THE PLGR
MADE SIMPLE

Published by the U.S. Army GPS GFO Robins AFB GA.
1 NOVEMBER 1997

SAFETY, CARE AND HANDLING
GENERAL SAFETY PRECAUTIONS

Refer to T.O. 31R4-2PSN11-1 or TM 11-5825-291-13, or EE174-AA-0MI-010/PSN-11, or PCN 60000282000. For all Cautions, and Warnings on using the PLGR.

SAFETY SUMMARY WARNING
THE BA-5800/U IS A LITHIUM BATTERY
THE LS6 IS A LITHIUM BATTERY
LITHIUM BATTERIES CAN EXPLODE

See T.O. 31R4-2PSN11-1 or TM 11-5825-291-13 or EE174-AA-OMI-010/PSN-11 or PCN 60000282000, for safety information on batteries.

CAUTION

This document does not cover all of the operational capabilities of the PLGR. It is intended to only aid a non-PLGR-user on how to perform limited operations with the PLGR.

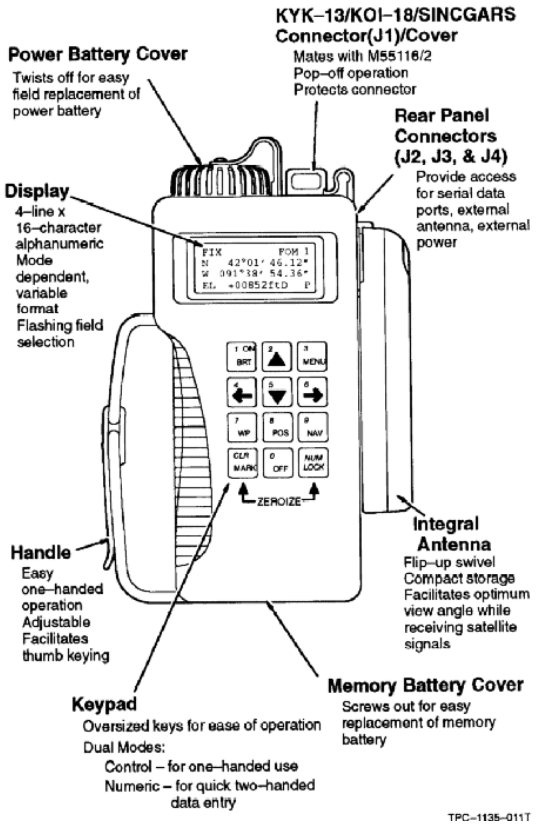

Figure-1

AN/PSN-11 PHYSICAL FEATURES

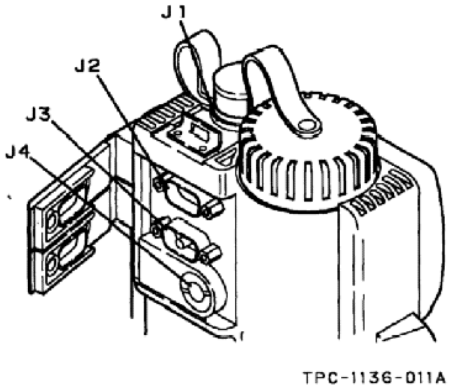

Figure -1A

REAR PANEL CONNECTORS

INTRODUCTION TO GPS

BEFORE YOU START USING YOUR PLGR, YOU NEED TO LEARN A FEW THINGS ABOUT GPS. IN A NUTSHELL HERE'S WHAT GPS IS AND HOW IT WORKS.

The NAVSTAR GLOBAL POSITIONING System (GPS) is a space based navigation and timing system. There are 24 satellites in 6 orbits, you can't see them but there are usually 6 to 9 satellites in view to a GPS receiver at any given time. Your PLGR needs only 3 satellites to figure out your location on the surface of the earth. To determine your elevation as well, your PLGR needs 4 satellites.

SECTION 1

1.0 HOW TO SETUP THE PLGR.

How to setup the PLGR to acquire satellites and meet the specific needs of the user. Refer to Figure 2.

NOTE:
Setting up the operating parameters of the PLGR is critical. Consider the mission requirements before making all selections.

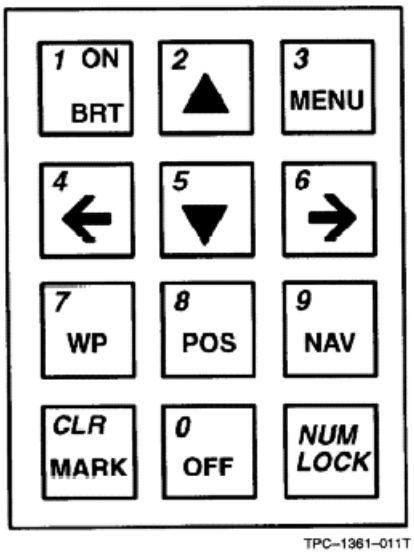

Figure-2

1.1 Turning on the PLGR
Press the ON BRT key to turn the receiver on. A self test begins immediately and upon completion, the results are displayed. The "No Faults" message indicates the unit is functioning properly.

NOTE:
FIX and **OLD** will be displayed on the first line every time the set is turned on and is not connected to external or vehicle power. If connected to external or vehicle power the default will be **CONT OLD**.

CAUTION:
The position initially displayed is "OLD" information until the receiver collects and calculates satellite data and displays the current position known as the "First Fix". Refer to figure 3.

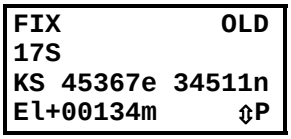

Figure-3

1.2 Mode Selection

1.2.1 Press the MENU key once. Refer to figure 4.

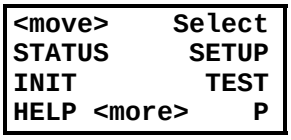

Figure-4

1.2.2 Use the right arrow key to move the flashing cursor to the **SETUP** field.

1.2.3 Press the down arrow key to activate the SETUP function. Refer to figure 5.

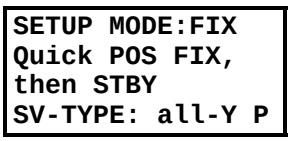

Figure-5

NOTE:

Line 1 will display **SETUP MODE: FIX**. Line 2 and 3 provides a brief explanation of each Mode selected. Line 4 displays the Satellite Vehicle **(SV)** type.

1.2.4 Press the right arrow key once to highlight the FIX mode of operation.

CAUTION:

Fix mode means the PLGR acquires satellites and determines the present position. Then automatically changes to standby (STBY) mode. After the position is determined.

1.2.5 Press the up arrow key to change the mode of operation to **CONT.** Refer to figure 6.

1.2.6 Press the right arrow key once to highlight **SV-TYPE: all-Y**

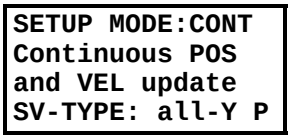

Figure-6

1.2.7 Press the right arrow key once to obtain the change page symbol ⇳ next to the P.

NOTE:

All-Y tells the PLGR to track only Y-code signals when crypto keys are loaded. Mixed allows the PLGR to track any type of satellite signal.

1.3 Units selection

1.3.1 Press the down arrow key once to display the **SETUP UNITS** page. Refer to figure 7.

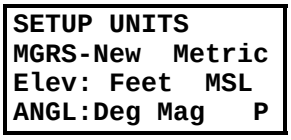

Figure-7

NOTE:

This page allows you to select your coordinate format and the units you want the PLGR to display your measurement under.

1.3.2 Press the right arrow key once to highlight the coordinate system on line 2. One of seven coordinate systems can be selected by pressing the down arrow key. Select MGRS-NEW if you are using a military map. For maritime and aviation charts you may select L/L DM or LL DMS.

1.3.3 Press the right arrow key to move to the Distance and velocity field. You may choose one of three options by pressing the down arrow key. Select Metric which is normally used with military and civilian road maps.

1.3.4 Press the right arrow key to highlight the elevation unit field on line 3. Press the down arrow key to review options. Select meter which is the standard option.

1.3.5 Press the right arrow key to highlight the elevation reference field. Select MSL (mean sea level) which is the standard option.

1.3.6 Press the right arrow key to move to the Angle units field on line 4. Now press the down arrow key to select Deg (Degree).

1.3.7 Press the right arrow key to highlight the Angle reference. Press the down arrow key to select one of three options available. Select Mag. When using the PLGR to determine bearings.

1.4 Magnetic variation selection

1.4.1 Press the right arrow key once and then press the down arrow key once to display the **SETUP MAGVAR** page. Refer to figure 8.

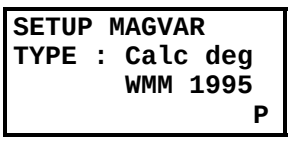

Figure 8

NOTE:

This page is used to choose the source of the Magnetic variation. Magnetic variation is the east west difference, in degrees or mils, between True and Magnetic north.

If a Map is not available select **Calc deg.**

1.5 Elevation Hold and Time Zone Selection.

1.5.1 Press the down arrow key to display page 4 of **SETUP.**

NOTE:

Page four of the SETUP display is used to customize the display which includes options for elevation calculation, time format and error display.

NOTE :

Selecting **AUTOMATIC** for the elevation means it will be calculated each time a new present position is received. If the PLGR is tracking less than 4 three satellites, elevation will be pulled from memory thereby allowing for continued navigation capabilities.

NOTE:

Satellites transmit in **ZULU** time, however, by entering an offset value, local time can be displayed. Your selection of error display format applies to both position and time displays. Estimated positional error can be displayed numerically as meters, or yards or feet, depending on selection made in step 1.3.3. Another option is the figure of merit (FOM) which is relative value ranging from one to nine, nine being the least accurate.

1.6 Datum Selection

1.6.1 Press the down arrow key to access the next page. Refer to figure 9.

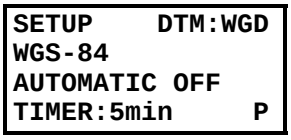

Figure-9

NOTE:

Military maps are drawn using a system of common reference called **DATUM.** A Datum is a surveyed line or point that ensures all maps within a series will correctly match when placed edge to edge.

MAP EXAMPLES

Spheroid: Clarke 1866
Horizontal Datum: 1927 North American Datum
Vertical Datum: Mean Sea

OR

Horizontal Datum: World Geodetic System 1984/
North American Datum 1983
Vertical Datum: National Geodetic Vertical Datum.

NOTE:

Fifty-two map Datum sets are available within the GPS. Maps have two associated Datums: horizontal and vertical (altitude) (See example). Refer to TM 11-5825-291-13 for Map Datum and Identifiers. For example, if you are using a map with the first example above your GPS Datum should match the below display. Refer to figure 10.

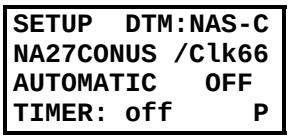

Figure 10

NOTE:

Line four on this display allows you to select the duration for the automatic-off timer. This sets the amount of time the PLGR will stay on after a fixed position has been obtained. It is operational only when battery power is in use.

1.6.2 Use the right arrow key to move the flashing cursor to a desired field, and then press the down arrow key.

1.7 Setup In/Out Port.

Setup I/O page. Refer to figure 11.

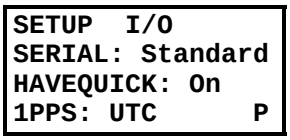

Figure-11

NOTE:

This page allows you to control **SERIAL** communications, HAVEQUICK, and 1PPS Options. You may configure the J2 Serial I/O port to select one of two data port options: **Standard** or **Instrumentation.**

1.7.1 Select Standard unless otherwise directed. Select HAVEQUICK: Off Select 1PPS: Off

1.8 Automatic Setup

1.8.1 Press the down arrow key to activate the SETUP **AUTOMARK** page. Refer to figure 12.

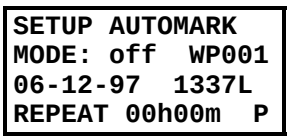

Figure-12

NOTE:

The AUTOMARK feature commands the PLGR to periodically:

- Wake Up
- Take A Position Fix.
- Store It As A Waypoint.
- Return to the Mode of Operation it was previously in.

NOTE:

The remaining pages for SETUP are for advanced GPS users.

1.9 Adjusting Display Back light

NOTE:

The display is back lighted for night viewing. Be aware that the PLGR draws more battery power with back lighting on.

1.9.1 Hold the ON BRT key and press the up arrow key. This increases the display back lighting.

1.9.2 Hold the ON BRT key and press thedown arrow key. This reduces the display back lighting.

1.9.3 Press the ON BRT key, this toggles the display back lighting off and on.

SECTION 2

2.0 How to Obtain Position, Time and Tracking Information.

2.1 How to locate your current position.

2.1.1 Press the **POS** key to display the position page. Refer to figure 13.

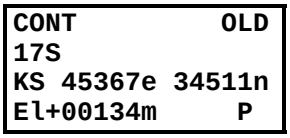

Figure-13

NOTE:

The position displayed is "OLD" information until the receiver collect and calculate satellite data and displays the current position known as the "First Fix".

2.2 To Obtain Dynamic Information

2.2.1 Press the POS key to select page # 2, Refer to figure 14.

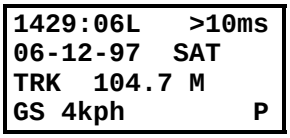

Figure-14

NOTE:

This display contains dynamic information fields;

- Line 1 - Time and Time Error
- Line 2 - Date, Day of The Week
- Line 3 - Track Heading
- Line 4 - Ground Speed

2.3 Track / Search Information.

2.3.1 Press the POS key to obtain information on the satellite vehicle that the PLGR is tracking and searching. Refer to figure 15.

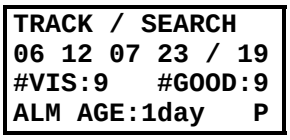

Figure-15

NOTE:

This display page contains the satellite tracking data and almanac age.

Line 1 - Satellite Track/Search Table Heading

Line 2 - Satellite identifier for each satellite tracked or searched for. IDs to the left of the slash / are satellites tracked. IDs to the right of the slash are satellites searched for.

Example; Line 2
07 17 24 31 / 01 Tracking 4 satellites and Searching for 1.

Example; Line 2
07 17 24 / 31 01 Tracking 3 satellites and searching for 2.

Line 3 - Shows the number of visible satellites. The number of visible satellites that are in good health.

Line 4 - Shows the age of the almanac. The age can be from 1 to 99.

NOTE:

The almanac provides the PLGR with the location of the satellites. A 1 day almanac is the most current.

The remaining pages of POS are for advanced GPS users.

SECTION 3

3.0 HOW TO INITIALIZE THE PLGR

NOTE:

The PLGR has the ability to determine present position, time, date, track and ground speed without any operator input and needs no initialization.

3.1 Press the MENU key once to access page 1 of the menu. Refer to figure 16.

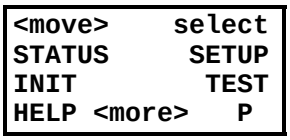

Figure-16

3.1.1 Press the right arrow key to highlight the INIT field. Press the down arrow key to activate the INIT field.

NOTE:

If the initialize position display is accessed after the PLGR has received a good position fix, the display shown comes up. Refer to figure 17, for an example of this page.

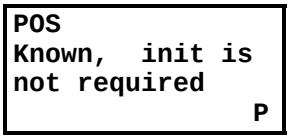

Figure-17

NOTE:

If the PLGR requires initialization the display shown below comes up. Refer to figure 18.

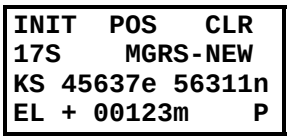

Figure-18

3.1.2 Press the right arrow key twice to highlight Line 2 of the display. Use the up or down arrow key to enter the correct grid zone designation from the map.

3.1.3 Press the right arrow key twice to highlight Line 3 of the display. Use the up or down arrow key to enter the correct grid coordinates from a map.

NOTE:

The entered position must be accurate within 1000 meters for a P or Y-code acquisition to be successful.

3.1.4 Press the down arrow key to access page two of INIT. If the below display comes up, it is because the PLGR requires only 1 satellite to know the time, while 3 or 4 satellites are needed to determine your position. Refer to figure 19.

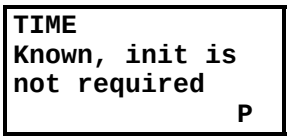

Figure-19

NOTE:

The remaining pages of INIT are for advanced PLGR users.

SECTION 4

4.0 CRYPTO VARIABLE OPERATIONS

WARNING:

Without crypto keys, you cannot compensate for the selective availability errors. You cannot read the encrypted signals. You have no protection against spoofing. Your receiver still operates but cannot be used for combat operations.

4.1 Accessing the crypto menu page.

4.1.1 Press the MENU key twice to access page 2 of MENU. If **"CRYPTO"** is displayed on line 4. Your PLGR has been keyed. Refer to figure 20.

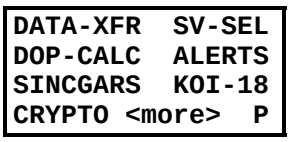

Figure-20

NOTE:

If crypto keys are not entered as shown on line 4 of the display, please follow all procedures below to enter crypto keys.

4.1.2 The AN/PSN-11 must be turned on and not in self-test to load crypto keys. Entering crypto keys protects the user from intentionally degraded accuracy.

4.1.3 Crypto Key Entry VIA KYK-13

4.1.4 Turn on the AN/PSN-11.Connect the KYK-13 to the J1 port on the AN/PSN-11. Please ensure that the AN/PSN-11 is not performing a self-test.

4.1.5 Set the KYK-13 selector switch to the position that contains the crypto key.

4.1.6 Set the KYK-13 mode switch to ON and observe the display of PLGR, The light on the KYK-13 flashes, and if successful the AN/PSN-11should display the following; **"key loaded**".

4.1.7 Set the KYK-13 mode switch to OFF, Disconnect the KYK-13 from the AN/PSN-11.

4.2 Crypto Key Entry VIA AN/CYZ-10

4.2.1 Turn on the AN/PSN-11.

4.2.2 Turn on the ANCD, read.

4.2.3 'Radio/SOI/SUPERVISOR.'

4.2.4 Enter RADIO, read 'SEND/RECEIVE/DATABASE/SETUP /COMSEC/TIME.'

4.2.5. Enter COMSEC, read 'VG/LD/RV/AK/MK/VU.'

4.2.6 Enter LD, read 'Select TEK/KEK.'

4.2.7 Enter TEK.

4.2.8 Select the desired GPS key, then press ENTER.

4.2.9 Enter QUIT, read 'Connect ANCD TO RT -(Do Not Comply).

4.2.10 Press, read 'Press LOAD on RT' - (Do Not Comply).

4.2.11 Connect ANCD to the J1 port on the AN/PSN-11 - GPS key transfer automatically.
4.2.12 The ANCD reports: "1 Keys Transferred." The AN/PSN-11 reports: **"Key Loaded."**
4.2.13 Disconnect ANCD from the J1 port on the AN/PSN-11.

NOTE:

The PLGR now has a key loaded and you are receiving the secure code, which allows the set to reach a FOM 1. This takes about 15 minutes with a GUV key installed.

NOTE:

Refer to Appendix C of TO 31R4-2PSN11-1 para. C-2.7 for information on Cryptoperiods.

SECTION 5

5.0 HOW TO ENTER A WAYPOINT

NOTE:

A waypoint is the location of a point on a desired course described by coordinates or a physical location. You can enter waypoints into the PLGR by map coordinates or by a known range, azimuth and elevation from your present position.

5.1 Press the **WP** key to access the waypoint Menu page. Refer to figure 21.

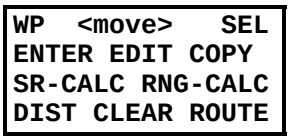

Figure-21

5.1.1 Press the down arrow key to activate the waypoint enter field. You are now prepared to enter your first waypoint. Refer to figure 22.

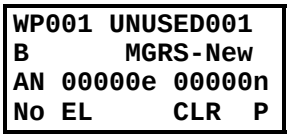

Figure-22

5.1.2 Press the right arrow key to highlight the waypoint number field in upper left corner. This field allows you to change the waypoint number, if necessary in numeric order.

5.1.3 Press the right arrow key and the up and down arrow symbol immediately appears next to the waypoint name. This allows you to use the up and down arrow keys to change the waypoint name, in alphanumeric order.

5.1.4 Press the right arrow key to highlight the waypoint label field. The waypoint label field allows you to name a waypoint up to ten characters.

NOTE:

This exercise will allow you to practice entering a waypoint. You will enter the word **STARWARS** by following the instructions below.

5.2 ENTERING A WAYPOINT NAME.

5.2.1 Press the down arrow key to highlight the first character of the waypoint label field.

5.2.2 Press the down arrow key twice to enter the letter ***S*** as the first character. Press the right arrow key to select the next character. Now press the up arrow key six times to enter the letter ***T*** as the second character.

5.2.3 Press the right arrow key to select the next character. Now press the up arrow key until the letter ***A*** appears.

5.2.4 Press the right arrow key to highlight the next character. Now press the down arrow key once to enter the letter ***R.***

5.2.5 Press the right arrow key to highlight the next character. Now press the up arrow key until the letter ***W*** appears.

5.2.6 Press the right arrow key to highlight the next character. Now press the down arrow key three times to enter the letter ***A***.

5.2.7 Press the right arrow key to highlight the next character. Press the down arrow key to enter the letter ***R***.

5.2.8 Press the right arrow key to highlight the next character. Press the down arrow key to enter your last letter which is the letter ***S***. Now we must remove the remaining characters.

5.2.9 Press the right arrow key to highlight the next character. Now press the up arrow key several times until all characters are removed.

5.2.10 Press the right arrow key to highlight the last character field. Again press the up arrow key until all characters are removed. Refer to figure 23.

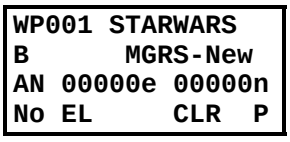

Figure-23

CONGRATULATIONS on a job well done!

5.3 HOW TO ENTER COORDINATES,FOR YOUR WAYPOINT. Please follow all of the below instructions.

5.3.1 Press the right arrow key to highlight the field to enter your grid zone designation. Line 2 of the display.

NOTE:

The grid zone designation is found in the map margin area (lower center of the map). Example of map margin area is below; Usually found in the center or lower left corner of your map.

GRID ZONE DESIGNATION 17S

Using the example above the grid zone designation for this map is 17S.

5.3.2 Press the up arrow key to enter the number 1. Now press the right arrow key to select the next field. Again use the up arrow key to enter the number 7.

5.3.3 Press the right arrow key and use the up or down arrow key to enter the letter ***S***. Now press the right arrow key to select the waypoint zone identification and coordinate field.

NOTE:

Please follow the instructions below for entering a grid zone identification and map coordinates.
Example: Grid Zone Identifier in center margin of map.

FS	GS
KS	LS

5.3.4 Press the up arrow key until the letter K appears. Now press the right arrow key to select the next field.

5.3.5 Press the up arrow key until the letter S appears.

5.3.6 Press the right arrow key to highlight the coordinates field. Now use the down arrow key to highlight the first numeric field.

NOTE:

Now press the **NUM LOCK** key to place the PLGR in the numeric mode of operation. An **N** is displayed in the lower right hand corner.

5.3.7 Press the number 5 key or (down arrow key) to enter the number 5. Press the number 6 key or (right arrow key) to enter the number 6.

5.3.8 Press the number 8 key or (POS key) to enter the number 8. Press the number 3 key (or MENU key) to enter the number 3.

5.3.9 Press the number 9 key (or NAV key) to enter the number 9. Now press the 1 key (or ON BRT key) to enter the number 1.

5.3.10 Press the number 2 key (or Up arrow key) to enter the number 2. Now press the number 2 key again (or the Up arrow key) to enter the number 2.

5.3.11 Press the number 1 key (or ON BRT key) to enter the number 1. Now press the number 5 key (or Down arrow key) to enter the number 5.

Refer to figure 24.

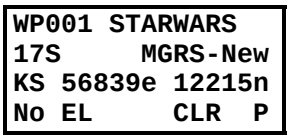

Figure-24

NOTE:

Notice Line 4 **"No EL"** is flashing at this time. This is normal.

5.3.12 Press the **NUM LOCK** key once at this time to turn off numeric mode. Now press the down arrow key to highlight the first character of the elevation field.

5.3.13 Use the up and down arrow key to change the first field to **-** and back to **+.** Use +symbol if your elevation is above sea. level.

5.3.14 Press the right arrow key to highlight the elevation numeric field. Now press the **NUM LOCK** key to place the PLGR in the numeric mode of operation. An **N** is displayed is the lower right hand corner.

NOTE:

The elevation for this waypoint is 00313 meters.

5.3.15 Notice the first field is flashing. Now press the 0 key or (OFF key) to enter the number 0. Notice the second field is now flashing.

5.3.16 Press the 0 key again to enter the number 0. Now press the number 3 key or MENU key) to enter the number 3. Notice the fourth field is now flashing.

5.3.17 Press the number 1 key to enter the number 1. Now press the 3 key to enter a 3. Refer to figure 25.

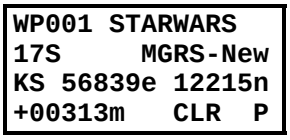

Figure-25

N**OTE:**

Notice the cursor has now move to the **CLR** field. You must be very careful to avoid clearing your waypoint. Please follow the instructions carefully.

5.3.18 Press the **NUM LOCK** key once to change the PLGR to the control mode. A **P** will be displayed in the lower right hand corner

5.3.19 Now press the right arrow key to move the cursor next to the page symbol. An ⇳ symbol will appear next to the letter P.

NOTE:

You are now ready to store your waypoint data. Please observe the display area as you perform the next step.

5.3.20 Press the down arrow key and observe the display area. It reads **"WAYPOINT STORED"** and immediately defaults to page 2 of waypoint.

CONGRATULATIONS on a job well done!

NOTE:

This page allows you to change the DATUM, MAGVAR and Coordinate Format. when necessary. If no changes are necessary press the down arrow key to enter a second waypoint. Follow the procedures above for entering waypoints.

SECTION 6

6.0 MARKING WAYPOINTS

6.1 The CLR/MARK key is used to store your present position as a waypoint.

NOTE:

This next lesson will describe the function of the MARK key. Observe the display as we perform the following steps;

6.1.1 Press the **MARK** key once to bring up the Mark display. Notice the display comes up with the cursor on the waypoint number. This indicates where the waypoint will be stored. Refer to figure 26.

```
MARK POS  WP:002
MARK: saves
 NAV: ManOverbrd
  ON:          P
```

Figure-26

6.1.2 Press the **MARK** key again to save the waypoint to the number listed on line 1. Observe the display area upon doing this. It reads **"WAYPOINT MARKED".** Refer to figure 27.

```
WAYPOINT
MARKED
```

Figure-27

NOTE:

Press ON to cancel the marking waypoint feature and return to the previous display.

NOTE:

If all nine-hundred ninety nine waypoints are already defined when the Mark key is pressed, the waypoint marked defaults to WP001. You may choose to overwrite this waypoint or select another one.

SECTION 7

7.0 HOW TO NAVIGATE

NOTE:

Navigating is using the PLGR to locate various points on a map relative to your current position.

7.1 There are four navigating modes that may be accessed and selected. However, we will only discuss one which is **2D FAST**. This mode maybe used for land or sea navigation.

7.1.2 Press the **NAV** key once to display the Nav menu page. Refer to figure 28.

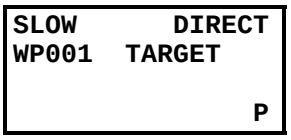

Figure-28

7.1.3 Press the right arrow key to highlight the Nav mode of operation. Now use the down arrow key to select the various mode of operations. (Slow, 2D Fast, 3D Fast and Custom.) Please select 2D Fast.

7.1.4 Press the right arrow key to highlight the Navigation method field of operation. Now use the down arrow key to see the various methods of navigation. (Direct, CRS to, CRS FROM). Please select Direct. Refer to figure 29.

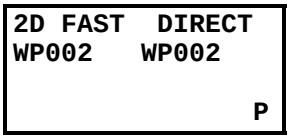

Figure-29

NOTE:

Direct is used to navigate from your current position directly to the waypoint.Not taking obstacles into consideration.

7.1.5 Now press the right arrow key to highlight the waypoint number field. Use the up or down arrow key to select waypoint number 2. Now press the right arrow key twice.

7.1.6 Press the down arrow key to change the Waypoint page. Refer to figure 30.

NOTE:

There are no selective fields on this page.The information displayed is used for navigation only.

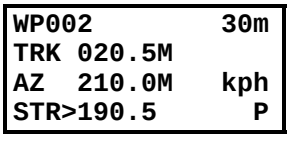

Figure-30

7.1.7 Line 1 (left corner) is the waypoint number you are currently navigating to.Line 1 (right corner) is the position accuracy.

7.1.8 Line 2 is your current heading in degrees. (TRK 020.5 deg magnetic).

7.1.9 Line 3 is the direct azimuth from your current position to the waypoint. Line 3 (right corner) is your ground speed.

7.1.10 Line 4 is your left/right steering angle. The steering angle lets you know how much your heading is off from the azimuth. (The difference between Line 2 and Line 3.)

NOTE:

If your TRK (line 2) is within 10 degrees or less from the azimuth this means you are on course. However, one must be outside and moving for this to be accurate.

7.1.11 Press the down arrow key to access page3of navigation. Refer to figure 31.

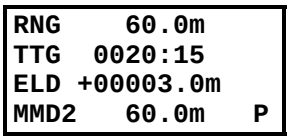

Figure-31

NOTE:

The third page includes: range, time to go, elevation difference, and minimum miss difference. No data is available (n/a) for time to go and minimum miss distance if you're not moving.

7.1.12 Line 1 is the range to the waypoint. As you move toward the waypoint the range should decrease. If not you're going the wrong way.

7.1.13 Line 2 represents the total time it will take you to reach the waypoint.(hours, minutes: and seconds.)

7.1.14 Line 3 is the difference in elevation. (current position minus waypoint altitude).

7.1.15 Line 4 is the minimum miss difference (MMD). Normally it is identical to your range providing you're on course.

NOTE

PRACTICE PRACTICE PRACTICE

NOTE:

The AN/PSN-11 (PLGR) has far more capabilities than those listed in this manual. This manual is written to aid a non-user in basic navigation tasks with the PLGR.

APPENDIX A

A.1 HOW TO LOAD GPS TIME INTO SINCGARS

NOTE:

The Time Figure of Merit (TFOM) must be seven or less (or 1ms or better) and have a SINCGARS radio connected.

A.2 Connect the SINCGARS cable to the data port (J1) on the AN/PSN-11. Connect the other end of this cable to the SINCGARS radio data port.

A.3 The SINCGARS function is accessed by pressing the MENU key twice.

A.4 Press either the Left/Right arrow key to move the cursor over the **SINCGARS** field.

A.5 Press the down arrow key to activate the SINCGARS field.

A.6 Press the left arrow key to activate the SINCGARS time fill.

A.7 Press the LOAD key on the SINCGARS.

A.8 The AN/PSN-11 display reads "**Time fill successful".**

A.9 Disconnect the AN/PSN-11 from the SINCGARS and continue the mission.

APPENDIX B

B.1 HOW TO LOAD GPS TIME INTO THE HAVEQUICK RADIO.

NOTE:

The time figure of Merit (TFOM) must be seven or less and HAVEQUICK data selected.

B.2 Connect the HAVEQUICK cable to the data port (J2) on the AN/PSN-11.

NOTE:

The user-end of the cable has bare tinned wires.

- **HAVEQUICK Out—Brown Wire.**
- **HAVEQUICK Return –Brown/white striped wire.**

B.3 Press the MENU key once to display the MAIN MENU page.

B.4 Press either the Left/right arrow key to move the cursor over the SETUP field.

B.5 Press the Down arrow key to activate the SETUP field.

B.6 Press the down arrow key several times to display the **SETUP I/O page.**

B.7 Press the right arrow key twice to move the cursor to the **HAVEQUICK** field.

B.8 Press the down arrow key to turn the HAVEQUICK feature on.

Note:

Time will be loaded into HAVEQUICK automatically.

C-1 HOW TO DEFINE A ROUTE.

NOTE:

ROUTE Nav is linking together several waypoints that are navigated from one waypoint to the next along a pre-defined route. In this mode the PLGR does all of the course computing for you.

C-1.1 We must first define a mission route. Please follow the instructions below carefully.

C-1.2 Press the **WP** key once to access the waypoint menu page. Refer to figure 32.

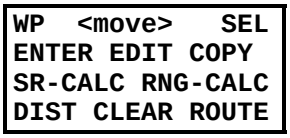

Figure-32

C-1.3 Press the right arrow key until the ROUTE mode begins to flash. Now press the down arrow key to access the ROUTE Nav mode. Refer to figure 33.

Figure-33

C-1.4 Press the down arrow key to activate the ENTER field. Refer to figure 34.

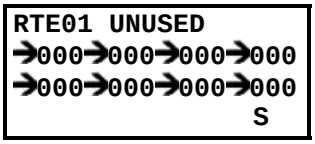

Figure-34

NOTE:

The ROUTE number 01 is flashing indicating that this the first ROUTE to be defined. You can program 15 ROUTES into the PLGR.

C-1.5 However, you must first enter your waypoint data before attempting to define any ROUTES.

C-1.6 Press the right arrow key to highlight the ROUTE name field. Here you will name the ROUTE.

C-1.7 Press the down arrow key to begin entering the ROUTE name. (SOLDIERS). Continue until the letter **S** appears.

C-1.8 Now press the right arrow key highlight the next field.

C-1.9 Press the up arrow key to enter the letter **O.** Again, press the right arrow key to move to the next field.

C-1.10 Press the down arrow key to enter the letter **L.** Now press the right arrow key to move to the next field.

C-1.11 Press the down arrow key to enter the letter **D.** Again, press the right arrow key to move to the next field.

C-1.12 Press the up arrow key to enter the letter **I.** Press the right arrow key to highlight the next field.

C-1.13 Press the up arrow key to enter the letter **E.** Now press the right arrow key to highlight the next field.

C-1.14 Press the down arrow key to enter the letter **R.** Press the right arrow key to highlight the next field.

C-1.15 Press the down arrow key to enter the letter **S.** Now press the right arrow key highlight the next field.

NOTE:

To remove the remaining characters please follow the directions below carefully.

C-1.16 Press the up arrow key once and immediately press the down arrow key once. Notice the first unused character disappears from the display.

C-1.17 Press the right arrow key once. Now press the up arrow key once and immediately press the down arrow key once. Notice all remaining characters are gone. Refer to figure 35.

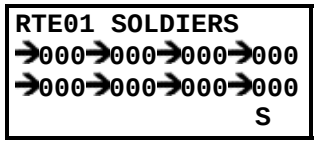

Figure-35

C-1.18 Press the right arrow key to move to line 2. Again, press the right arrow key once to highlight the ROUTE starting point. You may use the up or down arrow key to enter a waypoint number as your starting point.

NOTE:

We will use 001 as our starting waypoint. However, you must first have an adequate number of waypoints stored in the PLGR before you can define a ROUTE.

C-1.19 Press the up arrow key to enter the number 001. Press the right arrow key twice to highlight the next waypoint number field.

C-1.20 Press the up arrow key to enter the number 002. If you do not have this waypoint stored (002) in the PLGR you will not be able to enter it. Enter a waypoint number you have stored in the PLGR.

C-1.21 Continue to press the right arrow key until the page symbol appears next to the S on line 4. Refer to figure 36.

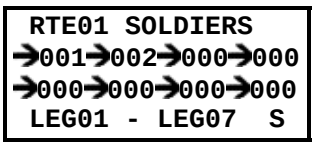

Figure-36

C-1.22 Press the up arrow key once. The word **SAVE** now appears on line 3.

C-1.23 Press the left arrow key once and the word **SAVE** is now flashing.

C-1.24 Press the down arrow key once to save your first ROUTE.

NOTE:

The display will read ' RTE has been saved'.

CONGRATULATIONS! You have completed the task of defining your first ROUTE with two legs. (WP001 & WP002)

C-2 NAVIGATE USING A ROUTE

C-2.1 Press the **NAV** key once to access the Nav menu page. Refer to figure 37.

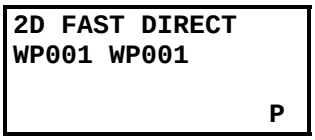

Figure-37

C-2.2 Press the right arrow key twice to highlight the method of navigation field.

C-2.3 Press the up arrow key to change the method of navigation to ROUTE. Refer to figure 38.

Figure-38

C-2.4 Press the right arrow key once to highlight the ROUTE number field.

C-2.5 Press the right arrow key one time to highlight the ROUTE Leg number on line 2.

NOTE:

LEG is another name for waypoint. In this case it spells out the first waypoint in the ROUTE you will navigate to. (starting point).

C-2.6 Press the right arrow key once and the start➔end field begins to flash.

NOTE:

Leg 01 is your starting waypoint and line 4 represent the ending waypoint.

C-2.7 Press the right arrow key once and the paging symbol will appear next to the letter P.

C-2.8 Press the down arrow key to access page two of ROUTE navigation. Refer to figure 39.

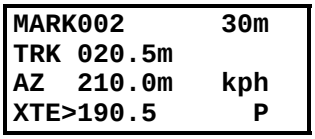

Figure-39

NOTE:

Cross track error (XTE)- The perpendicular Great Circle distance that you are to the left or to the right of the course.

NOTE:

PLEASE refer to the navigation pages 50 and 53 for an explanation of the above page. You mayalso refer to your PLGR operation manual for further details.

WARRANTY RETURN INFORMATION:
Refer to TO 31R4-2PSN11-1 Section 8, Para. 8.2.

Prepared by: Mr. George Rash and
Mr. Willie Jackson, at WR-ALC
DSN 468-3518, Comm.(478)926-3518