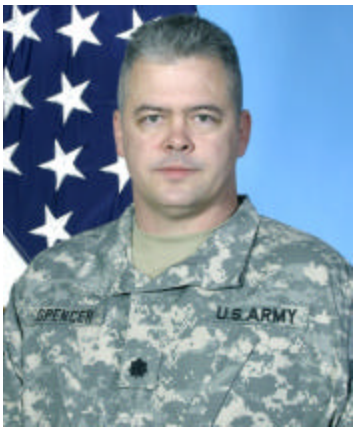
PATHFINDER

An informal electronic newsletter published for the GPS user community by PM GPS. Information presented is based on published and submitted news items of interest to the general user. Widest dissemination and reproduction is encouraged. Newsworthy items are solicited for inclusion. Editor Don Mulligan at PM GPS, Ft Monmouth NJ DSN 992-6137 or (732) 532-6137 or email: Donald.Mulligan1@us.army.mil

Volume 14 Issue 1 **Website: *https://gps.army.mil*** January 2007

DAGR Milestone: 100,000th Receiver Delivered!

From The New Product Manager



I am pleased to greet you as the new Army Product Manager for GPS!

I extend my thanks to Mr. Dave Williamson for his service as PM GPS until my arrival.

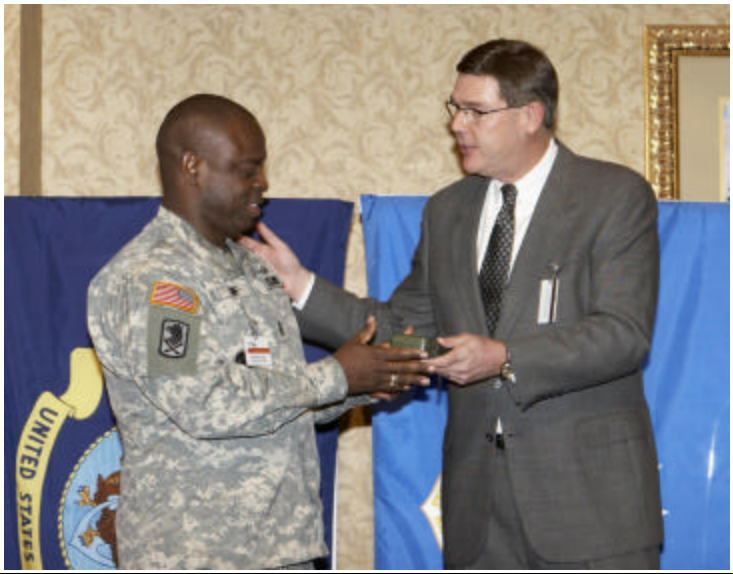
I also extend my congratulations to the entire GPS team of military, government and industry civilians who have worked so hard to achieve the recent DAGR delivery milestone proclaimed in the headline above. I join this team with pride and enthusiasm for the future.

I pledge to continue the world-wide support for Army soldiers and host weapon system integrators that the GPS team is known for, even as we continue the accelerated pace of DAGR fielding.

With staff located at Fort Monmouth, New Jersey, the GPS Wing at the Los Angeles Air Force Base and the Warner Robins Air Logistics Center in Georgia, we stand ready to support you.

Please start at the GPS website. If you don't find the answer you are looking for there, contact me or any member of my staff!

Jay Spencer
LTC, QM,
Product Manager, GPS



CSM Ray D. Lane, CE-LCMC FT Monmouth Command Sergeant Major, accepts delivery of the 100,000 DAGR on behalf of Soldiers, Sailors, Airmen and Marines from Mr. Greg Churchill, Rockwell Collins, Chief Operating Officer for Govt. Systems. Photo courtesy of Rockwell-Collins Inc.

On 13 December 2006 Army PM GPS and the Commander of the Air Force GPS Wing met at the Rockwell Collins manufacturing plant in Cedar Rapids, Iowa, to celebrate the production and delivery of the 100,000th DAGR to the government. Of this quantity, over 86,000 DAGRs have already been fielded to DoD units or weapons systems.

DAGR represents the state-of-the-art in handheld military GPS receiver technology and provides the most reliable and protected source of accurate GPS data available on the battle field.

Continued on Page Two.

REMEMBER! PPS is not just GPS, It's SECURE GPS!

100,000th Receiver Delivery

(*Continued from Page 1)*

At the ceremonies in Cedar Rapids, Command Sergeant Major Lane from the Army Communications Electronics Command was on hand to receive DAGR serial number 100,000 on behalf of war-fighters. Colonel Ballenger, Commander of the USAF GPS Wing at Los Angeles was presented with SAASM serial number 225,000.

"What's a SAASM?" you ask? See box at right for the acronym. SAASM contains the GPS receiver software and the COMSEC cryptology which provides access to the military-only portion of the GPS signal, making it the heart of a military GPS receiver.

SAASM stands for the Selective Availability Anti-Spoofing Module which contains GPS receiver software and COMSEC cryptology.

Both the handheld DAGR and the embedded GPS receiver known as GB-GRAM utilize SAASM. When all SAASM-based military GPS receivers are counted including aviation and munitions versions, the government has purchased over 225,000 SAASMs.

SAASM is the critical difference between military and commercial GPS receiver designs (as noted in the article below).

SAASM provides the war-fighter with a fundamental battlefield advantage over commercial GPS. SAASM means greater position accuracy, signal protection and situational awareness. SAASM enables the war-fighter to achieve the mission with pinpoint accuracy while protecting fellow war-fighters and avoiding non-combatant casualties.

After the symbolic presentations, the DAGR and SAASM were returned to the factory for delivery to war-fighters. PM GPS projects over 235,000 DAGRs will be in service with DoD forces by 2013.

Yes Virginia, There Really is a Difference between Military and Commercial GPS

We often hear the question: "Why don't military GPS receivers have features like this civilian model?"

Consumer demand drives manufacturers to change their products to add the latest technology as it becomes available. For military users, the focus is on performance and survivability not "bells and whistles", so we don't change product designs often. Lets look at some of the 'features' that distinguish military from commercial GPS receivers:

- **SAASM**
- **Environmental Standards**
- **Sound and Light Displays**
- **Mapping**

SAASM, as defined at the top of this page, provides military users only with greater position accuracy and resistance to intentional jamming or accidental interference with the GPS signal.

Rugged **environmental standards** for military receivers enable PLGR and DAGR to survive blows that would smash a receiver built to lighter civilian standards. The environmental standards of a military receiver would be considered "overkill" for a cheaper civilian receiver.

Sound and Light displays are "nice to have" features. But audible alerts and multi-color map displays, like those used in automobile navigation sets, create more parts to go bad and use more battery power. You know that power consumption and reliability are major concerns for the military user and to safeguard your mission need for sound and light discipline, military GPS receivers make no sound and are Night Vision compatible.

Mapping requirements for military and civil users are very different. Highway maps are okay for commercial GPS to navigate to Grandma's house, but military users need maps with a range of added "layered" features such as terrain or friendly and hostile locations. Military maps need to change as the mission changes. The Topographic Engineering Center, is hard at work developing and fielding a system of military maps for DoD weapon systems.

Visit the TEC website for current information about DAGR military maps at https://tsunami.tec.army.mil/Products/DAGRMapSupport/index.cfm

So, there are good reasons for the differences between commercial and military GPS receivers.

When it comes to performance, **SAASM** trumps the "latest and greatest" civilian features. A military GPS receiver with active COMSEC provides you with SECURE GPS.

And ***"that's the best there is!"***

Updated Software for DAGR Receivers

DAGR: TO 31R4-2PSN13-502 MWO 11-5820-1172-20-2 dated 31 Jan 2007

Like most software-driven equipment, GPS receivers are subject to periodic software updates.

Why you want it!

We know reprogramming is a distraction. We limit software updates to safety concerns and operational improvements. Like updating the software in your personal computer or cell phone, once in a while, you need to do it to get the latest features. The DAGR software update has been approved under the TCTO MWO number listed in the headline above. The improvements fall into three categories:

(1) Improved DAGR Operations

- Improved signal reception under dense foliage or in an urban area.
- Easier access to the Averaging Mode.

(2) Safety Concern Addressed

- Improvements in the Close Air Support mode.

(3) Improved DAGR Mapping Functionality

- Better interface with the mapping tool kit.
- High-speed serial port data processing for faster map downloading.

Getting the new software.

The new DAGR software is available for download at the DAGR product page on the PM GPS website. If you don't have good internet download capabilities, you can request a mail-out CD containing the software. Since DAGR software is distributed as a TCTO / MWO, you should be able to get a copy from your MWO coordinator as well.

How do we load the new software?

Reprogramming GPS receivers is straight-forward as illustrated below. The specific details for each issue are included in the TCTO / MWO or notice of new software release posted at the GPS website. If you have a question, contact us via the website or one of the GPS help desks numbers in this newsletter.

Your Turn!

If you have ideas on how to improve DAGR, contact us. The changes discussed in this article came from FIELD USER FEEDBACK. we are listening!

So Easy A Caveman Can Do it!

Bill Pohlmann, ARINC Engineer at PM GPS Fort Monmouth reprograms a DAGR using software files downloaded from the GPS website to a laptop and a DAGR-PC interface cable. The process takes a couple of minutes per DAGR.

New DAGR SOFTWARE

AN/PSN-13	***984-2461-012***
AN/PSN-13A	***984-3006-002***

Note: A table containing a complete list of all software versions issued for military GPS receivers is available at the PM GPS website or by contacting the Georgia Field Office listed in this newsletter.

Note: Loading the new software will provide your DAGR with all applicable updates including those issued under the first MWO in March 2005.

Other Pending GPS Software Updates.

Desktop Assistance Software (DAS)

Computer Based Training (CBT)

DAS for PLGR and DAGR operates on your desktop or laptop computer to generate mission data for download to a DAGR or PLGR.

CBT (for DAGR only) is a great tool for refresher or sustainment training for individuals or units.

Check the PM GPS website or our next newsletter for the availability of DAS and CBT updates!

GPS Customer Service Update for 2007

HANDHELD GPS RECEIVERS - MILITARY

PLGR and DAGR are the military-rated handheld GPS receivers issued to US military and other authorized DoD users. Both are manufactured by Rockwell Collins Inc. of Cedar Rapids, Iowa, and carry extended warranties with all depot repair provided by the manufacturer.

Each Branch of Service handles warranty repair returns differently:

Army and USAF users return GPS receivers requiring repair through their supporting DS maintenance support units or directly to the manufacturer.

Navy and Marine users return GPS receivers requiring repair through their supply system using the turn-in and requisition process.

Specific repair return procedures are posted at the PM GPS website, but take note of the following change:

Change: In October 2004, units deployed to the Iraqi-Afghanistan theaters of operation were advised to use in-theater Electronics Sustainment Support Centers or ESSC for GPS repairs. In November 2006, the advice was withdrawn and units were advised to return to the previous policy: Use DS maintenance support unit when available or return faulty receivers directly to the manufacturer.

EMBEDDABLE GPS RECEIVER REPAIR

A variety of PPS-capable embeddable GPS receivers are used by US military forces and other DoD authorized users. These include GPS receivers installed in ground based and airborne weapons systems, command & control, communications, computers, intelligence, sensors and reconnaissance systems, munitions and other 'smart' weapon systems.

Most of these embedded GPS receivers are procured in small numbers by DoD weapon system managers who obtain approval to use a specific military-capable GPS receiver in their weapon system. Platform-specific embedded GPS receivers are usually treated as parts with maintenance support provided by the host weapon system manager.

One embedded GPS receiver being used by many weapons systems has become the most widely used military embedded GPS receiver of all:

Ground-based GPS Receiver Applications Module GB-GRAM

The GB-GRAM was designed for use in low-dynamic ground-mobile applications. It is used in at least 15 weapon systems including man-portable, ground-mobile vehicles and even some Unmanned Aerial Vehicles (UAV).

PM GPS manages the GB-GRAM production contract with Rockwell Collins. GB-GRAM carries an extended warranty with all depot repair provided by the manufacturer.

The warranty repair return process for GB-GRAM is the same for all Branches of Service. The system integrators who install GB-GRAM to Army, USAF, Navy and Marine host weapons also later detect and remove faulty GB-GRAM for return to the manufacturer. In most cases, the weapon system operator doesn't see GB-GRAM because repair/replacement occurs at the integrator plant which maintains its own stock of spare GB-GRAMs as restricted Class IX parts.

Change: In 2007, the Program Director, Common Hardware Systems (PD, CHS), took over GB-GRAM customer service. PM GPS still manages the technical side of the GB-GRAM but PD, CHS now manages support including warranty services. Platform integrators have been advised of the change.

Weapon system manager or integrators may contact either PD, CHS or PM, GPS for assistance with any questions concerning GB-GRAM purchase, installation or support via the links at the GPS website.

HANDHELD GPS RECEIVERS – COMMERCIAL - Out in the Cold

OSD mandates the use of PPS-capable GPS receivers for all combat and combat support operations. Official policy cites can be requested from PM GPS website.

OSD grants waivers to allow the use of commercial GPS receivers in only Research and Development (R&D) or non-deployable training activities. When such waivers are approved, the buying activity, not PM GPS, is responsible for the maintenance of commercial receivers.

In 2006, another OSD policy took effect, requiring that any newly fielded weapon system using GPS must be equipped with current PPS technology known as SAASM. (The SAASM is explained elsewhere in this newsletter).

When military units or individual soldiers procure commercial GPS receiver without an OSD waiver of the PPS-capable mandate, they do so contrary to OSD policy and they are "out in the cold". PM GPS is prohibited from spending government funds to repair or replace unauthorized commercial GPS receivers.

Any commercial GPS receivers returned to the supply system or to PM GPS are subject to disposal.

Latest News on Batteries!

from the Power Sources Team at Fort Monmouth NJ

With the increasing amount of electronic devices that rely on batteries, managing your battery supplies is becoming more complex and critical.

DoD policy promotes the use of common rather than unique batteries whenever possible and GPS is a good example of how this policy has been implemented. The AN/PSN-11 PLGR was fielded with the BA-5800 battery which was not a common item. The newer technology of the AN/PSN-13A DAGR achieves the same level of performance using common throwaway or rechargeable AA batteries.

The Power Sources team at Fort Monmouth NJ supports the war-fighter with the best battery technology available today including “throwaway” & rechargeable batteries and recharging systems.

The Integrated Power Management website has the latest information including FY07 prices for batteries and chargers to help you calculate your battery costs. Visit the site at:

`https://lrcteams.monmouth.army.mil/ipm`

Of special interest at the unit level, the website offers the Power Sources Battery Calculator called **POWER**.

POWER stands for **P**ower **O**ptimizer for **W**ar-fighter's **E**nergy **R**equirements.

What does **POWER** do? It is a Microsoft Excel based application which enables you to calculate and forecast your battery power consumption and costs. A simple step-by-step process asks a series of questions about device usage and presents information to assist you in making the proper choices regarding battery type, frequency of battery changes, etc.

You create an automated worksheet customized for your unit needs. You can save the worksheet for future use.

POWER shows you which batteries will work in your device. It includes consumption data for most Army weapons systems not just GPS, so you can estimate total unit battery consumption. For most devices, you will find the expected runtime given a chosen battery type and in many cases you can adjust the estimated runtime for the ambient temperature.

If you discover that you have standard military-issue devices which are not listed in the POWER tables, or that you have information which conflicts with that provided in POWER, please contact the Power Sources team so they update POWER for the benefit of soldiers and authorized DoD users everywhere!

Any feedback on batteries and/or chargers "good or bad" is always welcomed. The Power Sources website is there to serve you. More information is available by calling the Project Leader at DSN: 992-4948, Comm: 732-532-4948 or send email to Donald.Brockel@us.army.mil

Note: We mentioned rechargeable batteries. The Power Sources team has another site with lot of information about rechargeable batteries. Check it out at :

www.monmouth.army.mil/cecom/lrc/lrchq/power/rechargebat.html

Rechargeable Batteries: " Transforming the Army...One charge at a time."

DAGR New Equipment Training (NET)

GPS Trainers Stay on the Move!

Recent NET locations, 1st Quarter FY07

- 1/10th SFG, Germany
- 3rd ID, Ft. Stewart , GA
- 1/10th MNT, Ft. Drum, NY
- 3rd ID, Hunter Army Airfield , GA
- 12 CAB, Germany
- 173rd ABN BDE, Germany
- 173rd ABN BDE, Vicenza Italy
- 3rd ID, Fort Benning, GA

Upcoming NET locations during 2nd Quarter FY07

Korea, Ft. Sill, Ft Knox, Ft. Bliss, Ft. Wainwright and National Guard units in Ohio, North Carolina, Indiana and West Virginia.

NOTE: If you are located at one of the upcoming NET locations, be sure to read the “Trail Boss” article in this issue about making the most of your NET opportunities!

Contact the PM GPS NET Manager at DSN 992-6295 or via the website if you have any questions about DAGR NET courses and the availability of training.

Visit the PM GPS website to order the DAGR Computer Based Training (CBT) on CD and other DAGR and PLGR training materials.

PM GPS Supports Re-set Mission

A Year as "Trail Boss" with the 82nd Airborne Division

Mr. Willie Jackson of the Georgia Field Office recently completed a one-year assignment as "trail boss", representing the Communication Electronics Lifecycle Management Command (CE- LCMC) at FT Bragg, NC.

As CE LCMC "trail boss" for the 82nd Airborne Division, Willie helped to synchronize the fielding of some 50 new CE-LCMC managed systems! He also served as a single Point of Contact for the division to coordinate the repair and return of battle-damaged CE-LCMC systems.

The "trail boss" concept was initiated in response to the need for military units to receive new equipment and repair old equipment in a reduced timeframe between the return to home base and the next deployment.

The trail boss is a full-time coordinator for new fielding, soldier training and refurbishment of damaged equipment to help the division "re-set" for deployment. As trail boss for CE LCMC, Willie Jackson coordinated these functions with a variety of Project and Product Manager offices for CE systems.

Here are three GPS-related observations that Willie made during his time as "trail boss" which may be of interest to other units:

1. Check for Obsolete Technical Manuals: Many units were still using the original DAGR TM. (See the box below for current DAGR TM information).

2. Make the most of New Equipment Training (NET) opportunities: Some units did not understand who should attend DAGR NET courses and lost their chance to get the right students to the courses when they were offered. Due to the high demand for NET, it was not always possible to get units in on later classes.

For your information:

The **DAGR Basic Course** is intended for General Purpose Users (GPU) who will use DAGR for basic functions: Positioning, land navigation and timing synchronization (e.g. SINCGARS).

On the other hand, The **DAGR Advanced Course** is intended for soldiers who may be assigned specialized duty such as forward observer where they need skill in DAGR advanced interfaces such as Laser Range Finder, Close Air Support, Gun Laying or Site Surveying.

Units that have not yet received DAGR NET should plan ahead to fill every slot in their quota for DAGR Basic and Advanced NET. Units that have already had home station NET can order a mail-out CD containing the DAGR Basic Course Computer Based Training (CBT) from the GPS website. The DAGR Advance Course is not yet available on CD so please contact the PM GPS NET manager at DSN 992-6295 for assistance.

3. Order the right DAGR Accessories: Total Package Fielding (TPF) includes five Basic Item of Issue (BII) items to accompany the DAGR: The mount, external antenna, antenna and power cables, carrying pouch and the TM. Many airborne units don't use the first three items so they were stored or disposed. As a result, these items may be deleted from the future BII list.

Major commands are briefed on DAGR accessories during the New Materiel Introduction Briefing (NMIB) process which occurs about 90 days prior to fielding. For current status of BII, contact the Army Fielding Chief via the website or call DSN 992-6133.

Willie Jackson can be reached at the Georgia Field Office, DSN 468-3518.

UPDATE TO DAGR TM

TO 31R4-2PSN13-1 TM 11-5826-1172-13 PCN 18409880200 / TM 09880C-01

Why so many titles? GPS is a Joint Service program so the DAGR TM has a publication title for each service.

The DAGR TM was originally published in June 2004 and revised in March 2005. Change 1 was issued in June 2005 and Change 2 was issued in October 2006.

Get Change 2 now. It includes the original content, all revisions and changes, plus information about the new DAGR software and an updated DAGR parts list.

To get the new TM, contact your source of technical publications support (varies by Branch of Service).

Note: Authorized DoD user can download a soft copy of Change 2 from the GPS website. If you don't have good internet connections, you may order a mail-out copy of Change 2 on CD from the website.

Need a paper copy?

If you use the Army Pinpoint System, you will get TM change pages that you must insert to an existing paper copy. USAF users can order a complete new paper copy from their installation TODO. Note: Authorized DoD users who need a complete paper copy may contact the inter-service coordinator at Tinker AFB at DSN 336-3868. Finally, you may also contact PM GPS at the Georgia Field Office at DSN 468-3518.

How to Contact PM GPS https://gps.army.mil

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Who to Call for Army Issues?

Call the Army Logistics Manager for:

- Army GPS User Equipment Policy
- User Equipment Authorizations & Procurement
- Maintenance Status or GPS Loans

Call the Army Fielding Manager for Army DAGR fielding and NET issues.

Other Service/Civilian Agencies?

Contact our representatives at the GPS Joint Service Support Office at Warner Robins AFB, Georgia: Frank Rowe or Willie Jackson as listed in the column at left.

Or use the User Information Request Form

Go to https://gps.army.mil

Click on the "Contact PM GPS" tab at the homepage.

Or use the GPS Help Line

by contacting Mr Willie Jackson at Warner Robins GA (see his contact info at left column)

Please Note

We have had some recent personnel changes.

If you have trouble reaching anyone listed, please use the "contact PM GPS" tab at our homepage to submit your question or comment and we will route your query to the right person.

Why Use Military instead of Commercial GPS?

Soldier Safety! Mission Accuracy! Signal Protection!

View the video on the GPS homepage! https://gps.army.mil