

# ARCHIVED REPORT

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## PPS-15 - Archived 9/96

### Outlook

- In service; on-going logistics support
- No further production expected

### Orientation

**Description.** This is a lightweight handheld or tripod-mounted ground surveillance radar.

**Sponsor**

US Army  
Communications Electronics Command  
Ft. Monmouth, NJ

**Contractors**

GDE Systems Inc  
16550 West Bernardo Drive  
San Diego, California  
(619) 675-2600  
(619) 675-1999  
(Development/production)

AMEX Data Systems Corp

401 Broadway  
Redwood City, California 94063  
(415) 367-4105  
(415) 376-3106 FAX  
(Second source)

**Status.** In service, ongoing logistics support.

**Total Produced.** An estimated 1,000 PPS-15A units have been produced for the US Army and 600 for FMS. About 200 PPS-15B units had been produced for the US Air Force.

**Application.** To detect, locate and identify moving targets such as personnel, vehicles, or boats.

**Price Range.** Estimated unit cost is approximately \$20,000.

### Technical Data

**Dimensions**

Antenna:

Weight:

PPS-15A  
PPS-15B

**Metric**

20 X 30 cm  
10.7 kg  
15 kg

**US**

8 X 12 in  
34.6 lb  
17.2 lb

**Characteristics**

Frequency:	12 to 15 GHz	
Power:	50 mW peak	
Range:		
PPS-15A	1.5 km	0.9 nm: personnel
PPS-15B	3 km	1.9 nm: vehicles
Operating mode:	Homodyne	
Units:	Antenna assembly	
	Antenna Drive	
	Tripod	
	Control Indicator	
	Remote cable	
	Headset	
	Internal, disposable batteries	

**Design Features.** The PPS-15 consists of the antenna assembly, control indicator, an antenna drive, a headset, a tripod, remote cable and an internal disposable battery that provides power for up to 12 hours of continuous operation. The PPS-15A can be operated in the handheld, tripod or remote mode. The control indicator and antenna assembly are integral for most operations; they were designed to be "remoted" up to nine meters (35 meters for the PPS-15B).

Target returns are fed to an *all-range* and a *discrete range* channel. The *all-range* channel was designed to automatically discriminate against clutter. It produces both visual and aural alarms when a moving target is detected. The *discrete range* channel is used for ranging operations. It interfaces with a light display and Doppler aural tone. This indicates when a moving target has entered an operator-positioned range gate.

**Operational Characteristics.** An operator can monitor the search video function while determining the range of a specific target. The system can operate at one of five operator selectable frequencies. The system provides an

indication that a target has been detected by the search mode of the radar. Once this happens, the operator can determine the range of a target using a discrete-range gate control.

The system can be used at the front lines or any field location where ground surveillance is needed. It can be used on the ground or from a vehicle and is used to detect the presence of potentially hostile personnel or vehicles. The range and azimuth of a moving target are read from LED displays. The nature of the target is deduced from its aural signature.

Aside from its military applications, the PPS-15 has been used by the FBI for surveillance purposes. The relatively inexpensive short-range radar was used for security during the 1980 Winter Olympic Games in Lake Placid, NY. There are reports that the system is used for border anti-narcotics operations in selected sections of the Southwest. Some may have been provided by Army and National Guard units as part of cooperative drug interdiction programs.

## Variants/Upgrades

**PPS-15B:** This is an enhanced version that includes a 350-meter range segment which can provide a special surveillance sector operating independently of other surveillance segments. This segment is divided into seven 50-meter range gates and has a variable sector scan.

The system is designed to detect and locate numerous types of moving targets and to provide perimeter

surveillance for virtually any type of installation. The PPS-15B can be handheld, pintle- or tripod-mounted, on the ground or on a vehicle, and remotely controlled. Both aural and visual alarms are produced when a moving target is detected, and the LED-type display is identical to that of the PPS-15A.

## Program Review

**Background.** Initial US procurement of the PPS-15 was funded in FY75 for the US Army and US Marine Corps. During FY80, the US Air Force purchased a small, undisclosed quantity of PPS-15Bs (which had been designed for GLCM site security) for airfield defense. During the 1980-1981 time period, AMEX Systems of

Compton, CA, became a second source producer of the PPS-15A.

Battlefield Sensor Replacement Program. In early 1992, the Army began looking for ways to fund the development of a replacement for the PPS-5 and PPS-15

battlefield radars used in its heavy armor units. Tentatively titled the Lightweight Battlefield Surveillance System (LBSS), the new system would have to provide all-weather ground-based surveillance capability. The US Army sources-sought announcement called for a light weight, low-probability of intercept (LPI), line-of-sight (LOS) surveillance capability which would meet the mobility and survivability requirements of maneuver forces. The LBSS would have to detect movement, classify targets, and locate threat forces for situation development or targeting. It would also have to automatically distinguish wheeled from tracked vehicles.

The system should have a range of 20 kilometers and the ability to work in all-weather and visibility conditions. The new equipment would have to fit the rear of a High Mobility Multi-Purpose Vehicle. The original goal was to field the LBSS sometime in FY93 when the logistics supply of PPS-5 and PPS-15 spares and repair parts would start to be depleted. Funding constraints, combined

with an emphasis on the development of new anti-aircraft and anti-helicopter radars, however, caused this goal to be missed.

In May 1993, the Army still maintained a need for LBSS. The system continued to be mentioned in the 1993 Science & Technology Master Plan. However, the program had not yet been funded. New starts were being held in favor of finding modified systems to meet Army mission needs. LBSS was desired but not formalized in FY94 and FY95 funding documents.

The program is currently on hold. The Program office is waiting for an Army decision on radar/sensor development and funding, a decision complicated by a lack of money. As the Army prioritizes where it will spend its limited resources, LBSS has tended to fall below the funding line. As technological developments in nonradar, IR/EO sensors advance, they may well take over the LBSS mission.

## Funding

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Funding is from Operations & Maintenance accounts for ongoing logistics support.

**Analysis.** Although this system performs an important mission, it is old technology. The next major development will be the introduction of new sensors that use Very High Speed Integrated Circuit (VHSIC) and Microwave/millimeter-wave Monolithic Integrated Circuit (MIMIC) components and powerful but small processors. Motorola has introduced its MSR 5 and MSR 20 Modular Surveillance Radars to directly compete in an eventual procurement to replace the PPS-15s. AIL is marketing its TPS-74 Modular Radar.

With the increasing emphasis on reducing targetable electronic emissions on the battlefield, infrared, laser and similar electro-optical approaches are being introduced in large numbers. The introduction of third generation staring focal plane arrays will significantly increase the effectiveness and popularity of IR sensors. Surveillance networks are becoming integrated combinations of both radio frequency and passive equipment. The Persian Gulf

War also proved the value of night vision equipment and infrared sensors at the front.

The Lightweight Battlefield Surveillance System (LBSS) being considered by the Army did not specify radar as the basic sensor. Mobility, low probability-of-intercept, and target classification favor a combined IR/EO and radar approach. One possibility is a surveillance radar which will cue non-emitting sensors after initial detection. On-the-move surveillance will most likely use IR/EO techniques only.

With the lack of funding for new-start programs, the PPS-5 will have to remain in service a little longer. No LBSS activity was included in the Army's most recent budget, although planners maintain a need for some sort of system. Until then, current battlefield radars will have to hang in there supporting the frontline forces as best they can.

## Recent Contracts

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There Are no recent contracts over \$5 million recorded.

## Timetable

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FY75	Initial procurement
FY85	Upgrade contract; last production
FY93	Planned fielding of replacement
FY97	Earliest likely fielding of replacement

## Worldwide Distribution

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Known distribution is as follows:

Argentina - 170

Canada - 215

Israel - Unspecified number

Norway - 25

Spain - 150

Taiwan - 3

United Nations - 40

United States - Over 1,200 units in use with the armed forces and the Federal Bureau of Investigation.

## Forecast Rationale

Except for spare/replacement parts orders, there will be no PPS-15 procurement activity in the near future. Although the system has been effective and popular, a technologically advanced replacement is planned. The success of systems such as the Thorn MSTAR system will impact the international PPS-15 market by attracting overseas buyers, particularly from developing nations.

Past contracting activity has been for various components of the PPS-15. These include adapter pintle mounts, circuit cards, digital indicators and drive antennas. There was no Commerce Business Daily activity for the past year.

## Ten-Year Outlook

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No further production is anticipated.