

Chapter 2

Manpack Single-Channel System

2-1. System Description

a. Manpack single-channel TACSAT terminals provide reliable, highly portable communications. They have minimum setup and teardown time and satisfy a need for extended distance communications.

b. The manpack system operates in the UHF band between 225 MHz and 400 MHz. The manpack terminals use a UHF satellite system (FLTSAT and Air Force satellite (AFSAT) space segments).

c. The Army terminals using the FLTSAT space system are the ANIPSC-3, AN/VSC-7, AN/URC-101, and AN/URC-110. The AN/PSC-3 is a manpack terminal carried by one operator. The AN/VSC-7 is a vehicle-mounted terminal which normally acts as a net control station (NCS) and can control up to 15 subscribers. The AN/URC-101 and AN/URC-110 are manpack terminals each carried by one operator.

2-2. Deployment

a. Army units such as Special Forces groups and Ranger battalions deploy manpack TACSAT terminals worldwide. The physical environment does not restrict these deployments. The terminals are lightweight and compact, and they can be moved easily by one person. The NCSs are normally vehicle-mounted. They are usually operated from a forward operating base by Special Forces groups or from a battalion headquarters by Ranger battalions. A network can be a small deployment (three to four terminals with one AN/VSC-7/NCS) or a larger deployment (more than one AN/VSC-7/NCS).

b. Manpack terminals deployed worldwide are issued to support Army units. AN/VSC-7s and AN/PSC-3s satisfy the real-time mission requirements of the following organizations:

- Special Forces.
- Ranger battalions.

- Airborne/air assault divisions.
- Selected infantry divisions (light and mechanized).

2-3. Employment

a. The Special Forces units use the AN/PSC-3s for group/detachment headquarters, forward operating bases, and operational teams spread over extended distances. Command and control between major headquarters is primarily secure voice. All users at the Special Forces team level operate in a data burst mode using the OA-8990 data burst device.

b. The Ranger regiment/battalions command nets provide command and control from regimental headquarters through company headquarters. They use secure voice and data burst in their operations.

c. The airborne/air assault divisions use the AN/PSC-3s primarily to provide a long-haul command and control link between major headquarters during initial deployment. Once on the ground, those headquarters still requiring a communications link not available by LOS means or by multichannel satellite link will continue to operate via the AN/PSC-3 network. The primary mode is secure voice, though secure teletype (AN/UGC-74) is also used.

d. Selected infantry divisions (light and mechanized) use the AN/PSC-3s to provide a long-haul command and control link between major headquarters during initial deployment of a contingency operation. The primary mode is secure voice, though secure teletype (AN/UGC-74) is also used.

2-4. System Configuration

a. The AN/PSC-3 is a battery operated, highly portable, manpack TACSAT terminal. It employs an RT-1402 receiver/transmitter (R/T) unit that provides two-way communications in the frequency range of 225 MHz to 400 MHz. The R/T functions in both satellite mode and LOS mode of operation. It can be configured to provide data or secure voice.

(1) In the data mode, it uses the digital message device group (DMDG) OA-8990 as the input/output (I/O) device. It provides data rates of 300 bps or 1,200 bps.

(2) In the secure voice mode, the AN/PSC-3 uses either the advanced narrowband digital voice terminal (ANDVT) or a COMSEC interface device such as the VINSON KY-57.

(3) In addition to voice and data, the AN/PSC-3 can interface with facsimile, teletype, net radio interface (NRI), and FM retransmission media.

b. The NCS uses the same basic AN/PSC-3 R/T unit reconfigured to form an AN/VSC-7. The vehicle's electrical system provides power for operation. The NCS can control as many as 15 terminals in a network. Because it is a single-channel system, it is configured with data needs being satisfied by some terminals and secure voice needs being satisfied by other terminals. The call mode operation is a unique calling function. It allows the sending station to alert a distant unit with a visual indication. It also allows an optional 5-second audible alarm. The NCS can transmit or receive any one of 15 selective calls. It can also receive all conference calls regardless of the selective control setting on the NCS applique front panel. The NCS selects any one of the 15 units operating in its net for selective call transmissions. Conference calls will be received by all units operating in the net with their controls set to receive selective call messages.

2-5. Antijamming and ECCM Techniques

Physical damage and hostile electromagnetic jamming threaten all communications including satellite. This system presently does not offer any antijamming protection to the TACSAT terminal. Mobile TACSAT terminals offset the need for providing protected multiple ground relay sites. In addition, it reduces exposure time to hostile actions. The protection of these terminals by terrain, such as valleys, further reduces the possibility of detection. Where ordinary means of communications are subject to varying degrees of RDF, the satellite system can be used to deter enemy RDF success. The short transmission times of burst mode present less attractive jamming targets than the longer continuous communications of regular nets. The only options available to tactical UHF satellite terminals are data burst, alternate frequency selection, mobility, and reducing the on-air time of each transmission.