



# UNCLASSIFIED

Position Paper  
LtCol LeMay, 12 April 2000  
Updated by Capt Trevor Clark, 19 April 01



## Hand-held GPS Receivers

**Purpose.** Provide updated information regarding Marine Corps efforts for acquiring updated hand-held Global Positioning System (GPS) receivers.

### Background

- Currently, GPS capabilities are tied to “platforms.” Therefore, with the exception of remaining PLGRs, there is **no stand-alone GPS capability**.
- **Precision Lightweight GPS Receiver (PLGR):** DoD-approved hand-held GPS receiver. USMC IOC was 1994; after several unsuccessful POM initiatives, remainder of AAO was procured in FY99 (total 5420). PLGRs are used in hand-held applications as well as integrated into M1A1s, LAVs, AAVs, and other tactical vehicles. Predominantly fielded at Company level in increments of 2-3. Each PLGR has a **six-year warranty**; therefore, USMC’s oldest PLGRs will lose warranty service in 2000. SYSCOM Project Office investigating alternatives.

Precision Lightweight GPS Receiver (PLGR)



- Block IIA-IIR satellites providing GPS services will be “replenished” by Block IIF satellites beginning in FY2005. At that time, PLGRs will become “less capable,” though still compatible, due to **enhanced security capabilities** on the IIF satellites.

### The Issue

- GPS control has set the selective availability (SA) error level to zero effective 2 may '00. The change means that all commercial receivers now have accuracy similar to keyed military receivers (Precise Positioning Signal).
- DoD retains the ability to selectively deny GPS signals on a regional basis when our national security is threatened.
- CJCSI 6140.01 directed implementation of Selective Availability Anti-Spoofing Mechanism (SAASM). Non-SAASM based GPS procurements/upgrades disallowed after 1 Oct '02.
- Current GPS receivers do not comply with SAASM mandate.

### Discussion

#### 1. Widespread use of commercial GPS is prohibited by DoD policy.

All DoD combatant users must acquire, train with, and use GPS systems capable of receiving the encrypted, military GPS signal, the Precise Positioning Service (PPS).... Commercially provided [position, navigation, and timing (PNT)] sources are not authorized for DoD operations.

1997 CJCSMASTER POSITIONING, NAVIGATION, AND TIMING PLAN, CJCSI 6130.01A, 13 February 1998

#### 2. An aggressive effort is underway by the GPS Joint Project Office to replace the PLGR.

The **Defense Advanced GPS Receiver (DAGR)** is an Army-led initiative, which will incorporate, advanced features in preparation for the Block IIF satellites, as well as enhance usability (size, weight, and ease of use). It will have graphic user interface, improved battery life, enhanced security, improved anti-jam, and lighter in weight. IOC is 2004; FOC is 2010.



Garmin

(example of possible DAGR)



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The Marine Corps is POMing for DAGR in FY04, and MCSC, with ReqDiv, are adopting the current Army ORD. As PLGRs fail, or as GPS is adapted to emerging tactics, techniques, and procedures, the Marine Corps will not have a suitable receiver available.

### Current Status

1. Due to the high cost of a the SAASM architecture (roughly \$1000+ per) and the fact that all equipment with the GPS capability are required to have SAASM, **the DACT and DAGR requirements officers are looking into combining the two programs** to fulfill the GPS and DACT needs under one form factor.

2. Due to structure changes there is a **current requirement of 5508 handheld and mounted GPS receivers** as opposed to the original requirement of 5146 receivers.

### **4. Services Brief GPS User Equipment (UE) Plans to JRB 12 Jul 00**

- MCCDC GPS Requirements Officer briefed the USMC status on the following:
  - Platforms that rely on GPS for nav or timing.
  - Strategy to upgrade GPS equipment
  - Transition schedule to incorporate selective availability anti-spoof module (SAASM).
  - Schedule to implement new military GPS signal called M-code.
  - Estimated cost for equipment/platform upgrades.
- JRB decided the Service UE plans could be a “paper” JROC and requested services brief their GPS UE plans annually.

### **6. Material Alternatives**

- Continue to work with the JPO on the development of the PLGR replacement called the DAGR.
- Combine DACT and DAGR together into one form factor requirement in order to save money and unnecessary repetition.
- Combine the DACT and DAGR requirements for those platforms requiring both capabilities, and continue to work with procuring the DAGR for all other GPS requirements.

- Combine the DACT and DAGR requirements for those platforms requiring both capabilities, and continue to work with procuring the DAGR for all other handheld GPS requirements.

### Recommended Course Of Action

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