

PATHFINDER

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An informal newsletter produced for the GPS user community by Army PM GPS, Fort Monmouth, NJ. 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 Mr. Don Mulligan at PM GPS, Ft Monmouth NJ DSN 992-6137 or (732) 532-6137 or email: Donald.Mulligan@mail1.monmouth.army.mil

The PATHFINDER can be found online at the PM GPS web page: <http://army-gps.robins.af.mil>

PM's CORNER



My last Hurrah!

Lieutenant Colonel Skip Harborth is taking over by the time you read this. As the new Army Product Manager for GPS here at the GPS Joint Program Office (JPO), LTC

Harborth heads the Army PM GPS team that is working hard to bring you the next-generation of GPS User Equipment.

Army PM GPS is now a component of Project Manager for Navigation Systems (PM NAV SYS) a new organization chartered to develop Army-wide next-generation navigation systems. The current GPS products are the first fielded systems to come under PM NAV SYS. These organizational changes do not affect our mission here at the JPO: To develop and field survivable, effective and affordable GPS equipment.

Speaking of which, the new handheld receiver, the Defense GPS Advanced Receiver (DAGR) and the miniaturized GPS Ground-Based Receiver Applications Module (GB GRAM) are moving through the acquisition process. Competing designs for DAGR are undergoing extensive evaluation this year, including soldier field-testing. We expect to select the best candidate and proceed to early production next year. The GB GRAM is designed to be a miniaturized receiver embedded inside many Army communication and weapons systems will go into a similar competitive evaluation phase next year. Both designs feature next-generation GPS security modules that will give you enhanced accuracy, anti-jam and anti-spoof protection on the battlefield.

A handwritten signature in black ink, appearing to read "George R. Eveland Jr.".

LTC Eveland

ANOMALY: What's it all about?

Webster's Dictionary defines anomaly as: "A deviation from the common rule or something different, abnormal, peculiar or not easily classified." We use the term to define a problem with GPS receiver software. Since the publication of the last newsletter in April 2002, we learned of two anomalies with PLGR software.

The Joint Program Office (JPO) launched an immediate analysis in each case and the good news is that the JPO has a solution for each problem as noted below:

Anomaly #1

A PLGR software anomaly was reported in April 2002. The problem: PLGR would continuously reset itself and often the display would flash at a rate of once every two seconds. The problem could affect users on a worldwide basis at various locations and for varying amounts of time. Although the operator could obviously see that something was wrong, CECOM issued a Ground Precautionary Message (GPM) 2002-006 in late April to advise users of the problem. The JPO investigation identified the problem in PLGR software, which was triggered by a set of circumstances involving the GPS satellites. Without going into details, we are pleased to report that the JPO implemented corrective action in the Satellite Segment to temporarily resolve the problem and no action is necessary on the part of the field user! A permanent solution to modify the PLGR software will be distributed during the next cycle of PLGR field reprogramming.

A note of caution: Part of the trigger that caused this anomaly was the information that is downloaded when PLGR acquires satellite almanac data. It takes about 15 minutes to download a complete almanac, so if you only operate your PLGR for a few minutes, just long enough to get a position fix, there is a slim chance that you might have corrupt data in memory. We recommend that the next time you use your PLGR, start by tracking satellites for 15 minutes to ensure that you have a new almanac loaded into memory. You only have to do this once.

Anomaly #2

The second anomaly was reported in June 2002. The problem: The PLGR would start to lose satellite lock for a few seconds up to 40 times an hour. If left in the Continuous Mode, the PLGR will lose satellite lock for up to 20 seconds at a time. Unlike the first anomaly, this one only affects a few users – those who operate PLGR continuously for over 8 hours. The JPO investigation identified the problem and the manufacturer is developing a fix. It will be included in the next cycle of PLGR field reprogramming. In the meantime, if you use PLGR for long periods of time, we recommend you cycle the power off/on about every eight hours.

Right now, it looks like the next scheduled PLGR field reprogramming will occur in 2005 including the above changes and an update for the Magnetic Variation (MAGVAR) reference data table. At this time there is no decision to accelerate the scheduled PLGR reprogramming date.

*POC: Johnny Walker at Georgia Field Office
DSN 468-3288*

Update on the Deferred Maintenance Program for PLGR

Over the last year we have reported on the Deferred Maintenance Program for the AN/PSN-11 and AN/PSN-11(V1) PLGR. To recap, there are insufficient funds to automatically repair all PLGR damaged outside of warranty coverage. Remember that the warranty for Army and USAF PLGR was extended so PLGR repairs covered by the warranty are still being performed promptly. However, due to the funding limit, a priority repair system is in place for PLGR damaged outside of warranty coverage.

It is more important now than ever to treat your PLGR with care. Since we instituted the "Deferred Maintenance" program in November 2001, units do not automatically get a replacement PLGR. If a unit does not qualify for priority repair and the damage is not covered by the warranty, that unit will not receive a replacement PLGR and the damaged PLGR goes into deferred maintenance. Some common problems

associated with exclusion damage are: Incorrect power hookups, abuse (smashed displays, cracked chassis, etc.), and unauthorized opening of the PLGR. In other words, things that go beyond normal "wear and tear." Also, you should verify a fault before sending a PLGR in for repair. Refer to the technical manual! Sometimes PLGRs are returned and there is nothing wrong with them (we call them RTOK – Returned O.K.). It could be something as simple as trying to load an out-of-date crypto key. So, please be careful with PLGR, treat it with respect and use your manual! The alternative could be that your PLGR will be placed in "deferred maintenance" prematurely and you may not see a replacement for an extended period of time.

Since the Deferred Maintenance program began, out of 3,636 PLGR entering the repair cycle and tagged as Exclusion Repairs, 746 have been placed in deferred maintenance status.

*POC Suzanne Reinhart-Smith at Fort Monmouth
NJ DSN 992-5758*

Update on Rechargeable PLGR Battery Program

A new field rechargeable battery system will be available beginning in early 2003! The new charger stand will service both the existing rechargeable batteries and a host of new batteries.

One of those new batteries will be the BB-2800/U battery designed for PLGR. It is intended to serve as a supplement to your "Go to War" BA-5800 battery and it should be available by 2QFY03. We'll release stock number and availability as soon as we have it.

If you already use the current issue PP-8444 recharging system, you will be able to buy an adapter (estimated cost of \$44) to fit the new PLGR rechargeable battery if you don't want to buy the new recharging stand (estimated cost of \$1,720).

The new recharging stand accommodates a variety of new and old rechargeable batteries by use of adapter interface plates.

The BB-2800/U PLGR battery will cost about \$110.00 each. Over the long term, the repeated re-use will cost far less than all the throwaway one-time-use BA-5800s.

The stock number and availability for the GPS battery will be posted to the battery website when it becomes available.
www.monmouth.army.mil/cecom/lrc/lrchq/power/rechargebat.html

*POC: Don Brockel at CECOM Power Sources,
DSN: 992-4948*

PLGR Warranty – Don't Believe the Label!

Another reminder: If your PLGR warranty label shows a date that has passed, don't believe it! Army and USAF PLGR warranties were extended so you can disregard the expiration date on the label! Don't open the PLGR! Turn it in for repair. Chances are, the damage is covered by the warranty and you'll get a serviceable replacement free of charge (subject to the Army-only deferred maintenance program discussed above).

Note: Marine Corps operators: Continue to send your PLGRs directly to Rockwell Collins Inc. as stated in the O&M Manual and expect a replacement sent directly to you from the contractor. The Marine Corps is covering the cost.

Note: Navy operators: Although your PLGR warranty coverage was not extended, the Navy department has provided central funding to pay for all repairs (unless the set is damaged beyond repair). Therefore you can disregard the expiration date on the PLGR warranty label. If you have a faulty or damaged PLGR, turn it in to supply for credit and requisition a replacement through Navy supply. Do not attempt to fix it yourself and do not send it to disposal.

*Diana Wright, PLGR Manager, Warner Robins
GA DSN 468-5096*

Update on PLGR+96 Software

In previous newsletters we reported that a new version of PLGR software called PLGR+96 was authorized for Army users who operate laser range finder equipment. The primary difference between standard issue PLGR software (either version 613-9854-003 or 613-9544-008) and PLGR+96 software (613-9868-006) is the Laser Range Finder (LRF) module. The LRF module is a program that allows the PLGR to connect to terminals on laser range finder binoculars and convert target range and bearing data to a Lat-Long reading which the operator can use to call in fire. Cool. However, if you don't operate the laser rangefinder system there is no advantage to changing to PLGR+96 software. Also, PLGR+96 software cannot be used in most tan colored PLGR because those early production models don't have sufficient operating memory to accommodate the LRF module.

So, Army units operating the laser range-finder system have PLGR+96 software and the rest of us will stick with the current versions of standard issue PLGR software until the next field reprogramming cycle in 2005.

We thought you should know this because you may find Special Operations, USAF or Navy operators who have switched to PLGR+96 software. Although the JPO recently held a Configuration Control Board to approve release of PLGR+96 software for DoD use, the US Army CECOM did not issue a Materiel Release to authorize its use by Army units outside of those operating the laser rangefinder systems. Note: PLGR+96 software is removed when PLGR is returned for warranty repair. Army units authorized to operate a laser range-finder system are equipped to reload PLGR+96 software when sets are returned from the repair cycle.

*Mr. William Burnette, Jr. at Georgia Field Office,
DSN 468-1109.*

Update on the PLGR External Protection Module

In previous issues, we've discussed problems caused by connecting and disconnecting the PLGR from the Appliqué computer (in TF XXI integrated vehicles) when either or both units are powered on. In addition, there have been articles advising the proper sequence for attaching cables to the PLGR (see the April 2001 newsletter, Vol 8, issue 2, available at the GPS website).

In order to provide a permanent solution to eliminate unintended damage when connecting PLGR and other devices in a vehicle, PM GPS is developing the PLGR External Protection Module (EPM). The PLGR EPM will protect PLGR and the computer it is interfaced to from power transients on the PLGR 2 Interface (data port). The PLGR EPM may be useful for other installations where the host platform system needs better protection from power coming across the PLGR data port.

The PLGR EPM will also provide reverse power protection for the external power input, an integrated ground to eliminate the need for the Hoffman Plate, an additional fuse that is easily accessible and a built-in serial port tester. A Critical Design Review (CDR) for the PLGR EPM was held in July 2002 with favorable results. We expect to announce availability in the near future.

*Mr. William Burnette, Jr. at Georgia Field Office
DSN 468-1109*

An interesting Observation from the Civilian Side!

A recent newspaper article told the tale of a family who got stuck in a snow bank in the forest in their fancy premium SUV. No problem they thought, as they pressed the "SOS" button but guess what? The screen on the dashboard console indicated, "call failed." The newspaper article mistakenly called this a GPS failure but that's not really the right description. As a military user you already know the answer: Terrain masking and overhead vegetation cover can interfere with radio signals! When they dismounted

and moved to higher terrain, they got help via their cell phone and in the end, a County Sheriff yanked them out of the snow bank with a towrope. Lesson learned was that both GPS and the telephone networks (cellular or satellite) that connect callers to SOS service centers ultimately depend on a relatively clear line of sight for reliable performance. But like we said, you already knew that!

PLGR Repair Returns (Warranty and Exclusions)

So you think your PLGR is faulty? You've checked the battery, the power connections and/or the self-test still indicates an internal fault. Or maybe there was an accident and your PLGR display screen got whacked or the antenna was broken off.

Don't hide the bad PLGR in a desk drawer! If you are the support unit, don't wait until you get a dozen bad PLGR! Broken PLGRs don't fix themselves and stockpiling broken PLGRs only makes it harder to get replacements. Send faulty or damaged PLGRs back for repair as soon as the fault is detected.

The procedure is the same for both warranty and warranty-exclusion returns. If you have a supporting DS go through them; if not, return it directly. The address is:

DODAAC: EZ7415
Rockwell Collins
855 35th Street NE
ATTN: PLGR Repair, MS 139-141
Cedar Rapids, IA 52402-3613
(mark for "PLGR Warranty")

To check the status of PLGR you have returned for repair: Contact PM GPS Readiness Office at (732) 532-5758 or 4733 (The DSN prefix is 992).



"DO" the following when returning a PLGR for repair service:

Do remove and retain the main power battery (e.g. the BA-5800) or AA battery tray.

Do zeroize the receiver to delete Crypto-key using MENU choices not the "Emergency Zeroize" function.

Do leave the small lithium 3.6 volt "AA" size memory battery in place.

Do package the receiver to protect it from in-transit damage.

Do provide essential information: Your unit Point of Contact and a commercial phone number in case the repair team needs to contact you. A complete return shipping address including Bldg. number (not just DODAAC!) Use a DD Form 1149.

Do write down what you think is wrong with the PLGR. Any information about how long the set was operating and what you were doing when it failed may help speed the diagnostic and repair process.



"DON'T" do the following when returning a PLGR:

Don't return PLGR accessories.

Don't remove the memory battery; you'll erase the fault codes needed for repair.

Don't throw a dozen PLGRs into one box without adequate packing – you'll end up with a lot of parts and no replacement PLGR!

Don't send any PLGR regardless of condition to a Defense Reutilization and Marketing Office (DRMO).

Desktop Assistance Software (DAS)

Are you spending valuable time to manually enter those waypoints to your PLGR for that upcoming FTX? Or maybe you're concerned that some users may have entered grid coordinates incorrectly?

There is a way to enter waypoints quickly using a conventional keyboard and to upload that data quickly to all unit PLGRs.

The solution is to use Desktop Assistant Software (DAS) on your personal computer and then transfer that data to a PLGR via the PC-PLGR cable. You can then copy the mission data from one PLGR to another PLGR. PM GPS offers Windows-based, easy-to-use DAS for both PLGR and SAGR:

AN/PSN-11 (V)1 (PLGR) Desktop Assistance Software, Version Number 3.0 - Jul 2000

AN/ASN-169 (SAGR) Desktop Assistance Software, Version Number 3.0 - Dec 1999

DAS lets you create waypoints and routes on your PC and upload/download to and from your PLGR or SAGR GPS receiver for field use. You may use the offline mission planning feature to view selected waypoints files, and add, delete, or modify waypoints. DAS requires use of the serial data port cable (PLGR-PC or SAGR-PC cable). PLGR-PC Cable, NSN 6150-01-375-8664, Class IX, SAGR-PC Cable, NSN 5995-01-396-4867, Class IX.

To register as a DAS user or to order the latest software, contact the Georgia office. POC: Willie Jackson at the Georgia Field Office DSN: 468-3288.

Portable Flight Planning Software (PFPS)

The USAF has developed a PLGR mission planning software module integrated to work with Portable Flight Planning Software (PFPS):

Are you tired of entering Waypoint, Route, or Set-Up data into your PLGR via its limited keypad? Well we've got good news for you! You can create waypoint, route, and set-up data using a personal computer and pass it to your PLGR using the serial cable. You can also download data from your PLGR to the PC. The "Hand-Held GPS AWE" software program was funded by the Special Operations Mission Planning Office and developed by TYBRIN Corporation for the 46th Test Squadron at Eglin AFB. "Hand-Held GPS" is compatible with PLGR, EPLGR, PLGR II, and a variety of commercial GPS models.

Don't let the unusual name put you off. "Hand-Held" only indicates that it isn't part of an aircraft's or vehicle's internal GPS, and "AWE" is just an aviation acronym for Aircraft Weapons and Electronics. ***The bottom-line for the PLGR user is – this software makes PLGR set-up and planning a breeze!***

Installing the software on a PC provides you with an interface displaying three Main Tabs: Waypoints, Routes, and Setup. Each tab allows you to enter data or select settings for your mission using your PC's mouse and/or keyboard instead of the PLGR keypad. In the case of the PLGR II, there is an additional Tab for downloading the Track points that were stored by your GPS during movement. The information on each tab can be saved as a file for future use or sent directly to the PLGR. A mission file containing all the information from all the tabs can also be saved. These files can be reused, shared, and even emailed to other users of the Hand-Held GPS.

Note: Hand-Held GPS is designed to integrate with the Portable Flight Planning Software (PFPS) so PFPS must be on your PC for Hand-Held GPS to work. PFPS has been around the aviation community for years and has established itself as one of the most widely used mission planning products in the DoD. Your mission waypoints and routes can be displayed or printed on digital maps or imagery. Time, course and distance information for each route leg can be calculated, displayed, and printed. Track points from a PLGR II can be downloaded and displayed using a playback feature and show you where you really went.

You also get several Lat/Long format options along with MGRS. You can access and load points from PFPS "Local Point" or "Threat" files, convert coordinates from various DATUM to WGS, and display coordinates in various DATUM. Hardcopy printouts are available for routes, waypoints, and track points.

The soon to be released PFPS Version 3.2 includes Ground and Maritime planning features and the Hand-Held GPS AWE in the same package. Ground planning uses standard military symbology to display checkpoints and events.

To get a copy of this software contact the Air Force Mission Planning System Support Facility COM 1-800-773-7739 or DSN 777-6538. Email: mpssfa@hill.af.mil

*Willie Kramer, TYBRIN Corp, DSN 775-2531
COM 801-775-2531*

GPS Modernization and GPS 3

Here is an interesting item for those of you who want to know a little more about GPS satellites. You already know there are 24 satellites plus active spares on orbit to ensure global coverage. Satellites have a fixed operating life and one of the key roles of the GPS Joint Program Office (JPO) is to regularly launch replacement satellites to ensure uninterrupted coverage for you. As they launch new satellites, the JPO makes each generation of satellite better than the last. One of the key improvements is signal power. Without going into technical detail, the batch of satellites being prepared for launch over the next few years (models GPS 2F and GPS 2R) will provide a ten-fold increase in signal strength, thereby improving your receiver performance. Even bigger news is down the road with the next generation satellites that begin launching sometime late in this decade: The GPS 3 satellites are expected to have 500 times the power of the GPS 2F and 2R birds! That boost in signal strength means a big improvement in your ability to lock and hold satellite signals in all conditions.

How to contact us

Los Angeles Office for
PM GPS and
Technical Management
(TMD): DSN 833-0595 CML
(310) 363-0595. Email:
Del.Crane@LOSANGELES.AF.MIL

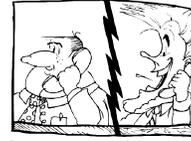


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Or contact the Pathfinder editor via email
address at front of newsletter and we will
route your question to the appropriate office
for response.

Who To Call?



- For GPS integration assistance and new product information, call TMD.
- For sustainment issues including help with software, supply, technical publications, accessory procurement and training call GFO.
- For equipment authorizations, fielding, host vehicle installation and New Equipment Training call RMD.

Do You Have Current PLGR Software?

1. If your PLGR displays one of the following version numbers on start-up, you are “okay”

a. For fielded PLGR: 613-9854-**003** or
 613-9544-**008**



b. For recently repaired PLGR: 613-9854-**004** or
 613-9544-**009**

c. For units operating Laser Rangefinders: 613-9868-**006**

NOTE: The manufacturer recently updated EPLGR software to correct Anomaly #1 discussed in this issue of PATHFINDER. The update (version 004 and 009) is applied to any PLGR entering the Depot Repair process. Since the JPO took steps to prevent Anomaly #1 from recurring, you DO NOT have to get this update if your PLGR is otherwise operable. All PLGR will eventually get this fix during the next field reprogramming.

2. If your PLGR displays any other version Number, contact PM GPS by phone or email to determine which version you should have and how to obtain it.

PM GPS
Attn: AMSEL-DSA-GPSR
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Fort Monmouth, NJ 07703

ACCT #89

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