

TECHNICAL BULLETIN

**WARRANTY PROGRAM
FOR
PRECISION LIGHTWEIGHT
GLOBAL POSITIONING SYSTEM RECEIVER
AN/PSN-11() (NSN 5825-01-374-6643) (EIC: N/A)
AND
AN/PSN-11(V)1 (NSN 5825-01-395-3513) (EIC: N/A)**

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HEADQUARTERS, DEPARTMENT OF THE ARMY

1 JULY 1997

DEPARTMENT OF THE ARMY TECHNICAL BULLETIN

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Headquarters, Department of the Army, Washington, D.C.

1 July 1997

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this bulletin. If you find any mistakes, or if you know of a way to improve the procedures, please let us know. Mail your letter, DA Form 2028 (Recommended Changes to Publications and Blank Forms) or DA Form 20282 located in back of this manual direct to: Commander, US Army Communications-Electronics Command and Fort Monmouth, ATTN: AMSEL-LC-LEO-D-CS-CFO, Fort Monmouth, New Jersey 07703-5000. The fax number is 732532-1413, DSN 992-1413. You may also e-mail your recommendations to AMSEL-LC-LEO-PUB-CHG@cecom3.monmouth.army.mil. In either case a reply will be furnished direct to you.

1. GENERAL

This Warranty Technical Bulletin (WTB) describes the intent and the coverage of the warranty program for the AN/PSN-11() and AN/PSN-11(V)1 Precision Lightweight Global Positioning System Receiver (PLGR) in accordance with provisions contained in Contract Number F04701-93-D-0001. The WTB provides instructions for obtaining the repair or replacement of failed items, at no additional cost to the government, which meet the warranty criteria and fail during the warranted period of performance. This WTB also describes the handling and processing of warranty claims.

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2. EXPLANATION OF TERMS

The following terms and definitions apply to this WTB:

- a. Abuse:** The improper use, repair, or handling of warranted items such that the warranty may become void.
- b. Acceptance:** The act of an authorized representative of the government by which the government assumes for itself, or as an agent for another, initial ownership of existing and identified supplies.
- c. Alterations/Modifications:** Any alteration after production, such as a retrofit, conversion, remanufacture, design change, engineering change and the like.
- d. Contractor Support:** Those services that are to be performed and those responsibilities that are placed upon the contractor by the Government as specified in the warranty contract/provisions. This support, which may include such things, as labor, parts, tools, training, technical packages, etc. will be used in support of the warranted equipment during the specified warranty period.
- e. Correction:** Elimination of a defect and restoration of the equipment to required operational status.
- f. Defect:** Any condition or characteristic in any supplies or services furnished by the contractor under the contract that is not in compliance with the requirements of the contract.
- g. Design and Manufacturing Requirements:** Structural and engineering plans and manufacturing particulars, including precise measurements, tolerances, materials, and finished product tests required by the specifications of the contract for the supplies deliverable under the contract.
- h. Failure:** Any warranted supply returned to the contractor because of a failure condition, a malfunction and/or reduction in the performance of the supplies below the requirements of the contract specification. . NOTE: A failure could also be a defect, and that not all defects result in failures and not all failures result from defects.
- i. Full-rate production:** Those quantities delivered after satisfactory completion of Initial Production Testing and Follow-on Evaluation.
- j. Prime Contractor:** A party that enters into an agreement directly with the United States to furnish part or all of a weapon system.

k. Reimbursement: A written provision in a warranty contract whereby the user may make the necessary repairs with or without prior approval of the contractor where the government will be reimbursed by the contractor for the repair parts and/or labor costs. The term "bill back" is often used to describe this type of reimbursement.

l. Repair: To restore an item to serviceable condition without affecting the warranty.

m. Supplies: Supplies is synonymous and interchangeable with the word "units".

n. Verification: The process of determining the accuracy and adequacy of the WTB provided by the contractor. This process is performed by the government/user.

o. WARCO: Warranty Control Officer that serves as the intermediary between the units owning the equipment and the local dealer, contractor, or manufacturer. All warranty claim actions will be processed through the WARCO.

p. Warranty: A promise or statement of fact from a seller to a purchaser on the nature, usefulness, or condition of the supplies or performance of services to be furnished. The main purpose of the warranty in a government contract is to outline the rights and obligations of the contractor and the government for defective items and services.

q. Warranty Claim: The action started by the equipment user to request, from the contractor, repair or replacement of a failed item, or reimbursement for a failed item.

r. Warranty Period: The duration of time over which the warranty is in effect. This duration of time is normally measured as the maximum number of years, months, days, miles, or hours that an item is used.

s. Warranty Start Date: The date the warranty is put into effect.

3. COVERAGES - SPECIFIC

a. Terms of Coverage: The AN/PSN-11() and AN/PSN-11(V)1 PLGR equipment, procured under Contract Number F04701-93-D-0001 and listed below, is under warranty for a period of 72 months after acceptance by the government and is guaranteed to be free from any defects in material and workmanship which would cause the supplies to fail to conform to the specified performance requirements of the contract and all other agreements relating to the production under the contract Rockwell Collins is required to repair or replace, at no cost to the government, those furnished supplies that meet the warranty criteria but fail during the warranty performance period.

<u>NOMENCLATURE</u>	<u>NATIONAL STOCK NUMBER</u>	<u>PART NUMBER</u>
AN/PSN-11 (PLGR)	5825-01-374-6643	(13499) 822-0077-002
AN/PSN-11(V)1 (PLGR)	5825-01-395-3513	(13499) 822-0077-103
AS-4334/U (HELMET ANTENNA)	5985-01-374-7757	(13499) 013-1925-010
AS-4333N (REMOTE ANTENNA)	5985-01-375-4660	(13499) 013-1925-030 (79329) 3395-8015-0044

The remote antenna, (79329) 3395-8015-0044, is manufactured by Spectra Systems Inc. and has a 12 month warranty.

b. Warranty Information: Each warranted PLGR has a warranty label, which contains the warranty expiration date. See Appendix A, Warranty Marking Requirements. All PLGRs are to be returned to Direct Support (DS) for a one-to-one direct exchange. Before returning the PLGR, the DS should retest defective PLGRs to avoid Return OKs (RTOKs) and if the PLGR is defective, remove the prime battery. See Appendix B, PLGR RTOK Procedures, for further information. The DS unit is to return each defective PLGR to the address listed in paragraph 3c. All other warranted items, except for the remote antenna manufactured by Spectra Systems Inc., are to be returned directly to the address listed in paragraph 3c. The remote antenna manufactured by Spectra Systems, P/N 3395-8015-0044, is to be returned to:

Spectra Systems Inc.
777 Yamato Road, Suite 105
Boca Raton, FL 33431

c. Warranty Returns: The warranted equipment is to be returned to the following address for repairs:

EZ7532
Rockwell Collins
2855 Heartland Drive
Building 155 Dock
Coralville, IA 52241

MARK FOR: PLGR WARRANTY

The AN/PSN-11() and AN/PSN-11(V)1 are NOT to be opened in the field, except to change batteries. Opening the PLGR will void the warranty. See section 6 for other warranty exclusions. Prior to shipping, zeroize the PLGR and remove the power battery. Leave the memory battery installed so fault codes are retained. The PLGR with only a memory battery installed is exempt from DOT hazardous material transportation restrictions. Such exemption may be found in CFR 49, Section 173.185(i).

The PLGR is to be returned without accessories. Only the PLGR with the memory battery installed is to be returned to the contractor for warranty repair. Operable accessories are to be retained by the owning unit. A reusable container should be utilized for shipping the PLGR whenever possible. A quantity of these containers should be retained for future returns.

Ensure each defective PLGR shipment contains a DD Form 1149, Shipping Directive, which will include the following information: Organization; point of contact; DODAAC; UIC; and commercial telephone number to whom the PLGR is to be returned. Failure to provide the DODAAC and other required return address information could delay or prevent the return of a set to its proper owner.

4. CONTRACTOR RESPONSIBILITIES

The responsibilities of the contractor with regard to warranty coverage is delineated below:

4.1. Extent of Contractor Obligations

The contractor's obligations under warranties extend to all failures and defects discovered by either the government or the contractor during the warranty period, but does not include damage caused by the government. When a warranty for the entire item is not advisable, a warranty may be required for a particular aspect of the item that may require special protection (e.g. installation, components, accessories, subassemblies, preservation, packaging, and packing, etc.). Replacement units will assume the remainder of warranty time from the unit being replaced.

The contractor will repair or replace returned units and ship the repaired unit or replacement unit to the depot or as otherwise directed by the ACO within an average of five work days during each three month period. The average turnaround required applies individually for each unit.

Supplies returned by the government for which the failure cannot be verified and which pass Acceptance Test Procedures (ATP) will be covered at no additional cost to the government until the number of unverified failures equals 20% of the total returns for that unit during each three month period. If the contractor presents evidence to the ACO

or his designated representative that nonconformance of the returned supply cannot be verified, and the ACO concurs that the failure cannot be duplicated, the contract price will be adjusted and make payment to the contractor for non-verified failures.

The contractor will develop and maintain a data accumulation, processing, analysis, and reporting system capable of providing the data to the government upon request.

If the contractor becomes aware at any time after acceptance by the government or after tender to the government that a defect exists in any supplies or services which would adversely affect performance or reliability, the contractor will correct the defect.

The contractor may update units returned for repair or replace units with upgraded equipment provided that form, fit, and function is maintained.

4.2. Remedies

The contractor will repair or replace at no cost to the government those units produced under the contract which fail during the warranty period.

In the event of a breach of the essential performance requirements defined in the contract, the contractor will determine the cause of the breach and develop a solution the government may demand redesign and retrofit replacement of units if actual inherent failures exceed expected failures by 100% and the increase in expected failures is not due to factors beyond the control of the contractor. If the solution involves redesign and retrofit, MIL-STD-480 configuration control procedures will apply. The contractor will be responsible for the retrofit of all units delivered under the contract. If all units cannot be retrofitted by the contractor, regardless of cause, the contractor will provide the necessary data and retrofit kits to the government for government accomplishment. The contractor will be responsible for updating all affected technical data provided to the government. All costs for engineering analysis, redesign, and retrofit will be borne by the contractor.

If the contractor does not return the repaired/replaced unit(s) within the time specified in section 4.1, Extent of Contractor Obligations, it will be considered a late delivery and the contractor will be liable to the government for liquidated damages as specified in the contract.

The rights and remedies of the government provided:

a. will not be affected in any way by any terms or conditions of the contract concerning the conclusiveness of inspection and acceptance

- b. are in addition to, and do not limit, any rights afforded to the government by any other clause in the contract
- c. will survive final payment, unless sooner extinguished.

In no event will the government be responsible for any extension or delays in the scheduled deliveries or periods of performance in the contract as a result of the contractor's obligations to correct defects. Nor will there be any adjustment of the delivery schedule or period of performance as a result of the correction of defects unless provided by a supplemental agreement with adequate consideration.

Failure to agree will be deemed to be a dispute concerning a question of fact within the meaning of the contract.

Shipment of defective units to the contractor's facility will be at government expense. Shipment from the contractor's facility back to the owning unit will be at contractor's expense.

4.3. Warranty Duration

The time period or duration of the warranty is as specified in section 3 and has been established after consideration of such factors as: the estimated useful life of the item; the nature of the item, including storage or shelf-life; and trade practice. The period specified will not exceed the contractor's liability for patent defects beyond a reasonable time after acceptance by the government.

4.4. Notice

The warranty will specify a reasonable time, within five working days, for furnishing notice to the contractor regarding the discovery of defects. This notice period, which applies to all defects discovered during the warranty period, will be long enough to ensure that the government has adequate time to give notice to the contractor. The contracting officer will consider the following factors when establishing the notice period:

- a. The time necessary for the government to discover the defects.
- b. The time reasonably required for the government to take necessary administrative steps and make a timely report of discovery of the defects to the contractor.
- c. The time required to discover and report defective replacements.

4.5. Markings

See Appendix A, Warranty Marking Requirements, for information pertaining to markings.

4.6. Consistency

Contracting officers will ensure that the warranty clause and any other warranty conditions in the contract (e.g. in the specifications or an inspection clause) are consistent. To the extent practical, all of the warranties to be contained in the contract should be expressed in the warranty clause.

5. GOVERNMENT RESPONSIBILITIES

The responsibilities of the government with regard to warranty execution are delineated below:

5.1. Government Responsibility/Identification

The contracting activity responsible for execution of the administrative functions associated with this warranty is:

USAF Space and Missile Systems Center
ATTN: SMC/CZK
2435 Vela- Way, Suite 1613
Los Angeles AFB, CA 90245-5500

5.2. Government Maintenance

No corrective maintenance will be performed by the government without prior notification and authorization by the contractor or the designated representative. Any unauthorized repair or attempted repair to the warranted items with the exception of scheduled maintenance could void the warranty.

a. In the event corrective maintenance is authorized by the contractor and performed by the government, the maintenance levels and functions outlined in the organizational maintenance manual Maintenance Allocation Chart (MAC) will be strictly adhered to.

b. Normal care, servicing, and preventive maintenance procedures must be adhered to by the government/owning unit.

c. For details covering storage, shipping, or handling, refer to section 8.

Alterations and modifications will not be made unless expressly authorized or directed by:

USAF Space and Missile Systems Center
ATTN: SMC/CZK
2435 Vela Way, Suite 1613
LAAFB, CA 90245-5500

Unless provided otherwise in the warranty, the contractor's obligation to repair or replace the defective item or to agree to an equitable adjustment of the contract, will include: responsibility for the costs of furnishing all labor and material to reinspect items that the government deems defective; accomplish the required repair or replacement of defective items; and test, inspect, package, pack, and mark repaired or replaced items.

5.3. Owning Unit Responsibilities

Upon discovery of a defect, a determination of warranty status will be made by the using activity. A Warranty Claim Action (WCA), via DA Form 2407/5504, will be executed in accordance with DA PAM 738-750. The owning unit will be responsible for the normal care, servicing, and preventative maintenance of the equipment listed in section 3. The owning unit will follow maintenance schedules outlined in the PLGR technical manual and verify all failures. For additional information, see the Integrated Logistic Support Plan (ILSP).

5.4. Warranty Control Office (WARCO) Responsibilities

The WARCO will receive, verify, administer, process, and distribute the WCA and verify if the defect is covered under warranty. The WARCO will forward a copy of the original DA Form 2407/5504 to the Commander, U.S. Army Communications-Electronics Command (CECOM) and hold the exhibit until disposition instructions are received. When the contractor requests the exhibit, the WARCO/user will pack the exhibit in such a manner as to preclude further damage and ship it to the appropriate Source of Repair (SOR) for return to the contractor in accordance with the PLGR technical manual or instructions received from CECOM. When local repair is authorized, all costs are to be documented and reported to CECOM via the DD Form 2407/5504.

6. EXCLUSIONS

a. Exclusions

The contractor will not be obligated to repair or replace supplies if loss or damage occurs due to causes not attributable to the warranted item, such as accidental damage, fire or explosion not originating in the unit, aircraft crash, natural disasters such as flood, hurricane, tornado, or earthquake, combat damage, or failures which occur through use or abuse outside the parameters of the specification.

The warranty provisions do not cover liability for loss, damage, or injury to third parties, nor do they cover consequential damages.

If the contractor considers that a returned unit is covered by one of the exclusions listed above, the contractor will request the ACO perform an inspection of any supplies that are considered an exclusion. If the ACO determines that repair or replacement is excluded, repair may be accomplished under the provisions in the contract. Supplies so repaired will continue to be warranted for the remaining warranty period at no change in contract price.

b. Actions

The government is obligated to perform all field maintenance actions as prescribed by the PLGR technical manual and Repair Parts and Special Tools List (RPSTL) in order to keep the warranty in effect.

c. Abuse Determination

The determination as to whether or not a defect in a warranted item is caused by abuse will be made by the unit level commanders. If abuse is suspected, the item will be shipped to the contractor for repair, and the contract price will be equitably adjusted and will include transportation costs. A replacement will be shipped from Rockwell out of the exclusion pool.

7. CLAIM PROCEDURES

Two forms, DA Form 2407 or 5504, Maintenance Requests, and DA Form 2402, Exchange Tag, are needed to make a warranty claim. It is important that these forms are filled out completely.

In those cases in which maintenance personnel (operational, organizational, or direct support maintenance) have determined that an item covered by the warranty is defective, the following procedures should be taken towards processing claims:

7.1. Identification of Failed Items

The defective item(s) will be tagged using DA Form 2402, Exchange Tag, to prevent improper repair or use. A DA Form 2407/5504, Maintenance Request, will be filled out requesting warranty action on the item. The DA Form 2407/5504 should include the nature of the defect. See DA PAM 738-750 for instructions on how to fill out these forms or check with the WARCO or CECOM Logistics Assistance Office (LAO). The individual copies of the DA Form 2407/5504 will be distributed as follows:

Copy 1 - Kept by owning unit until equipment is returned or action is completed.

Copy 2 and 3 - Send to the following address:

Commander, US Army CECOM
ATTN: AMSEL-LC-LEO-D-CS-CFO
Fort Monmouth, NJ 07703-5000

Copy 4 - Returned to owning unit or filed by the local WARCO.

Copy 5 - Stays with the item until the warranty action is completed.

7.2. Reimbursement of Army Repair

If the WARCO elects to have the government perform the corrective action, the contractor can be required to pay reasonable costs incurred in performing such action. A copy of the government discrepancy report, test and operational reports, and the cost analysis report will be forwarded to the contractor and will be subject to the contractor's verification. Reimbursement actions to support the claim will be documented and submitted through the WARCO. Contract F04701-93-D-0001 does not allow the government to perform corrective actions on warranted hardware nor collect costs incurred in performing such actions.

7.3. Claim Denials/Disputes

If there is a disagreement between the government and the contractor over a warranty claim, the WARCO will try to resolve the problem at that level. When the disagreement

cannot be resolved locally, the WARCO will contact the major subordinate command representative. If a resolution cannot be obtained at this level, the WARCO will then raise the issue to a Defense Contract Management Administration Office (DCMAO) representative at the manufacturer's facility.

7.4. Reporting

Reporting or recording action on a failed item will be as specified in DA PAM 738-750. Contractor unique forms will not be used.

8. STORAGE/SHIPMENT/HANDLING

The following ensures proper storage, shipment, and handling of warrantied equipment:

a. Storage

All warrantied items will be marked in accordance with MIL-STD-129J, Marking for Shipment and Storage, and MIL-STD-130F, Identification Marking of U.S. Military Property. Packaging and preservation considerations for the warrantied items will follow the instructions and procedures outlined in MIL-STD-794 and MIL-E-55585.

b. Shipment

Procedures for shipment of warrantied items will be in accordance with AR 70-47, Engineering for Transportability, and will include the special provisions outlined in this section.

1. The government is entitled to compensation of reasonable costs incurred while shipping warrantied items from and/or to the responsible contractor or designated facility. Refer to section 4 for further information on the contractor's assumption of shipping cost.

2. Procedures for the recovery of shipping and transportation costs are listed in section 4.

c. Handling

All warrantied items will be marked in accordance with MIL-STD-129 and MIL-STD-130. Current government standards for handling will be followed for all warrantied items. Packing and preservation considerations for the warrantied items will be in accordance with the instructions and procedures outlined in MIL-STD-794 and MIL-E-55595.

APPENDIX A

WARRANTY MARKING REQUIREMENTS

a. General

Items under warranty must be properly marked as to their warranty status and labeled with information necessary to track and administer the warranty on that item.

b. Marking of Individual Hardware Items under Warranty

Warrantied hardware items handled by government personnel must be marked with a warranty label.

1. Warranty Label

A semi-permanent warranty label, separate from any MIL-STD-130F permanent label, will be applied to the item. The requirements of MIL-STD-130F will apply, tailored as follows:

a. The contractor may select any label method under MIL-STD-130F, paragraph 4.1, that will give a semi-permanent label, one that can be physically removed from the item either upon expiration of the warranty or upon replacement of the label due to extensions of the warranty period without damaging the item or damaging the finish of the item.

b. The type of label used will have a life expectancy of at least twice the duration of the warranty period in accordance with paragraph 4.3 of MIL-STD-130F.

c. The warranty label will have a surface that can be written on with a ball-point pen if the warranty start and expiration dates are to be added after the label has been applied.

d. The warranty label may be overcoated with a clear plastic for protection against obliteration from handling or exposure.

2. Label Information

The following information is required on the face of the label:

- a. Warranty logos and layout as seen in Figures A-1 through A-4.
- b. Identification Information: Add only if it not included on the permanent MIL-STD-130 label. Add any of the following information, if required, to the warranty label underneath the logos.
 1. Part Identification Number IAW MIL-STD-130F, paragraph 3.10.
 2. Commercial and Government Entity Code (CAGE) IAW MIL-STD-130F, paragraph 3.2. The CAGE be the contractor who is party to this contract. If different from the one who has design authority for the part identification number, indicate with "(W)" following the CAGE.
 3. Item serial number IAW MIL-STD-130F, paragraph 3.18. (Note: It may be desirable to include date of manufacture as part of the serial number if this date is not included on the permanent identification label.)
 4. Procurement Instrument Identification Number IAW MIL-STD-130F, paragraph 3.16.
- c. Date of Acceptance: This is a line "DATE OF ACCEPTANCE _____" with a blank space for the written entry of the date of acceptance by the government.
- d. Warranty Expiration Date: This is a line "WARRANTY EXPIRES _____." The date may be written in or printed, depending of the starting date and duration of the warranty.
- e. Disposition Instructions: This is a line "IF DEFECTIVE, HANDLE IN ACCORDANCE WITH:
 - NAVY: SECNAVINST 4330.17
 - ARMY: WARRANTY TB # 11-5825-291-30
 - AIR FORCE: T.O. 00-35D-54

3. Label Locations:

Orientation and locations of the label on the items will be established based on MIL-STD-1472D, paragraphs 5.5.2, 5.5.4.3, and 5.5.6.1.2. The label will be conspicuous to the person removing the item for maintenance. The label will also be mounted so that the blanks to receive written in dates lie over hard, flat surfaces.

4. Label Characteristics:

The following characteristics are required:

a. The basic format, colors, and appearance will correspond to Figure A-1. The proportions of length and width may be changed to accommodate the required information below the "W".

b. Black characters will be provided on a light background, so that the standard ball point dark inks will clearly show up when the label is written or printed on.

c. Letters will correspond to MIL-STD-1472D, paragraph 5.5.5.

d. The label may be scaled up or down, or proportions changed as required, but the printed lettering will not be reduced below the following requirements:

1. For equipment type items, letter heights will not be less than 0.18 inches. Blanks for written-in dates will not be shorter than 9 characters.

2. For assemblies and parts within equipment, letter heights will not be less than 0.05 inches. The space for written-in dates will not be smaller than 0.5 inches wide by 0.15 inches high.

5. Responsibility for Application:

The contractor is responsible for applying warranty labels prior to item delivery to the government.

c. Marking of Packages Containing Hardware Items under Warranty

All packaged hardware items under warranty that pass through the government's supply systems must be properly identified as containing a warranted item.

1. Label requirement: The contractor will mark, in accordance with MIL-STD-129, the outside of all item storage packages and shipping container with warranty information as specified in this section.

a. Information on label: The following is required on the face of each warranty label; this supersedes the requirement of MIL-STD-129K, Appendix C, "Interior and Exterior Container Special Markings."

1. Warranty Logos: This is as shown in Figure A-2, Package Label, which differs from Figure A-1 only in the information below the "W". If the label is stamped or written on, fill in the "W" with a red ink marking pen.

2. Warranty Expiration Date: This is a line "WARRANTY EXPIRES_____". The date may be written in or printed. It is primarily intended to ensure prompt handling of warranted items.

3. Disposition Instructions: This is a line "IF DEFECTIVE, HANDLE IN ACCORDANCE WITH:

- NAVY: SECNAVINST 4330.17
- ARMY: WARRANTY TB # 11-5825-291-30
- AIR FORCE: T.O. 00-35D-54

b. Label location: Labels will be located in a manner so as to be conspicuous to personnel handling, shipping, and storing the items so that warranted items will be issued before non- warranted items. Normally one label will be located adjacent to or above the contract data markings.

c. Label characteristics:

1. The basic format, colors, and appearance will correspond to Figure A-2. The proportions of length and width may be changed to accommodate different label sizes.

2. Black characters will be provided on a light background, so that standard ball point dark inks will clearly show up when the label is written or printed on.

3. Letters will correspond to MIL-STD-1472C, paragraph 5.5.5 if a printed label or stamp is used. If manually written, labels are used, the width of the strokes making up the letters will not be less than 0.05 inches.

4. Printed or stamped labels may be scaled up or down as required, but the printed or stamped lettering will not be reduced below a letter height of less than 0.18 inches. Blanks for written in dates will not be shorter than 9 characters.

2. Tracking information: In order to be able to track the warranty on the item inside the package without opening the package, the following item information must be placed on the package exterior. The information may be added to the label or may be included in other labels on the package. The information may be in bar code format as described in MIL-STD-129K, paragraph 4.11.

a. Part Identification Number in accordance with MIL-STD-130F, paragraph 3.10.

b. Commercial and Government Entity Code (CAGE) IAW MIL-STD-130F, paragraph 3.4. The CAGE will be the contractor who is party to this contract. If different from the one who has design authority for the part identification number, indicate with "(W)" following the CAGE.

c. Item serial number in accordance with MIL-STD-130F, paragraph 3.18.

d. Procurement Instrument Identification Number IAW MIL-STD-130F, paragraph 3.16.

d. Multiple Package Labeling

If the contractor ships related or unrelated items in one shipping container i.e., multipack, each item under warranty, if packaged separately within the container, will have a warranty label appropriate for that item on each individual item package. The outside of the shipping container, will have one or more Figure A-3 warranty labels corresponding to the requirements of paragraph c, Marking of Packages Containing Hardware Items under Warranty, of this appendix.

**WARRANTED
ITEM**

W

DATE OF ACCEPTANCE _____
WARRANTY EXPIRES _____

IF DEFECTIVE. HANDLE IAW:

- NAVY: SEC NAVINST 4330.17
- ARMY: WARRANTY TB# 11-5825-291-30
- AIR FORCE: T.O. 00-350-54

- **INTERIOR OF "W" TO BE EARTH RED,
FED-STD-595, COLOR 31090**
- **BACKGROUND COLOR TO BE SAND,
FED-STD-595, COLOR 33303**
- **LETTERING, EDGE OF LABEL, AND BORDER
OF "W" TO BE BLACK**

Figure A-1. Unit Label

**WARRANTED
ITEM**

W

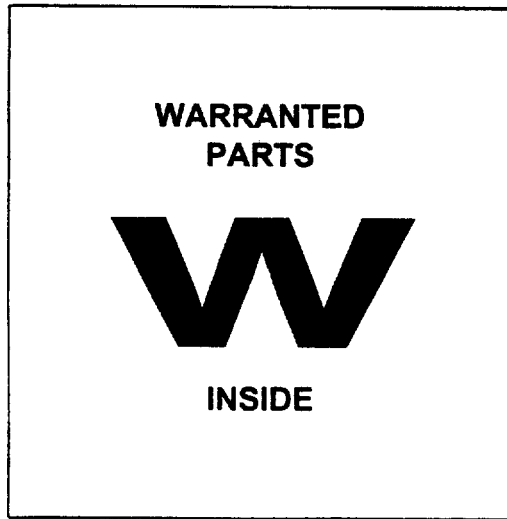
DATE OF ACCEPTANCE _____
WARRANTY EXPIRES _____

IF DEFECTIVE. HANDLE IAW:

- NAVY: SEC NAVINST 4330.17
- ARMY: WARRANTY TB# 11-5825-291-30
- AIR FORCE: T.O. 00-350-54

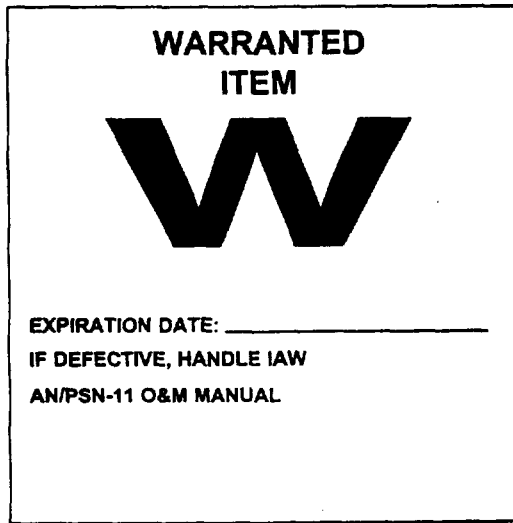
- **INTERIOR OF "W" TO BE EARTH RED,
FED-STD-595, COLOR 31090**
- **BACKGROUND COLOR TO BE SAND,
FED-STD-595, COLOR 33303**
- **LETTERING, EDGE OF LABEL, AND BORDER
OF "W" TO BE BLACK**

Figure A-2. Package Label



- **INTERIOR OF "W" TO BE EARTH RED,
FED-STD-595, COLOR 31090**
- **BACKGROUND COLOR TO BE SAND,
FED-STD-595, COLOR 33303**
- **LETTERING, EDGE OF LABEL, AND BORDER
OF "W" TO BE BLACK**

Figure A-3. Multipack Label



- **INTERIOR OF "W" TO BE EARTH RED, FED-STD-595, COLOR 31090**
- **BACKGROUND COLOR TO BE SAND, FED-STD-595, COLOR 33303**
- **LETTERING, EDGE OF LABEL, AND BORDER OF "W" TO BE BLACK**

Figure A-4. SRU Label

APPENDIX B

PLGR RTOK PROCEDURES

Introduction

There are several conditions that can make the PLGR appear to be malfunctioning when in fact it is operating properly. If returned for repair, these units represent an unnecessary cost to the PLGR program and the user. The PLGR should be reviewed for the following common problems before returning the unit for repair. For a complete list of common problems, check with the PLGR Technical Information Bulletin (TIB), TB 11-5825-291-13-1.

Low Memory Battery:

While there are some valid failure modes for this problem, it's always a good idea to check the memory battery. The battery that should be used is a **3.6 volt lithium battery** which is identical to a AA battery. It's common for a returned PLGR to contain a AA battery. To inspect for the wrong memory battery, first install a prime battery or apply external power to the PLGR. This will preserve the fault logs if the failure is valid. Remove the memory battery and look for the value printed on the battery. If it is not 3.6V, replace with the correct battery. If the battery is 3.6V, replace with a new one. If the unit is on, turn it off by pressing the OFF key twice. Turn the PLGR back on and watch the screen as the PLGR powers up. If the PLGR displays a message about the memory battery being low, it is a valid failure and should be returned to for replacement. If the LOW MEM BATT screen does not appear, then no failures exist with the memory battery.

PLGR Won't Turn Off

This problem is characterized by the PLGR turning itself on after having been shut off. This is almost never a true error. There is an AUTOMARK feature in the PLGR menu that can inadvertently get turned on. This will cause the PLGR to power up after a period of time to get a position fix. By going into the SETUP menu and paging through until the AUTOMARK page is reached, the AUTOMARK function can be turned off. Set the AUTOMARK mode to OFF, being sure to exit the screen properly so the change is saved.

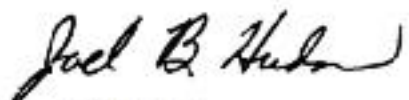
No Almanac/Unit Won't Hold Data

PLGRs that have all power removed, including the memory battery, will lose almanac. If there's a problem with not retaining the memory, be sure to check the PLGR and verify that the memory battery is installed. Many PLGR's returned for this complaint are missing the memory battery. See above for details.

Won't Track Satellites

Many things can cause a slow acquisition. Having no almanac or accurate times will cause a PLGR to take longer to acquire satellites. If the PLGR is partially masked from the sky, it may be difficult to find and acquire satellites. While the PLGR will survive a one meter immersion, it will not be able to acquire a satellite if the antenna is underwater. If it seems to be taking excessive time to get a fix, go to the menu and scroll through the status pages until the satellite tracking status page is reached. This will allow the user to watch the progress of the PLGR acquiring satellites and the signal levels of those satellites. Remember, that in general, it requires four satellites to get a fix. If the intent is to update the almanac, it can take 12 - 13 minutes before a new almanac is received.

By Order of the Secretary of the Army:

Official: 
Joel B. Hudson
*Administrative Assistance to the
Secretary of the Army*
04324

DENNIS J. REIMER
*General, United States Army
Chief of Staff*

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The Metric System and Equivalents

Linear Measure

1 centimeter = 10 millimeters = .39 inch
 1 decimeter = 10 centimeters = 3.94 inches
 1 meter = 10 decimeters = 39.37 inches
 1 dekameter = 10 meters = 32.8 feet
 1 hectometer = 10 dekameters = 328.08 feet
 1 kilometer = 10 hectometers = 3,280.8 feet

Weights

1 centigram = 10 milligrams = .15 grain
 1 decigram = 10 centigrams = 1.54 grains
 1 gram = 10 decigrams = .035 ounce
 1 decagram = 10 grams = .35 ounce
 1 hectogram = 10 decagrams = 3.52 ounces
 1 kilogram = 10 hectograms = 2.2 pounds
 1 quintal = 100 kilograms = 220.46 pounds
 1 metric ton = 10 quintals = 1.1 short tons

Liquid Measure

1 centiliter = 10 milliliters = .34 fl. ounce
 1 deciliter = 10 centiliters = 3.38 fl. ounces
 1 liter = 10 deciliters = 33.81 fl. ounces
 1 dekaliter = 10 liters = 2.64 gallons
 1 hectoliter = 10 dekaliters = 26.42 gallons
 1 kiloliter = 10 hectoliters = 264.18 gallons

Square Measure

1 sq. centimeter = 100 sq. millimeters = .155 sq. inch
 1 sq. decimeter = 100 sq. centimeters = 15.5 sq. inches
 1 sq. meter (centare) = 100 sq. decimeters = 10.76 sq. feet
 1 sq. dekameter (are) = 100 sq. meters = 1,076.4 sq. feet
 1 sq. hectometer (hectare) = 100 sq. dekameters = 2.47 acres
 1 sq. kilometer = 100 sq. hectometers = .386 sq. mile

Cubic Measure

1 cu. centimeter = 1000 cu. millimeters = .06 cu. inch
 1 cu. decimeter = 1000 cu. centimeters = 61.02 cu. inches
 1 cu. meter = 1000 cu. decimeters = 35.31 cu. feet

Approximate Conversion Factors

<i>To change</i>	<i>To</i>	<i>Multiply by</i>	<i>To change</i>	<i>To</i>	<i>Multiply by</i>
inches	centimeters	2.540	ounce-inches	Newton-meters	.007062
feet	meters	.305	centimeters	inches	.394
yards	meters	.914	meters	feet	3.280
miles	kilometers	1.609	meters	yards	1.094
square inches	square centimeters	6.451	kilometers	miles	.621
square feet	square meters	.093	square centimeters	square inches	.155
square yards	square meters	.836	square meters	square feet	10.764
square miles	square kilometers	2.590	square meters	square yards	1.196
acres	square hectometers	.405	square kilometers	square miles	.386
cubic feet	cubic meters	.028	square hectometers	acres	2.471
cubic yards	cubic meters	.765	square meters	cubic feet	35.315
fluid ounces	milliliters	29.573	cubic meters	cubic yards	1.308
pints	liters	.473	milliliters	fluid ounces	.034
quarts	liters	.946	liters	pints	2.113
gallons	liters	3.785	liters	quarts	1.057
ounces	grams	28.349	liters	gallons	.264
pounds	kilograms	.454	grams	ounces	.035
short tons	metric tons	.907	kilograms	pounds	2.205
pound-feet	Newton-meters	1.356	metric tons	short tons	1.102
pound-inches	Newton-meters	.11296			

Temperature (Exact)

°F	Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	°C
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