
APPENDIX H

ADDITIONAL AIDS

This appendix provides information on the operation and function of already fielded, and soon to be fielded, devices that can be used as aids to navigation.

H-1. AN/PVS-5, NIGHT VISION GOGGLES

These goggles are passive night vision devices. An infrared light source and positive control switch permit close-in viewing under limited illumination. The AN/PVS-5 has a field of view of 40 degrees and a range of 150 meters.

a. The device has the capability for continuous passive operation over a 15-hour period without battery replacement. It weighs 1.5 pounds and is face-mounted. An eyepiece diopter is provided so the device can be worn without corrective lenses.

b. The device is designed to assist the following tasks: command and control, fire control, reconnaissance, close-in surveillance, terrain navigation, first aid, operation and maintenance of vehicles, selection of positions, traffic control, rear and critical area security, patrolling, combat engineer tasks, radar team employment, resupply activities, and flight-line functions.

c. It is a fielded system used by combat, CS, and CSS elements. The infantry, armor, air defense, field artillery, aviation, engineer, intelligence, military police, transportation, signal, quartermaster, chemical, maintenance, missile, and munitions units all use the device to help accomplish their missions.

d. The AN/PVS-5 can assist the land navigator under limited visibility conditions. Chemical lights may be placed at selected intervals along the unit's route of movement, and they can be observed through the AN/PVS-5. Another navigation technique is to have one person reading the map while another person reads the terrain, both using AN/PVS-5's. This allows the map reader and the terrain interpreter to exchange information on what terrain is observed, both on the map and on the ground. It allows each user to concentrate his AN/PVS-5 on one task. Land navigation, especially mounted, is a task better performed by more than one person. The above technique allows one soldier to perform map interpretation in the cargo portion of the vehicle while another soldier, possibly the driver, transmits to him information pertaining to the terrain observed on the ground.

H-2. AN/PVS-7, NIGHT VISION GOGGLES

The AN/PVS-7 is a lightweight (1.5 pounds), image intensification, passive night-vision device that uses ambient light conditions. It has the same applications as the AN/PVS-5. It is designed to be used in the same way as, and by the same units as, the AN/PVS-5. The AN/PVS-7 has a field of view of 40 meters and a range of 300 meters in moonlight and 150 meters in starlight.

H-3. ENHANCED PLRS USER UNIT

The enhanced position location reporting system (EPLRS)/joint tactical information distribution system (JTIDS), hybrid (PJH), is a computer-based system. It provides near real-time, secure data communications, identification, navigation, position location, and

automatic reporting to support the need of commanders for information on the location, identification, and movement of friendly forces.

a. The EPLRS is based on synchronized radio transmissions in a network of users controlled by a master station. The major elements of a EPLRS community include the airborne, surface vehicular, and man-pack users; the EPLRS master station; and an alternate master station. The system can handle 370 user units in a division-size deployment per master station with a typical location accuracy at 15 meters. The man-pack unit weighs 23 pounds and includes the basic user unit, user readout, antenna, backpack, and two batteries.

b. The EPLRS are deployed at battalion and company level. Its use allows—

(1) Infantry or tank platoons to locate their positions, know the location of their friendly units, navigate to predetermined locations, and be informed when near or crossing boundaries.

(2) Artillery batteries to locate forward observers and friendly units, and position firing batteries.

(3) Aircraft to locate their exact positions; know the location of other friendly units; navigate to any friendly units, or a location entered by pilot; navigate in selected flight corridors; and be alerted when entering or leaving corridors or boundaries.

(4) Command and control elements at all echelons to locate and control friendly units/aircraft.

c. The network control station is located at brigade level to provide position location/navigation and identification services. It also provides interface between the battalion and company systems, and the JTIDS terminals.

d. It is fielded to infantry, armor, field artillery, military police, engineer, intelligence, aviation, signal, and air defense artillery units.

e. The EPLRS is a system that allows units to navigate from one point to another with the capability of locating itself and other friendly units equipped with the same system.

H-4. GLOBAL POSITIONING SYSTEM

The GPS is a space-based, radio-positioning navigation system that provides accurate passive position, speed, distance, and bearing of other locations to suitably equipped users.

a. The system assists the user in performing such missions as siting, surveying, tactical reconnaissance, sensor emplacement, artillery forward observing, close air support, general navigation, mechanized maneuver, engineer surveying, amphibious operations, signal intelligence operations, electronic warfare operations, and ground-based forward air control.

b. It can be operated in all weather, day or night, anywhere in the world; it may also be used during nuclear, biological, and chemical warfare.

c. It has been widely fielded in both active and reserve component units. (See Appendix J for more information on GPS.)

H-5. POSITION AND AZIMUTH DETERMINING SYSTEM

The PADS is a highly mobile, self-contained, passive, all-weather, survey-accurate position/navigation instrument used by field artillery and air defense artillery units for fire support missions. Its basis of issue is two sets per artillery battalion. The device is about the size of a 3-kilowatt generator and weighs 322.8 pounds in operational configuration.

- a. The two-man PADS survey party uses the high-mobility, multipurpose, wheeled vehicle, the commercial utility cargo vehicle, the small-unit support vehicle, or the M151 1/4-ton utility truck. The system can be transferred while operating into the light observation helicopter (OH-58A) or driven into the CH-47 medium cargo helicopter.
- b. The system provides real-time, three-dimensional coordinates in meters and a grid azimuth in mils. It also gives direction and altitude.
- c. The PADS can be used by the land navigator to assist in giving accurate azimuth and distance between locations. A unit requiring accurate information as to its present location can also use PADS to get it. The PADS, if used properly, can assist many units in the performance of their mission.

WARNING

Laser devices are potentially dangerous. Their rays can and will burn someone's eyes if they look directly at them. Users should not direct the beams at friendly positions or where they could reflect off shiny surfaces into friendly positions. Other soldiers must know where lasers are being used and take care not to look directly at the laser beam.

H-6. GROUND-VEHICULAR LASER LOCATOR DESIGNATOR

The G/VLLD is the Army's long-range designator for precision-guided semi-active laser weapons. It is two-man portable for short distances and can be mounted on the M113A1 interim FIST vehicle when it has the vehicle adapter assembly. The G/VLLD provides accurate observer-to-target distance, vertical angle, and azimuth data to the operator. All three items of information are visible in the operator's eyepiece display.

- a. The G/VLLD is equipped with an AN/TAS-4 night sight. This night sight increases the operator's ability to detect and engage targets during reduced visibility caused by darkness or battlefield obscuration.
- b. The G/VLLD can give the navigator accurate line-of-sight distance to an object. The system can be used to determine its present location using resection and can assist the navigator in determining azimuth and distance to his objective.

H-7. QUICK RESPONSE MULTICOLOR PRINTER

The QRMP is a self-contained, laser, xerography printer capable of reproducing maps, photographs, annotated graphics, transparent originals, and digital terrain data in full color on transparent material or standard map paper. The QRMP system will consist of a QRMP housed in an 8' by 8' by 20' ISO shelter mounted on a 5-ton truck with a dedicated military-standard 30-kilowatt generator. Each system will carry at least a seven-day supply of all necessary materials.

- a. The QRMP system has map size (24" by 30" paper size and 22.5" by 29" image size), color printing, scanning and electronics subsystems. It produces the first copy in less than five minutes in full color and sustains a copy rate of 50 to 100 copies per hour for full color products. The system uses a charged couple device array for scanning and sophisticated electronic signal processing to electrostatically discharge a selenium photoreceptor drum.

b. The QRMP has the capability to print terrain and other graphics directly from digital output from the digital topographic support system or another QRMP. The first unit is scheduled to be equipped with the QRMP in 1QFY97, and the initial operating capability is scheduled for 4QFY97. The QRMP system is used by the engineer topographers at division, corps, and echelons above corps.