reload the new OW key in the correct position.
D	
Data Transfer Request (Result)	Displays result of data transfer request. No action required unless noted below. **Denied**. Request to transmit is denied because you are in EMCON mode. **Destination Busy**. Try again later **Destination Out of Service**. Try again later. **Not Acknowledged**. The controller has not acknowledged your request. Check antenna and re-send request.
L	
Link Test Request (Result)	Displays result of link test request. Denied Link Tests are identified by an Information Request Code.
O	
Orderwire Zeroize Notification	The controller has zeroized all your orderwire encryption keys. Reload keys.
Out of Service Request (Result)	Displays result of request to suspend temporarily service. Turn off radio or exit 25-kHz DAMA no matter which message is received.

25-kHz DAMA MESSAGES

P	
Paging Request (Result)	Displays result of request to suspend temporarily service. No action required unless noted below. **Denied**. Request to transmit is denied because you are in EMCON mode. **Designation Busy**. Try again later **Destination Out of Service**. Try again later. **Not Acknowledged**. The controller has not acknowledged your request. Check antenna and re-send request.
R	
Requested Party Busy	Destination is busy. Try again later
S	
Satellite Ranging Failed	Ranging attempt has failed. Terminal will automatically attempt again. If ranging continues to fail, check antenna and power setting.
Service Request Denied	Your request for service is denied. You are either in EMCON mode or your precedence is not valid.
Status Report Request (Result)	Displays result of a Send Status B. No action required unless noted below. **Denied**. Request to transmit is denied because you are in EMCON mode or a status report is pending. **Destination Busy**. Try again later **Destination Out of Service**. Try again later. **Not Acknowledged**. The controller has not acknowledged your request. Check antenna and re-send request.
T	
Transmission Inhibited	The controller has stopped all transmissions on the channel. Wait until "Transmission Enabled" is displayed.
Transmit Aborted Due to Constant Key Alarm	The handset PTT or data device RTS has been active for over 17 minutes and the controller has commanded your terminal to stop transmitting. Release PTT or deactivate RTS. Check the Guard List since the Controller likely deleted your Network addresses. Re-enter as applicable and then setup service once again.
Tx Rejected, Check Mode & Status Msgs Retransmit	Transmission rejected. Someone else is transmitting - try again later. Or, radio is in idle – set up a service.

Table 14 Information Request Codes ***Please note**: wherever it states contact the NCTAMS – the RSSCs may be contacted and can provide you assistance!*

Code	ondition	ction
1-3	***Unused***	NONE
4	**Disconnect constant key offender**. The controller has determined that a constant key offender should be disconnected.	You have been transmitting for 17 minutes – waveform does not allow for constant transmission. AN/PSC-5 terminal does not provide a means to bypass this so all transmissions must be less than 17 consecutive minutes.
5-65	***Unused***	NONE
66	**Your terminal type cannot be connected to the requested guard number.** The requested guard number is associated with terminals built to a different version of the MIL-STD. Check the guard number and try again. 1. FSCS or 183A terminal requested to connect to a guard number associated with 183 (baseline) terminals 2. 183 (baseline) terminal requested to connect to a guard number associated with FSCS and 183A terminals	Information Request Code 66 is sent when user requests to join/start a network service using the "wrong" network address. MIL STD 188-183(-) uses the Odd numbered (primary) address; this is the AN/PCS-5, AN/PRC-117F, etc. FSCS & MIL STD 188-183(A) use the Even numbered (alternate = primary+ 1), this is the TD-1271 only for now as there are not any 188-183(A) terminals yet certified. The new DAMA SAC channel controller software links this even/odd network address pair to maintain interoperability between all the terminal types. Example VOICE CMD NET: Primary network address: 56001 for MIL STD 188-183(-); alternate network address: 56002 for TD-1271. The DAMA SAC links 56001 & 56002 in its software to the same data slot. You would need to use 56001 in the AN/PSC-5.
67	**Your terminal cannot communicate on the assigned channel.** The requested service is assigned on a channel a MIL-STD-188-183 (baseline) terminal cannot be connected to • The channel is identified by an 8-bit channel code and this terminal can only use channels identified by a 6-bit channel code • The channel is a 5-kHz slave channel	AN/PSC-5 terminals would receive this code if mistakenly assigned a 5-kHz slave channel. AN/PSC-5 terminals cannot utilize these channels. Contact NCTAMS if you receive this message.
68	**Log Out report has been ignored** – Terminal log out can only be performed from port 1. The Log Out Information Report was sent from a port other than port 1. Change to port 1 and retry.	Should not receive this code – contact NCTAMS if you do. AN/PSC-5 is a single port terminal and therefore only uses port 1. In addition, start using code 99 when sending the out of service message. This will actually perform logout on the DAMA SAC.

INFORMATION REQUEST CODES

69	**Terminal ID duplicates an existing operational address.** The requesting terminal's ID duplicates the address of an operational controller.	Your terminal address is the same as a PCC's. Check your terminal address!
70	**Requesting party's guard list does not contain guard address.** The requesting user's port guard list does not contain the guard address of the guard it is trying to activate with the current request.	Put the correct Net Guard Address in the Guard list.
71	**Service Request Access Restriction Violation.** The service request either has a higher precedence than is allowed by the source's terminal access restriction level or it has a lower precedence than the channel access restriction level.	Send a Status B Message. Lower your precedence and re-setup the service.
72	**Requesting party already has an outstanding queued request.** Only one request at a time may be queued from a user. This user already has a request queued and thus, the current request is being canceled.	Three things may have occurred – one you have already sent a service set up that was queued. Only one service of any kind on 25-kHz DAMA so you must teardown and then set up the new service. Two – the control station believes you have a service pending. Teardown and try again. If this does not work, teardown, Out-of-Service, Send Status B, then set up the service again. Third - You just received a busy signal from the distant end – try again later or page the terminal address so they know you are trying to contact them. (This one doesn't make sense but has happened on occasion.)
73	**Requesting party is not authorized to activate All-Call.** The current request is being canceled because only the controller operator may activate a service to the All-Call address.	This code only applies if you set up the service to addresses: 16383 or 65535. Check the service setup and ensure correct address is entered – send request again with correct address. If still receiving 73 – JMINI has address identified incorrectly – contact NCTAMS.

74	**Requested terminal is already connected to a DASA service.** The requested user is on a terminal that is already connected to a DASA service, and thus, is unavailable.	The terminal you are calling is unavailable. Teardown (if required) and try again later.
75	**Request canceled by user.** The source of the service request has now canceled that request while it was queued waiting for a resource.	You will receive this anytime you teardown the service before it is provided (after sending a service set up, usually queued) – no action required.
76	**Queued call canceled; service queue time-out timer expired.** The previously queued request from the requesting user has been canceled due to the controller imposed time-out limit on queued service requests.	JMINI canceled your service – set up the service again.
77	**Your terminal does not exist in the controller database.** The controller has no record of the requesting terminal's address having been assigned.	Your terminal address is missing from the database – check your address to ensure it is correct. If correct, contact the NCTAMS.
78	**Request queue is currently full.** The controller has too many requests in queue and cannot accept any more at this time.	Should not normally see; however, you just received a busy signal again – try again later.
79	**Queued call canceled; connection is no longer possible.** The controller has deleted a request from queue, either at the request of the controller operator or because it is no longer a valid request.	Attempt the service setup again. If the terminal(s) you called sent an out of service or you are the only one up on the network, you may receive a different code providing updated information.

INFORMATION REQUEST CODES

INFORMATION REQUEST CODES

80	**Enter a Configuration Code and try again**. The terminal operator has not entered a Configuration Code into the port originating the request since the terminal was powered up or since an RCCOW: Out-of-Service message was sent from this port.	Check the configuration code, ensuring there is one and it is correct, in the current menu then set up the service again.
81	**Required data rate can't be supported.** The data rate required for this connection is not supported by any of the channels operating on this satellite.	You requested a different data rate than the original submitted in the SAR. The channel cannot support changing to allow you to use a different data rate. Set up service at original data rate and configuration code (via current mode screen).
82	**Requested party unknown. Check Call Directory and try again.** The requested user or guard doesn't exist in the controller database.	Check the terminal or network address in the service set up then try again. If network address is correct and terminals are up in the network, the controller may not have activated the network address – contact the NCTAMS. (If unable to contact NCTAMS, try making a conference call.)
83	**Cannot add users to this guard.** The requesting party is already connected to a guard and has attempted to add user port(s) to the guard connection.	You are not at SVC Idle – teardown then retry your call. (Even if it says SVC Idle, do this first!)
84	**Cannot add a guard to your existing call.** The requesting user is already participating in a call and has attempted to add a guard to this pre-existing connection.	You are not at SVC Idle – teardown then retry your call. (Even if it says SVC Idle, do this first!)
85	**Requesting party is not authorized to activate this guard.** The requesting user has attempted to activate a guard, but this user is not authorized to activate the guard for one of the following reasons: • The requesting party has attempted to activate a Private Guard, but is not a Net Controller for this guard (All)	The JMINI database has the Net Guard Address marked wrong – need to contact the NCTAMS to correct this. OR You asked for a Private Guard and the NCS has not or is not setting up the service to the network first.
86	**Requesting party is not a member of this Private Guard.** The requesting user has attempted to join a Private Guard, but this user is not an authorized member of this Private Guard.	You were not listed as part of the Private Network OR you are calling the wrong Net Guard Address (check your service setup). If you were supposed to be part of the Private Network, contact the NCTAMS.

87	**Requested party's terminal is unauthorized or zeroized.** The requested user is on a terminal that is marked in the controller database as in an unauthorized or zeroized state.	Check to ensure you called the correct address. If yes, contact the NCTAMS about the address to find out why it is marked this way. **JMINI Controller sends.**
87	**5/25-kHz Slave Channel is not available from requestor's home channel** Requested service requires a 5-kHz or 25-kHz slave channel, but the required slave channel is not accessible from the requestor's home channel.	You requested a service with a terminal and/or network address assigned to a different home channel. Currently, no capability to assign you to either a different home channel or a slave channel associated with a different home channel. If authorized to talk within this network, check current mode screen to ensure it is set up for the correct home channel. If not, send an out of service, make changes or select correct preset, reenter the DAMA mode on the correct channel and set up your service again. **DAMA SAC sends.**
88	**Requesting party's device is not compatible with this guard.** The requesting port's baseband device is not compatible with the baseband device specified for this guard.	Your configuration code does not match what is in the JMINI database for the Net Guard Address. Check the code – if correct per the SAA, try again. If continued receipt of info code - contact the NCTAMS.
89	**Requested party has no compatible baseband device.** No port on the requested terminal is configured for a baseband device compatible with the baseband port originating the request.	Your configuration code does not match what is in the JMINI database for the terminal being called. Check the code – if correct the distant end may have entered the wrong code. Try again first then need to work with distant end (maybe use Data Transfer??).
90	**None of the users requested is available**. Not enough requested users are capable and available (for various reasons) to activate the service request.	You need to try and set up the service again later. If making a conference call, page the other terminals. If a network call, no one else is up but your terminal.
91	**Connection would cause contention**. The requested connection would cause contention with an ongoing communication.	Do a Teardown and Out Of Service then Send Status B and attempt to set up the service again. If this does not work, contact the NCTAMS. The JMINI mistakenly has you already in a service.

INFORMATION REQUEST CODES

INFORMATION REQUEST CODES

92	**Not all requested parties could be connected**. At least one, but not all, of the requested parties could be connected. (This request is honored, connecting all available parties.)	You set up a conference call and not all received the service assigned message. Call all the stations and find out who isn't there that you called. Prior to making a conference call, it is highly suggested you page everyone to ensure they are up before you make the call. This should ensure you do not receive this message. However, if you do, the terminal that did not receive the message needs to send a Status B Message. (maybe use Data Transfer to assist? Only way to get any missed terminals into the service is to all teardown, then one terminal set up the service again.
93	**Other Link Test in progress.** Only one link test at a time can be conducted on a channel and another user terminal is conducting one at this time.	Wait a couple minutes and rerun your link test. Be sure to run it at 32 ksps first!

94	**Unable to connect parties from different channels (JMINI sends) OR**
	Unable to perform frequency switching required for this connection (DAMA SAC sends)
	Frequency switching is required in order to connect the requested service, but frequency switching cannot be accomplished for any of the following reasons:
	● Terminal or terminals that must switch are not capable of doing so;
	● Communications and orderwire channels are not on the same satellite;
	• Communications and orderwire channels are not controlled by the same controller;
	  • Required frame segment on the communications and orderwire channels don't match;
	  • Frame timing for the channels may not be aligned,
		You requested a service with a terminal and/or network address assigned to a different home channel. Currently, no capability to assign you to a different home channel If authorized to talk within this network, check current mode screen to ensure it is set up for the correct home channel. If not, send an out of service, make changes or select correct preset, reenter the DAMA mode on the correct channel and set up your service again.

95	**Demand Assigned Activation disabled for this guard.** This network can only be activated on a pre-assigned basis. In order for a user to be able to activate this network, the NMS operator must check the "Allow User to Activate" box in the network definition.	The JMINI database has the Net Guard Address marked wrong – need to contact the NCTAMS to correct this.

95	**DASA requests are reserved for guards only.** The requesting user's Configuration Code indicates a DASA service and the user has requested connection to another user or users. Configuration Codes 98 and 99 are reserved for DASA services and only Private Guards can be assigned to DASA channels.	Should not receive this code – contact NCTAMS if you do. Currently, there are no procedures to request DASA from 25-kHz DAMA!
96	**No DASA channel available.**	Should not receive this code – contact NCTAMS if you do. Currently, there are no procedures to request DASA from 25-kHz DAMA!
97	**Party is already connected to a DAMA time slot.** Can't assign a DASA connection if another user port on the requested/requesting user's terminal is participating in a DAMA service of equal or higher precedence. If it were of lower precedence, that user could have been preempted out of the DAMA service.	Should not receive this code – contact NCTAMS if you do. Currently, there are no procedures to request DASA from 25-kHz DAMA!
98	**Too many guards specified in this request.** More than one guard was specified in conference request.	You can only have ONE network address in the request. Use terminal addresses for the other four addresses.
99	**Reserved for TD-1271 Home Channel Change notification.**	Should not receive this code – contact NCTAMS if you do.

CONFIGURATION AND INFO REPORT CODES

CONFIGURATION CODES

Configuration codes identify to the control station the baseband equipment attached to the terminal I/O port. Currently, the codes for 5 and 25-kHz DAMA are the same, except the 5-kHz codes are prefaced with a zero (i.e., they are three digits not two). Use the code provided by the NCTAMS if available (must have for 25-kHz DAMA). The codes listed below are for 2400 bps.

Table 15. Configuration Codes

Code #	Equipment	Protocol	Crypto
60	Network (Prearranged)	IAW Network/prearranged)	IAW Network/prearranged)
61	FAX	FAX	KYV-5, KY-99A/100
62	FAX	FAX	KG-84A/C
63	Handset/ANDVT	Voice	KYV-5, KY-99A/100
64	Data/ANDVT	Prearranged	Prearranged
66	PSC-2A	PSC-2A	KG-84A/C
67	PSC-2A	PSC-2A	KYV-5, KY-99A/100
68	KL-43C/F	ASCII 8N2	KL-43C/F
69	Computer	ASCII 8N2	KG-84A/C
70	Computer	ASCII 8N2	KYV-5, KY-99A/100
71	Tactical Internet	Tactical Internet	KG-84A/C
72	PC	Prearranged	KG-84A/C
98	DASA 5KHz	Prearranged	Prearranged
99	DASA 25KHz	Prearranged	Prearranged

INFORMATION REPORT CODES

Information Report Codes are currently not defined, but will be placed in the call directory when available.

The following tables list some of the status messages that may be displayed during DAMA operation. See TM 11-5820-1130-12&P for a complete listing.

Table 16 Operational Status Messages

MESSAGE	ACTION
Alarm Detected Press Enter or PTT to Clear	Press ENT or PTT. If it persists, load variables.
Batteries Depleted Operation Suspended Replace Batteries	Radio Set can no longer transmit/receive. Operation suspended.
Cannot Change Parameters While in Tx	You cannot change parameters while transmitting. Wait until terminal is idle.
COMSEC fault	Notify unit maintenance.
High TX Current	Notify unit maintenance.
Invalid Combination Parameters Modified To Match Mode	Your entered parameters were invalid and have been changed to valid parameters. Also, you are in PT and the parameters were set for CT. Changes were made. Preset displays M# instead of P#.
Modem failure	Notify unit maintenance.
Modem is still initializing Mode not changed	Wait until initialization is complete to change mode.
Power Regulator fault detected	Notify unit maintenance.
Tx Rejected, Check Mode & Status Msgs Retransmit	Transmission rejected. Someone else is transmitting - try again later. Or, radio is in idle – set up a service.

This page intentionally left blank.

Perform the following procedure to enter Line of Sight (LOS) preset(s).

1. Press ESC until the main menu is displayed.
2. Press 3. (Set Presets)
3. Press 1. (Set Mode Presets)
4. SELECT LOS.
5. ENTER the preset number (1-6).
6. ENTER the COMSEC key number (1-5).
7. SELECT modulation (AM, FM or FSK).
8. SELECT encryption type (VINSN, FASCN, 3KG-84. 4KG-84).
9. SELECT mode (V or D).
10. SELECT data rate.
11. In PT mode only, SELECT Normal.
12. SELECT transmit power level.
13. ENTER receive frequency (030.000-399.975)

SET PRESET		
LOS	-P#	
TEK#	FM	VINSN V16K
Normal		Tpwr 30 dbm
R###.###		T###.###

Table 17 **Frequency And Power Levels**

30.000 – 87.975	FM/FSK	23-43 dbm
108.000 – 129.975	AM	23-38 dbm
130.000 – 148.975	AM/FM/FSK	23-38 AM/23-39 FM/FSK
156.000 – 173.975, 225.000 – 399.975	FM/FSK	23-39 dbm

14. If the transmit frequency is the same as the receive frequency, press ENT. Otherwise ENTER a new transmit frequency.
15. To load additional presets, repeat steps 4 thru 14.

Perform the following procedure for Line of Sight (LOS) operation.

1. SELECT LOS.
2. ENTER the preset number (1-6).
3. Check all fields to ensure they are correct. {19}
4. Proceed with communications.

CURRENT MODE		
LOS	-P#	Sq- -054
TEK#	FM	VINSN D16K
Normal		Tpwr 37 dbm

SATCOM PRESET(s) AND OPERATION

Perform the following procedure to enter a SATCOM preset(s).

1. Press ESC until the main menu is displayed.
2. ENTER 3. (Set Presets)
3. ENTER 1. (Set Mode Presets)
4. SELECT SATCOM.
5. ENTER the preset number (1-6).

NOTE: Modulation is not selectable. Satellite loopback is not performed in FSK.

```
SET PRESET
SATCOM  -P#
TEK#  FSK VINSN V16K
Normal      Tpwr 43 dbm
```

6. ENTER COMSEC key (1-5).
7. SELECT encryption type (ANDVT, VINSN, 3KG-84, 4KG-84).
8. SELECT mode (V or D).
9. SELECT data rate (1200, 2400, 9600, 16k bps).
10. ENTER/SELECT power level (23-43dbm).

NOTE: It may be necessary to reenter the encryption type and data rate after entering the channel number.

11. ENTER channel number (009-239) or 999 to manually enter frequency pairs. It is recommended to use the home Channel Number. SATCOM loopback cannot be utilized if 999 is the Channel Number.

```
Channel Number: ###
R###.###        T###.###
DIFF
```

12. If 999 was entered in previous step, then ENTER the receive and transmit frequencies (225.000-399.995).

13. SELECT encoding type (DIFF or NDIFF). Radios must have the same Encoding Type in order to communicate.

14. To load additional presets, repeat steps 4 thru 13.

Perform the following procedures for SATCOM operation.

1. SELECT SATCOM.
2. ENTER the preset number (1-6).
3. Check all fields to ensure they are correct.{19}
4. Proceed with communications.

```
CURRENT MODE
SATCOM  -P#   Sq-__-030
TEK#  FSK   VINSN  V16K
Normal      Tpwr 43 dbm
```

Perform the following procedure to set up a satellite relay using AN/PSC-5 and SINCGARS radio sets.
Retransmission may use analog voice (LOS only) or 16 kbps digital (voice or data) signals using LOS, SATCOM or 25kHz DAMA. Encryption is supplied by the source and destination radios.

1. Configure radios for over the air communications. Since the AN/PSC-5 is used to retransmit and not initiate communications, it is not necessary to connect the handset to the AN/PSC-5.

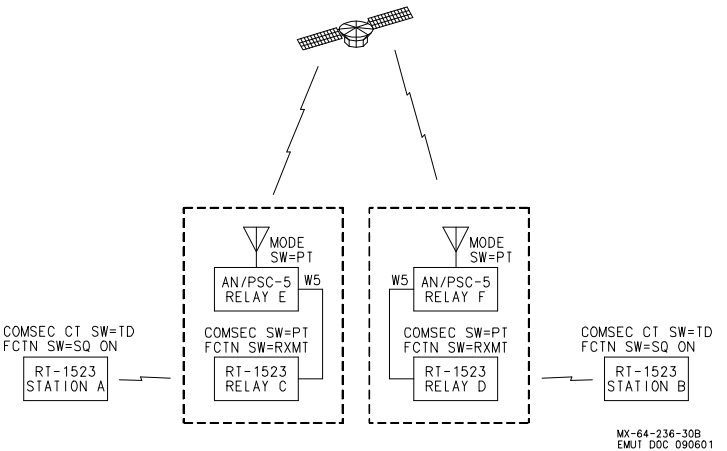
2. Ensure AN/PSC-5 is in PT mode and select desired preset.

3. Connect retransmit cable W5 between the AN/PSC-5 AUX connector and SINCGARS RXMT connector.

NOTE: Separate both radios by the full length of W5 cable.

4. Set FCTN switch on SINCGARS to RXMT. If using RT-1523A(C)/U, set COMSEC switch to PT and select desired preset.

5. Proceed with retransmission.



SINCGARS RETRANSMIT

Table 18 Retransmit ASIP Single Channel (SC) or Frequency Hopping (FH)

SINCGARS Outstation A & B				
	PT Voice	PT Data	CT Voice	CT Data
COMSEC	PT	PT	TD	TD
Mode	SC or FH	SC or FH	SC or FH	SC or FH
Function	SQ on	SQ on	SQ on	SQ on
Data	Off	As required	Off	As required
Frequency	XXXX/YYYY	XXXX/YYYY	XXXX/YYYY	XXXX/YYYY
RF	As required	As required	As required	As required
SINCGARS Relay C & D				
COMSEC	PT	PT	PT	PT
Mode	SC or FH	SC or FH	SC or FH	SC or FH
Function	RXMT	RXMT	RXMT	RXMT
Data	Off	Off	Off	Off
Frequency	XXXX/YYYY	XXXX/YYYY	XXXX/YYYY	XXXX/YYYY
RF	As required	As required	As required	As required
AN/PSC-5 Relay E & F				
Mode Switch	PT	PT	PT	PT
Field	SATCOM	SATCOM	SATCOM	SATCOM
PSK/FSK	FSK	FSK	FSK	FSK
Voice/Data	D16K	D16K	D16K	D16K
Transmit Power	As required	As required	As required	As required
Frequency	Channel Number	Channel Number	Channel Number	Channel Number

Perform the following procedure to send an Over The Air Re-key (OTAR). OTARs may be sent in VINSON mode using LOS or non-DAMA SATCOM.

Equipment Required: KYX-15 Fill Cable, KY-57 OTAR Adapter and UDC cable

1. Fill KEK and the new TEK into any unused KYX-15/15A fill positions. The TEK must be stored in a lower position than the KEK.

2. Connect KYX-15 to the KY-57 fill port. Connect KY-57 OTAR cable between KY-57 and AN/PSC-5 AUX connector 3. Setup AN/PSC-5 as follows:

	LOS MODE	SATCOM
MODE Switch	PT	PT
Modulation	FM	FSK
Voice/Data	D	D16K
OP Mode	Normal	Normal
Tpwr	39 dBm	43 dBm
Tx /Rx Frequency	As Req	As Req

3. Setup KY-57 as follows:

POWER: ON	**MODE**: C	**FILL Switch**: As Req	**FUNC Switch**: OFF LINE

4. On KYX-15/15A, set ADDRESS SELECT switch for address containing the new TEK to ON. Set all other ADDRESS SELECT toggle switches to OFF.

5. Set ADDRESS SELECT toggle for address containing the KEK to ON.

6. On KYX-15/15A, set Mode switch to AK.

7. Contact receiving station using current TEK. Notify receiving station to stand by for AK operation.

8. On KYX-15/15A, press and release the INITIATE button. After 5-8 seconds, several beeps will be heard in the handset. When the beeps stop, the PARITY INDICATOR on the KYX-15/15A will flash.

9. Wait 30 seconds and set the KY-57 FILL switch to 5.

10. Connect a handset to the KY-57 and perform secure communications check with the receiving station. If unsuccessful, repeat steps 1 through 9.

11. Upon successful re-key, the receiving radio's KEK will be updated automatically. The transmitting radio must manually fill KEK from KYK-15 in order for the keys to match.

SEND OTAR IN VINSON MODE

SEND OTAR IN ANDVT MODE

SEND OTAR IN ANDVT MODE

Perform the following procedure to send an Over The Air Re-key (OTAR) in ANVDT mode using non-DAMA SATCOM.

Equipment Required: KYX-15 Fill Cable, KY-99 OTAR Adapter and UDC Cable

1. Fill KEK and the new TEK into any unused KYX-15/15A fill position. The TEK must be stored in a lower position than the KEK.

2. Setup AN/PSC-5 as follows:

PARAMETER	SENDING STATION	RECEIVING STATION(S)
MODE SWITCH	PT	CT
MENU	CURRENT	CURRENT
MODE	SATCOM	SATCOM
P# or M#		
TEK #		
MODULATION	PSK	PSK
COMSEC MODE		ANDVT
VOICE/DATA	D2400	V2400
OP MODE	NORMAL	NORMAL
Tpwr	43 dBm	43dBm
CHAN # (Rx/Tx Freq)	AS RQD	AS RQD
INTERFACE	PSC-5	PSC-5
NONDIFF/DIFF	AS RQD	AS RQD

3. Setup KY-99 as follows:

POWER: ON	**MODE**: C	**FILL Switch**: As Req	**FUNC Switch**: OFF LINE

4. On KY-99 menu Scroll to INFC and then set the FUNCTION switch to CT.

5. Contact receiving station using current TEK. Notify receiving station to stand by for AK operation.

6. On KYX-15/15A, set ADDRESS SELECT toggle switch for address containing the new TEK to ON. Set all other ADDRESS SELECT toggle switches to OFF.

7. Set ADDRESS SELECT switch for address containing the KEK to ON.

8. On KYX-15/15A, set Mode switch to AK.

9. On KYX-15/15A, press and release the INITIATE button. The KY-99 display shows TX AK and the PARITY INDICATOR on the KYX-15/15A will flash. Wait 30 seconds.

10. Perform secure communications check with the receiving station. If unsuccessful, repeat steps 1 through 9.

11. Upon successful re-key, the receiving radio's KEK will be updated automatically. The transmitting radio must manually fill KEK from KY-99 in order for the keys to match.

Perform the following procedure to receive an OTAR. OTARs may be sent in a VINSON mode using LOS or SATCOM or in ANDVT mode using SATCOM.

1. Ensure the terminal has the current TEK and KEK installed.

2. Set up AN/PSC-5 for LOS or SATCOM communications.

3. Wait for sending terminal to establish communications.

4. OTAR is received when “VINSON (or ANDVT) OTAR DETECTED” is displayed.

NOTE: The terminal’s KEK is automatically updated upon receipt of a new TEK.

5. Verify re-key by establishing communication with sending terminal.

CLONING AND ERASING PARAMETERS

Perform the following procedure to clone terminal parameters from one AN/PSC-5 to another. The radio will clone everything in the terminal except the DAMA address and COMSEC keys.

1. Ensure radio sets are set to PT in LOS mode.
2. Connect cloning cable W7 to the AUX connector of each radio set.
3. On each radio set, press ESC until the main menu is displayed.
4. On each radio set, press 2. (Database Options)
5. On each radio set, press 8. (Clone Mode)
6. On the source radio set, ENTER the five-digit DAMA address of the destination radio set.
7. On the source radio set, press ENT on SEND.

CLONE MODE
DAMA Address #####
{SEND}

8. Observe each radio set. The source radio will display “Sending” and the destination radio will display “Receiving." When complete, each will display “Successful."

CLONE MODE
Sending - LOS
DAMA Address #####

9. If “Link Failure” is displayed on the source radio set, the transfer failed. Repeat steps 1 thru 8. If the Cloning transfer continues to fail, check the cloning cable.

Perform the following procedure to reset all parameters to factory default parameters (excluding COMSEC keys).

1. Press ESC until the main menu is displayed.
2. Press 5. (Maintenance)
3. Press 5. (Erase Parameters)
4. Press ENT on ERASE.
5. Press ESC twice when done to return to the main menu.

ERASE PARAMETERS
{ERASE}

The following footnotes are referenced throughout this manual (**1**).

1. Applies to message service only. Select manual to queue messages in terminal, auto to release upon receipt. Defaults to manual whenever voice is selected.

2. Terminal Time is required only for passive ranging. Time is also used in Status Messages. Time is always reset to 00:00Z after radio is turned off.

3. Set Transmit Power as low as possible.

4. Orderwire is always encrypted.

5. Select Active or Passive. Not required in EMCON mode.

6. Satellite ID and Ephemeris data is used only when passive ranging.

7. Not Used.

8. Each terminal must have a unique Terminal Address.

9. Always include the network (Net Guard) address in the Guard List. Until officially notified, DO NOT put terminal addresses in the guard list.

10. For Pre-assigned Login, demarcation point and call precedence are required.

11. Maximum Call Precedence assigned to the terminal is in the SAR, designated by unit frequency manager. In 25-kHz DAMA the terminal will not indicate the maximum precedence.

12. Destination Addresses can be terminal or network address. Need network address and all terminal addresses in net for making calls.

13. A checkmark indicates the Message has already been viewed.

14. Indefinite should always be used for network address.

15. Up and down arrows are displayed when orderwires are transmitted and received.

16. M is displayed when orderwires are not received and decrypted. Check antenna and power to remove M– if still there, refill the Orderwire key.

17. The acknowledgement message confirms the message was sent. It is not from the receiving terminal.

18. Currently, no Codes are assigned; use the default value 00001.

19. To change preset parameters, move cursor to desired data field and update then press ENT to confirm. The P (Preset) changes to M (Modified).

LIST OF ACRONYMS

AC	Automatic Control
ac	Alternating Current
AK	Automatic Keying
BER	Bit Error Rate
BIT	Built-In Test
bps	Bits per second
BPSK	Binary Phase Shift Keying
CC	Channel Controller
CCOW	Channel Control Orderwire
D	Data
DAMA	Demand Assigned Multiple Access
DASA	Demand Assigned Single Access
dBm	Decibels relative to 1 milliwatt
DC	Distributed Control
DIFF	Differential
EA	Emergency Action
EMCON	Emergency Control
F	Flash
FO	Flash Override
FOW	Forward Orderwire
FSK	Frequency Shift Keying
KEK	Key Encryption Key
LIO	Limited Input/Output
LQ	Link Quality
MHOP	Multiple Satellite Hops
NDIFF	Non-Differential
NVM	Nonvolatile Memory
OTAR	Over-The-Air-Rekey
OW	Orderwire
P	Priority
PCC	Primary Channel Controller
PSK	Phase Shift Keying
R	Routine
RCCOW	Return Channel Control Orderwire
ROW	Return Orderwire
RTS	Request to Send
SAA	Satellite Access Authorization
TDMA	Time Division Multiple Access
TSN	Time Slot Number
UPD	Update

The following table lists satellite channels authorized for use with the radio set.

Table 19 25-kHz Satellite Channels (1-8 are not applicable)

CHAN #	DOWNLINK	UPLINK	CHAN #	DOWNLINK	UPLINK
1	250.350	SHF	**39**	268.350	309.350
2	250.400	SHF	**40**	268.450	309.450
3	250.450	SHF	**41**	269.650	310.650
4	250.500	SHF	**42**	269.750	310.750
5	250.550	SHF	**43**	269.850	310.850
6	250.600	SHF	**44**	269.950	310.950
7	250.650	SHF	**45**	260.350	293.950
8	250.700	SHF	**46**	260.375	293.975
9	251.850	292.850	**47**	260.400	294.000
10	251.950	292.950	**48**	260.425	294.025
11	252.050	293.050	**49**	260.450	294.050
12	252.150	293.150	**50**	260.475	294.075
13	253.550	294.550	**51**	260.500	294.100
14	253.650	294.650	**52**	260.525	294.125
15	253.750	294.750	**53**	260.550	294.150
16	253.850	294.850	**54**	260.575	294.175
17	255.250	296.250	**55**	260.600	294.200
18	255.350	296.350	**56**	260.625	294.225
19	255.450	296.450	**57**	260.650	294.250
20	255.550	296.550	**58**	260.675	294.275
21	256.850	297.850	**59**	260.700	294.300
22	256.950	297.950	**60**	260.725	294.325
23	257.050	298.050	**61**	260.750	294.350
24	257.150	298.150	**62**	260.775	294.375
25	258.350	299.350	**63**	260.800	294.400
26	258.450	299.450	**64**	260.825	294.425
27	258.550	299.550	**65**	260.850	294.450
28	258.650	299.650	**66**	261.450	295.050
29	265.250	306.250	**67**	261.475	295.075
30	265.350	306.350	**68**	261.500	295.100
31	265.450	306.450	**69**	261.525	295.125
32	265.550	306.550	**70**	261.550	295.150
33	266.750	307.750	**71**	261.575	295.175
34	266.850	307.850	**72**	261.600	295.200
35	266.950	307.950	**73**	261.625	295.225
36	267.050	308.050	**74**	261.650	295.250
37	268.150	309.150	**75**	261.675	295.275
38	268.250	309.250	**76**	261.700	295.300

25-kHz SATELLITE CHANNELS

25-kHz SATELLITE CHANNELS

CHAN #	DOWNLINK	UPLINK	CHAN #	DOWNLINK	UPLINK
77	261.725	295.325	**118**	263.800	297.400
78	261.750	295.350	**119**	263.825	297.425
79	261.775	295.375	**120**	263.850	297.450
80	261.800	295.400	**121**	263.875	297.475
81	261.825	295.425	**122**	263.900	297.500
82	261.850	295.450	**123**	263.925	297.525
83	261.875	295.475	**124**	263.950	297.550
84	261.900	295.500	**125**	263.975	297.575
85	261.925	295.525	**126**	264.000	297.600
86	261.950	295.550	**127**	264.025	297.625
87	262.050	295.650	**128**	264.050	297.650
88	262.075	295.675			
89	262.100	295.700	**192**	254.150	307.750
90	262.125	295.725	**193**	257.550	311.150
91	262.150	295.750			
92	262.175	295.775			
93	262.200	295.800			
94	262.225	295.825			
95	262.250	295.850			
96	262.275	295.875			
97	262.300	295.900			
98	262.325	295.925			
99	262.350	295.950			
100	262.375	295.975			
101	262.400	296.000			
102	262.425	296.025			
103	262.450	296.050			
104	262.475	296.075			
105	262.500	296.100			
106	262.525	296.125			
107	262.550	296.150			
108	263.550	297.150			
109	263.575	297.175			
110	263.600	297.200			
111	263.625	297.225			
112	263.650	297.250			
113	263.675	297.275			
114	263.700	297.300			
115	263.725	297.325			
116	263.750	297.350			
117	263.775	297.375			

The following table lists satellite channels authorized for use with the radio set.

Table 20 5-kHz Satellite Channels

CHAN #	DOWNLINK	UPLINK	CHAN #	DOWNLINK	UPLINK
129	248.845	302.445	**166**	249.150	302.750
130	248.850	302.450	**167**	249.155	302.755
131	248.855	302.455	**168**	249.165	302.765
132	248.865	302.465	**169**	249.175	302.775
133	248.875	302.475	**170**	249.185	302.785
134	248.885	302.485	**171**	249.195	302.795
135	248.895	302.495	**172**	249.200	302.800
136	248.900	302.500	**173**	249.205	302.805
137	248.905	302.505	**174**	249.215	302.815
138	248.915	302.515	**175**	249.225	302.825
139	248.925	302.525	**176**	249.235	302.835
140	248.935	302.535	**177**	249.245	302.845
141	248.945	302.545	**178**	249.250	302.850
142	248.950	302.550	**179**	249.255	302.855
143	248.955	302.555	**180**	249.265	302.865
144	248.965	302.565	**181**	249.275	302.875
145	248.975	302.575	**182**	249.285	302.885
146	248.985	302.585	**183**	249.295	302.895
147	248.995	302.595	**184**	249.300	302.900
148	249.000	302.600	**185**	249.305	302.905
149	249.005	302.605	**186**	249.315	302.915
150	249.015	302.615	**187**	249.325	302.925
151	249.025	302.625	**188**	249.335	302.935
152	249.035	302.635	**189**	249.345	302.945
153	249.045	302.645	**190**	249.350	302.950
154	249.050	302.650	**191**	249.355	302.955
155	249.055	302.655			
156	249.065	302.665			
157	249.075	302.675	**194**	243.855	316.955
158	249.085	302.685	**195**	243.860	316.960
159	249.095	302.695	**196**	243.875	316.975
160	249.100	302.700	**197**	243.900	317.000
161	249.105	302.705	**198**	243.910	317.010
162	249.115	302.715	**199**	243.915	317.015
163	249.125	302.725	**200**	243.925	317.025
164	249.135	302.735	**201**	243.935	317.035
165	249.145	302.745	**202**	243.945	317.045

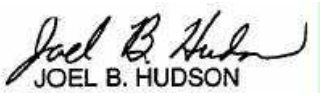
5-kHz SATELLITE CHANNELS

CHAN #	DOWNLINK	UPLINK	CHAN #	DOWNLINK	UPLINK
203	243.955	317.055	**223**	244.105	317.205
204	243.965	317.065	**224**	244.110	317.210
205	243.975	317.075	**225**	244.115	317.215
206	243.985	317.085	**226**	244.125	317.225
207	243.990	317.090	**227**	244.135	317.235
208	243.995	317.095	**228**	244.145	317.245
209	244.000	317.100	**229**	244.155	317.255
210	244.005	317.105	**230**	244.165	317.265
211	244.010	317.110	**231**	244.175	317.275
212	244.015	317.115	**232**	244.185	317.285
213	244.025	317.125	**233**	244.190	317.290
214	244.035	317.135	**234**	244.195	317.295
215	244.045	317.145	**235**	244.200	317.300
216	244.055	317.155	**236**	244.205	317.305
217	244.065	317.165	**237**	244.210	317.310
218	244.075	317.175	**238**	244.215	317.315
219	244.085	317.185	**239**	244.225	317.325
220	244.090	317.190			
221	244.095	317.195			
222	244.100	317.200			

By Order of the Secretary of the Army:

ERIC K. SHINSEKI
General, United States Army
Chief of Staff

Official:



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