TECHNICAL MANUAL

OPERATOR'S MANUAL

FOR

LAND WARRIOR-STRYKER INTEROPERABLE (LW-SI)

HEADQUARTERS, DEPARTMENT OF THE ARMY

3 NOVEMBER 2008

WARNING SUMMARY

This warning summary contains general safety warnings and hazardous materials warnings that must be understood and applied during operation and maintenance of this equipment. Failure to observe these precautions could result in serious injury or death to personnel. Also included are explanations of safety and hazardous material icons used within the technical manual.

For first aid information, refer to FM 4-25.11.

EXPLANATION OF SAFETY WARNING ICONS

   EYE PROTECTION - person with goggles shows that the material will injure the eyes

   LASER LIGHT - laser light hazard symbol indicates extreme danger for eyes from laser beams and reflections

GENERAL SAFETY WARNINGS DESCRIPTIONS

INTERCEPTOR BODY ARMOR

WARNING

Keep the Improved Outer Tactical Vest (IOTV) opening clear. Do not arrange cabling or equipment so that it interferes with opening or doffing the IOTV.

HEADSET

WARNING

Use double hearing protection, (headset plus ear plugs), for high noise environments, such as in a Stryker vehicle or when firing weapons.

COMMUNICATIONS NETWORK RADIO SUBSYSTEM (CNRS)

WARNING

Do not touch the CNRS transmitting antenna when the system is operating.

LI-145 BATTERY

WARNING

Do not abuse, mutilate, or short circuit the LI-145 battery or any other battery. Charge the LI-145 battery only in the approved charger. Do not attempt to charge non-rechargeable batteries. Store batteries in a cool (i.e., <130°F), dry, and well-ventilated area. Do not store batteries in direct sunlight or under hot conditions. Do not smoke around batteries. Keep batteries away from open flame or heat sources. Do not store batteries in the same stacks with hazardous materials. Do not store large quantities of batteries in office areas, or other areas where personnel congregate. Thoroughly wash hands after cleaning-up a battery spill (i.e., leaking or venting batteries). Do not eat or drink in battery storage areas. Follow all manufacturer warnings, cautions, and instruction labels on battery chargers and support equipment.

VEHICLE INTEGRATION KIT

WARNING

Ensure Vehicle Power has been removed prior to performing Vehicle Based Charger (VBC) Trouble Shooting Procedures. Failure to do so may result in electrical shock or damage to equipment.

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FOR

LAND WARRIOR-STRYKER INTEROPERABLE (LW-SI)

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this manual. If you find any mistakes or if you know of a way to improve the procedures, please let us know. Mail your letter or DA Form 2028 (Recommended Changes to Publications and Blank Forms), directly to: Commander, TACOM Life Cycle Management Command, ATTN: AMSTA-LC-LMPP / TECH PUBS, 1 Rock Island Arsenal, Rock Island, IL 61299-7360. You may also send in your recommended changes via electronic mail or by fax. Our fax number is DSN 793-0726, and commercial number 309-782-0726. Our e-mail address is TACOMLCMC.DAForm2028@us.army.mil. A reply will be furnished to you.

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<div align="center">**HOW TO USE THIS MANUAL**</div>

HOW TO OBTAIN TECHNICAL MANUALS

When a new system is introduced to the Army inventory, it is the responsibility of the receiving units to notify and inform the Unit Publications Clerk that a Technical Manual is available for the new system. Throughout the life cycle of the new system, the Distribution Center DOL-W will also provide updates and changes to the Technical Manual.

To receive new Technical Manuals or change packages to existing Technical Manuals (TM) for fielded equipment, provide the Unit Publications Clerk the full Technical Manual number, title, date of publication, and number of copies required. The Unit Publications Clerk will justify the request through the Unit Publications Officer. When the request is approved, the Unit Publications Clerk will use DA Form 12-R to order the series of Technical Manuals from the Army Publishing Directorate (APD).

Instructions for Unit Publications Clerk

Obtain DA Form 12-R and request a publications account from the APD Web site at http://www.apd.army.mil. Once on the Website, click on the "Orders/Subscriptions/Reports" tab. From the dropdown menu, select "Establish an Account," then select "Tutorial" and follow the instructions in the tutorial presentation.

Complete information for obtaining Army publications can be found in DA PAM 25-33.

OVERVIEW

This manual contains operating instructions and maintenance procedures for the Land Warrior (LW).

This manual is divided into the following major sections:

Front Cover. Provides information about the equipment covered by the TM.

Warning Summary. Provides a summary of warnings that apply throughout the manual.

Table of Contents. Lists chapters and work packages in order of appearance.

Chapter 1. General Information, Equipment Description and Data and Theory of Operation. Provides descriptions, equipment data, and theory of operation information.

Chapter 2. Operator Instructions. Provides operating instructions for the LW-SI.

Chapter 3. Troubleshooting Procedures. Provides troubleshooting procedures for the LW-SI.

Chapter 4. Operator Maintenance Instructions. Provides instructions on inspecting, cleaning, and PMCS.

Chapter 5. Supporting Information. Provides references information, Components of End Items (COEI)/ Basic Issue Items (BII) Lists, Additional Authorized List (AAL), Expendable and Durable Items List and Additional Information for the LW.

NAVIGATION

This TM is in work package format. All of the work packages contained within the TM are listed in the table of contents in the order they appear by chapters. The work package sequences number (e.g. 0001) is listed for each work package in the table of contents. The work package sequence number is at the top of each page of the work package and is also a part of the page number for each work package (e.g. 0001-1). The page numbers appear at the bottom of each page.

OPERATION AND MAINTENANCE

Before you use the Land Warrior, familiarize yourself with the assembly and fitting instructions and the operating instructions (Chapter 2). Perform PMCS (Chapter 4) as directed. Always follow the WARNINGS and CAUTIONS.

CHAPTER 1 - GENERAL INFORMATION, EQUIPMENT DESCRIPTION AND THEORY OF OPERATION
GENERAL INFORMATION

SCOPE

This manual covers the basic fitting and use instructions for the LAND WARRIOR (LW-SI), hereafter referred to as the LW-SI.

MAINTENANCE, FORMS, RECORDS AND REPORTS

Department of the Army forms and procedures used for equipment maintenance will be those prescribed by DA PAM 750-8, The Army Maintenance Management System (TAMMS) Users Manual; DA PAM 738-751, Functional users manual for the Army Maintenance Management System --(TAMMS-A); or AR 700-138, Army Logistics Readiness and Sustainability.

REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIR)

If your LW needs improvement, let us know. Send us an EIR. You, the user, are the only one who can tell us what you don't like about your equipment. Let us know why you don't like the design or performance. If you have Internet access, the easiest and fastest way to report problems or suggestions is to go to https://aeps.ria.army.mil/aepspublic.cfm (scroll down and choose the "Submit Quality Deficiency Report" bar). The Internet form lets you choose to submit an Equipment Improvement Recommendation (EIR), a Product Quality Deficiency Report (PDQR) or a Warranty Claim Action (WCA). You may also submit your information using an SF 368 (Product Quality Deficiency Report). You can send your SF368 vie e-mail, regular mail, or facsimile using the addresses/facsimile numbers specified in DA PAM 750-8 The Army Maintenance Management System (TAMMS) Users Manual.

CORROSION PREVENTION AND CONTROL (CPC)

Corrosion Prevention and Control (CPC) of Army materiel is a continuing concern. It is important that any corrosion or degradation problems with this item be reported so that the problem can be corrected and improvements can be made to prevent the problem in future items. Corrosion specifically occurs with metals. It is an electrochemical process that causes the degradation of metals. It is commonly caused by exposure to moisture, acids, bases, or salts. An example is the rusting of iron. Corrosion damage in metals can be seen, depending on the metal, as tarnishing, pitting, fogging, surface residue, and/or cracking. Plastics, composites, and rubbers can also degrade. Degradation is caused by thermal (heat), oxidation (oxygen), solvation (solvents), or photolytic (light, typically UV) processes. The most common exposures are excessive heat or light. Damage from these processes will appear as cracking, softening, swelling, and/or breaking.

CORROSION PREVENTION AND CONTROL (CPC) - Continued

SF Form 368, Product Quality Deficiency Report should be submitted to the address specified in DA PAM 750-8, The Army Maintenance Management System (TAMMS) Users Manual. We will send you a reply.

DESTRUCTION OF ARMY MATERIEL TO PREVENT ENEMY USE

When directed by competent authority or SOP, system will be purged IAW the Purge and Zero Navigation Subsystem paragraphs in WP 0004.

PREPARTION FOR STORAGE OR SHIPMENT

Remove battery from system. COMSEC/sensitive items should be handled IAW COMSEC/sensitive item procedures.

LIST OF ABBREVIATIONS/ACRONYMS

Term	Definition
AAL	Additional Authorization List
ACH	Advanced Combat Helmet/Army Common Hardware
ARS	Adapter Rail System
BII	Basic Issue Items
BIT	Built In Test
BLPS	Ballistic Laser Protective System
BSS	Body Subsystem
CAGEC	Commercial and Government Entity Code
CFM	Call for Medic
CNRS	Communications Net Radio Subsystem
COEI	Components of End Item
COMSEC	Communications Security
CPC	Corrosion Prevention and Control
CPDU	C4ISR Power Distribution Unit
CSS	Computer Subsystem
CTA	Common Table of Allowance
DoD	Department of Defense
DRM	Dead Reckoning Module
DSN	Defense Switched Network
DTG	Date/Time Group
DVS	Daylight Video Sight
DVS/WH	Daylight Video Sight/Weapon Hub
EIR	Equipment Improvement Record
EPLRS	Enhanced Position Location Reporting System
ESAPI	Enhanced Small Arms Protective Insert
FBCB2	Force XXI Battle Command Brigade and Below
FFCS/W	Full Function Crew Station/Wireless

LIST OF ABBREVIATIONS/ACRONYMS - Continued

<u>Term</u>	<u>Definition</u>
FIPR	Flash, Immediate, Priority, Routine
FM	Field Manual
GBI	Graphic Bearing Indicator
GFE	Government Furnished Equipment
GPS	Global Positioning System
HIA	Helmet Interface Assembly
HIU	Helmet Interface Unit
HMD	Helmet Mounted Display
HSS	Helmet Subsystem
HTWS	Heavy Thermal Weapon Sight
HUD	Heads Up Display
IAW	In Accordance With
IOTV	Improved Outer Tactical Vest
LASER	Light Amplification from the Stimulated Emission of Radiation
LRF	Laser Range Finder
LRU	Line Replaceable Unit
LTWS	Lightweight Thermal Weapon Sight
LW-SI	Land Warrior-Stryker Interoperable
MAC	Maintenance Allocation Chart
MDP	Mission Data Packet
MDSE	Mission Data Support Equipment
MFL	Multi-Function Laser
MGRS	Military Grid Reference System
MTOE	Modified Table of Organization and Equipment
MTWS	Medium Thermal Weapon Sight
NFOV	Narrow Field of View
NSN	National Stock Number
NSS	Navigation Subsystem
PDP	Power Distribution Panel
PMCS	Preventive Maintenance Checks and Services
PQDR	Product Quality Deficiency Report
PTT	Push-To-Talk
QDC	Quick Disconnect Connection
RAS	Rail Adapter System
RPSTL	Repair Parts and Special Tools List
SA	Situational Awareness/Satellite
SaaS	Soldier as a System
SALUTE	Size, Activity, Location, Unit, Time, Equipment
SAM	Soldier Access Module
SBCT	Stryker Brigade Combat Team
SCU	Soldier Control Unit
SMR	Source, Maintenance, and Recoverability

LIST OF ABBREVIATIONS/ACRONYMS - Continued

Term	Definition
SOCI	Status of Charge Indicator
SRA	Specialized Repair Activity
STORM	Small Tactical Optical Rifle Mounted Micro Laser Range Finder
TAMMS	The Army Maintenance Management System
TBD	To Be Determined
TM	Technical Manual
TMDE	Test, Measurement, and Diagnostic Equipment
TMI	Timing Master Initiate
TOE	Table of Organization and Equipment
TWS	Thermal Weapon Sight
TY	Type
U/I	Unit of Issue
UOC	Usable On Code
USB	Universal Serial Bus
VBC	Vehicle Based Charger
VIK	Vehicle Integration Kit/Vehicle Installation Kit
WFOV	Wide Field of View
WGS	World Geodetic System
WP	Work Package
WSS	Weapon Subsystem
WUI	Weapon User Interface
WUID	Weapon User Interface Device

NOMENCLATURE CROSS REFERENCE LIST

Approved Name	Common Name
Talk Button 1	PTT1 (Push-to-talk 1)
Talk Button 2	PTT2 (Push-to-talk 2)

END OF WORK PACKAGE

EQUIPMENT DESCRIPTION AND DATA

EQUIPMENT CHARACTERISTICS, CAPABILITIES, AND FEATURES

The LW-SI System is an integrated system worn by a mounted or dismounted Soldier.

LW-SI increases the Soldier's ability to shoot, move, and communicate.

LW-SI enhances the Soldier's ability to accomplish his mission as a member of the Stryker Brigade Combat Team (SBCT).

LW-SI is made up of three subsystems; Helmet Subsystem (HSS), Body Subsystem (BSS), and Weapon Subsystem (WSS).

LW-SI provides comprehensive "Soldier-as-a-System" (SaaS) capability, equipping the Soldier with an integrated offensive and defensive capability to significantly enhance combat effectiveness.

LW-SI provides Battle Command, Situation Awareness, Survivability, Lethality, Mobility and Sustainability. W-SI enhances the dismounted combat Soldier's ability to locate, close with and defeat the enemy.

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS

Helmet Subsystem (HSS)

NOTE

The Advanced Combat Helmet (ACH) and Improved Outer Tactical Vest (IOTV) are integral parts of the LW-SI system but are not supplied with the system.

The Helmet Subsystem (HSS) allows Soldiers to communicate by voice and to monitor the strength, location, and activity of friendly and threat units. It also provides the ability to view, create, and issue orders, graphics, and messages. The HSS consists of four components; the Headset (Figure 1, Item 1), the Advanced Combat Helmet (ACH) (Figure 1, Item 2), the Helmet Mounted Display (HMD) (Figure 1, Item 3), and the Helmet Interface Assembly (HIA) (Figure 1, Item 4). A helmet cover specially designed for the LW-SI is included but not illustrated. ACH must be supplied by user and is not part of LW-SI system. See Table 1 for component physical characteristics.
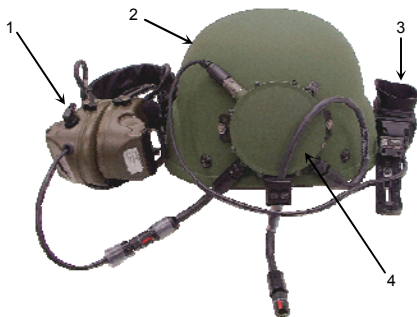
Figure 1. Helmet Subsystem (HSS).

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS - Continued

Body Subsystem (BSS)

The Body Subsystem (BSS) allows a Soldier to conveniently carry the Computer Subsystem (CSS) (Figure 2, Item 1), CNRS (Figure 2, Item 2), LI-series batteries (Figure 2, Item 3), Soldier Control Unit (SCU) (Figure 2, Item 4), Navigation Subsystem (NSS) (Figure 2, Item 5), and all within an Improved Outer Tactical Vest (IOTV) (Figure 2, Item 6). See Table 2 for component physical characteristics.

Figure 2. Body Subsystem (BSS).

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS - Continued

Weapon Subsystem (WSS)

The Weapon Subsystem (WSS) provides the capability to view and capture digital images. It allows Soldiers to employ their individual weapon from a covered position (Reduced Exposure Fire). The WSS also allow visual reconnaissance and treat identification at extended ranges using the Daylight Video Sight (DVS) digital zoom capability. The WSS consists of the DVS (Figure 3, Item 1) and the Weapon User Input device (WUID) (Figure 3, Item 2). See Table 3 for component breakdown.

Figure 3. Weapon Subsystem (WSS).

EQUIPMENT DATA

Tables 1 through 4 provide physical characteristic data for the various LW-SI components.

**Table 1. Physical Characteristic Data for the Helmet Subsystem (HSS)
and its Line Replaceable Units (LRUs).**

Figure 1 Item No.	Nomenclature	Dimensions (inches) L x W x H	Weight (oz)
1	Peltor Headset	9.0 x 4.0 x 4.0	14.34
1	Quiet Pro Headset (not illustrated)	5.0 x 3.0 x 1.5	14.22
2	Advance Combat Helmet (ACH) (user supplied)	N/A	N/A
3	Helmet Mounted Display (HMD)	5.5 x 1.75 x 1.5	6.72
4	Helmet Interface Assembly (HIA)	4.83 x 4.57 x .81	6.91

**Table 2. Physical Characteristic Data for the Body Subsystem (BSS)
and its Line Replaceable Units (LRUs).**

Figure 2 Item No.	Nomenclature	Dimensions (inches) L x W x H	Weight (lbs)
1	Computer Subsystem (CSS)	6.26 x 4.86 x 1.38	1.46
2	Communications Net Radio System (CNRS) w/antenna	7.0 x 3.5 x 3.25	1.50
3	LI-145 Battery	2.90 x 1.68 x 8.25	2.13
4	Soldier Control Unit (SCU)	6.15 x 3.77 x 1.25	1.01
5	Navigation Subsystem (NSS)	5.27 x 3.95 x 1.7	1.15
6	Improved Outer Tactical Vest (IOTV) (user supplied)	N/A	N/A

**Table 3. Physical Characteristic Data for the Weapon Subsystem (WSS)
and its Line Replaceable Units (LRUs).**

Figure 3 Item No.	Nomenclature	Dimensions (inches) L x W x H	Weight (oz)
1	Daylight Video Sight (DVS) with Weapons Hub	4.55 x 3.0 x 1.2	14.25
2	Weapon User Input Device (WUID) without peg	3.21 x 2.06 x 1.85	6.43

Table 4. Physical Characteristic Data for LW-SI System Cables.

Nomenclature	Dimensions (Approximate Length in Inches)	Qty
Cable, W1	41.0	1
Cable, W2	18.25	2
Cable, W3	41.5	1
Cable, W4	18.0	1
Cable, W5	18.0	1
Cable, W6	45.5	1
Cable, W8	41.5	1
Cable, W9	18.0	1
Cable, W10	15.0	1
Cable, W11	9.5	1
Cable, W12	14.5	1
Cable, W14	36.0	1
Cable, W15	5.0	1
Cable, W16	6.75	1

END OF WORK PACKAGE

THEORY OF OPERATION

THEORY OF OPERATION

This work package discusses theory of operation of the LW-SI.

The Land Warrior-Stryker Interoperable (LW-SI) system, an integrated Soldier-fighting system, enhances the lethality, battle-command compatibility, survivability, mobility, and sustainability of dismounted combat Soldiers, enabling them to engage and defeat the enemy targets while minimizing friendly casualties.

The LW-SI system is modular, to permit tailoring for mission requirements, minimize the combat load, and facilitate maintenance. The LW-SI facilitates command, control, and sharing of battlefield information, thus providing "total battlefield visibility" and integration into the digitized battlefield. The system integrates previously distinct components such as communications, sensors, and power, thereby adding enhanced capabilities without adding weight.

The LW-SI system is three major parts: LW-SI ensemble, Vehicle Integration Kit (VIK), and Mission Data Support Equipment (MDSE). The LW-SI ensemble is worn by the Soldier and includes weapon-mounted sensors, helmet mounted display, integrated load carrying equipment, speaker, microphone, computer, navigation, radio, rechargeable battery, and controls with a consistent and intuitive interface for use under battlefield conditions. The VIK provides the interface/gateway between the LW-SI equipped Soldiers and Army's digitized battlefield. The interface provides commanders with a common operating picture populated by both LW-SI equipped Soldiers and other digitized assets across the battlefield. This situational awareness provides the commanders with real time combat information and communication to mitigate risks in their mission decision process. The MDSE provides a simple process for commanders to prepare and plan battalion and below level missions for use on the LW-SI system.

The LW-SI system enhances the dismounted combat Soldier's ability to locate, close with and defeat the enemy.

END OF WORK PACKAGE

OPERATION UNDER USUAL CONDITIONS

INITIAL SETUP:

References:
  TM 9-5855-1913-13&P
  TM 9-5860-226-13&P
  TM 11-5855-316-10
  TM 11-5855-317-10

OPERATING PROCEDURES

Check the Power Level of an LI-145 Battery:

NOTE

As the mission dictates, charge batteries when possible.

Press the SOCI button on the side of the battery. Observe the power remaining on the visual indicator:

- 5 lights = 81-100%
- 4 lights = 61-80%
- 3 lights = 41-60%
- 2 lights = 21-40%
- 1 light = 6-20%
- 1 light blinking = 0-5%

END OF TASK

Start-Up Procedures/Log On

1. Check the LI-145 battery for a good charge, preferably (100%), by depressing the Status of Charge Indicator (SOCI) and viewing the LED display.

2. Connect the W8 or W9 battery cables to the LI-145 battery.

3. After donning the ensemble, press and hold the ON/OFF button on the headset and listen for the ON tone.

OPERATING PROCEDURES - Continued

NOTE

The ON/OFF button is a dual button. Either button performs the same function as an ON/OFF button.

Use of the "buddy" system may be required to perform the next step.

4. Press the Power button on the CSS for 3 seconds.

5. Observe a flash on the HMD approximately 5 seconds after releasing power button.

6. Listen for a metallic click on the headset approximately 4-7 seconds after releasing the power button.

7. Observe progress of the system starting up until it reaches the "Attached Devices" screen.

NOTE

The LW-SI system starts up with the HMD brightness level at the lowest setting.

8. Adjust the brightness of the HMD, by pressing up or down on the Brightness Control button on the back of the SCU.

9. Review the Attached Device list to ensure all components are listed and what the status is of each component is.

10. Top mouse click "Continue."

11. Review the U.S. Government Security screen.

12. Top mouse click "Continue" and wait for the "Land Warrior Login" screen to appear.

13. Using the virtual keyboard, move the cursor and top mouse click on the required keys to enter the password in the bar field above the keys.

OPERATING PROCEDURES - Continued

NOTE

When entering the password, ensure the correct amount of key entries are reflected with an asterisk (one for each entry), in the bar field.

14. Top mouse click on "Express Login."

15. Place the SAM card against the SAM Reader.

NOTE

Upon clicking "Express Login" the operator will have 20 seconds to place SAM card against the SAM Reader.

16. Observe indication that Password was accepted; "Login Successful, system starting…"

17. Observe as start up procedures continue, "Welcome to Land Warrior," duty position and Unit Roll Number (URN).

18. Observe as the Map screen appears.

NOTE

If the radio icon at the bottom of the map screen fails to turn yellow or green either the network has not been initiated (TMI) or the operator needs to conduct a Built-In-Test (BIT) to verify functionality of the radio. See System Test paragraph.

19. Observe that the "Network Status" icon shows Yellow or Green.

20. Perform Time Master Initiate (TMI) if necessary.

21. Upon completion of power-up, the operator conducts a Field Functionality Test (FFT).

Time Master Initiate (TMI)

To perform a TMI:

1. Move cursor to "Radio" icon on lower right corner of map screen.

2. Bottom mouse click on the icon and the CNRS radio configuration screen should appear.

OPERATING PROCEDURES - Continued

3.   If TMI button is grayed out, TMI has already been established with another LW. If the TMI button is black proceed to next step.

4.   Top mouse click on "TMI" button to establish TMI. System will take as little as 30 seconds or up to two minutes to establish TMI.

5.   Top mouse click the "Close" button to return to map screen.

END OF TASK

Field Functionality Test

Field functionality test will consist of verifying DVS operation, voice communications, free text message functionality, and proper GPS operation.

END OF TASK

Software Version/Date

NOTE

As the Land Warrior system continues to evolve, there will be new hardware and software updates.

To determine current software version/date of the LW-SI:

1.   Top mouse click on the "Menu" button.

2.   Scroll and top mouse click on "System Test."

3.   Each Line Replaceable Unit (LRU) of the system is listed along with the current status as well as the version information and dates.

4.   To check firmware versions of each LRU, you can view the Firmware Version column denoting the version. You can bottom mouse click on the firmware version/date column next to the LRU. When you do, a small window opens, displaying the information as shown below in the example (Figure 1).

Helmet Subsystem	
S/N 12345	
Component	**Version**
Overall hardware	2.3 (6/6/2005)
Overall firmware	2.3 (8/9/2005)
USB microcontroller	2.3 (6/6/2005)
DSP	1.0 (6/24/2005)
FPGA	3.10 (7/26/2005)

Figure 1. Version Example.

END OF TASK

To Determine Software Version of Each LRU:

1. Top mouse click on the "Menu" button.

2. Scroll and top mouse click on "System Test."

3. Top mouse click on the "Version Quick View" button.

4. The "LW-SI LRU Devices Version Information List" screen will appear.

5. Observe the LRU and version list.

NOTE

No date is listed with the version of software under the "Version Quick View" screen.

6. Top mouse click on the "Menu" button, observe the drop down menu and select "Map."

END OF TASK

MAP SCREEN FUNCTIONS

Figure 2. Maps Button.

Shortcut Button

The shortcut button is used to toggle through the screen view image and map views.

To Use Shortcut Button:

1.   Move the cursor to the upper left button on the screen.

2.   Toggle by top mouse clicking on this button to get to the desired screen.

END OF TASK

Menu Button

The "Menu" button allows for access to a variety of options that provide the operator specific information and features. It allows the operator to configure the LW-SI system.

MAP SCREEN FUNCTIONS - Continued

Top mouse click on the "Menu" button, observe the drop down menu, and select the venue. The Menu provides the following venues:

- Map
- Message
- Mission
- Image Editor
- Configuration
- System Test
- MDP Management
- Help
- System Log
- Logoff

END OF TASK

Zoom In

NOTE

To ensure the efficient operation of the LW-SI system, prior to performing any function or using tools with the map, top mouse click the GRD button to turn off this feature. This removes the green grid lines from the map. It will reduce the operating work load of the CSS.

When you use zoom in, allow the system to complete a command before you attempt another action.

Each time you zoom in on a map, you will notice a slight latency as the system is attempting to load the data and complete the command.

The system may change the map in an attempt to give you the best resolution map.

As the Mission Data Packages increase in size, the operator may see the system take longer to perform a function.

To Zoom In:

1. Top mouse click on the "Zoom In" button. Observe the cursor changes to a magnifying glass with a plus sign and the numeral 1.

2. Top mouse click on the map to anchor the "Zoom In" box at the desired location. Observe the numeral 1 change to 2.

MAP SCREEN FUNCTIONS - Continued

3.   Move the cursor across the map, drawing a rectangle around the area to be zoomed in.

4.   When the desired area is selected, top mouse click again. Observe as the area you selected appears on the screen enlarged.

5.   Continue this process until you acquire the desired scale of view.

END OF TASK

Zoom Out

Map zooms back out to the previous view.

Continue to top mouse click on the "Zoom Out" button until the desired scale of view is acquired.

The LW-SI system may change the map in an attempt to give you the best resolution map.

To Zoom Out:

1.   Top mouse click on the "Zoom Out" button.

2.   Observe as the map zooms out.

END OF TASK

Pan

To Pan, perform these steps:

1.   Top mouse click on the "Pan" button. Observe the cursor change to a hand with fingers extended.

2.   Top mouse click on the map in the desired direction to "Pan" the map.

3.   Move the closed hand in the direction to "Pan" the map. Observe the hand close to a fist as if grabbing the map.

4.   Top mouse click the closed hand cursor when desired.

5.   Observe the map move in the desired direction.

MAP SCREEN FUNCTIONS - Continued

6.   Continue this process until you pan to a location on the map that you wish to view.

7.   To stop the pan function, bottom mouse click the mouse button on the SCU.

END OF TASK

MAP SYMBOLS

Adding a Map Symbol
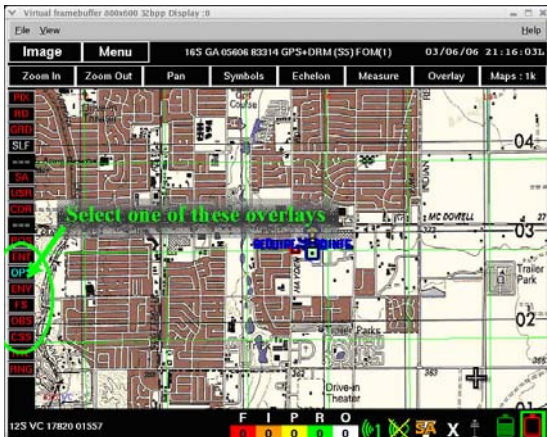
Figure 3. Adding a Map Symbol Screen 1.
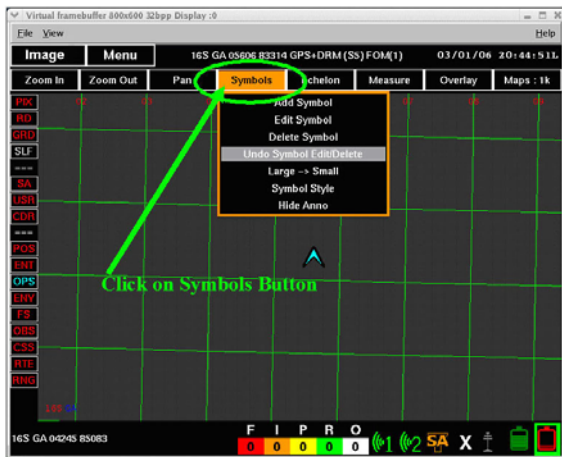
Figure 4. Adding a Map Symbol Screen 2.

To add a symbol, perform the following:

1. Select by top mouse clicking on the overlay you wish to add a symbol to.

2. Top mouse click on the "Overlay" button until the color of the button letters change to blue. Blue letters signify that the overlay can be written to.

3. Top mouse click on "Symbols" button (Figure 4).

4. In the drop down menu top mouse click on "Add Symbol." A new menu opens listing many symbol options and sub-options.

5. Select by top mouse clicking on the symbol you want to place on the map.

6. Upon top mouse clicking on the selected symbol, observe the map reappears.

7. Observe the cursor shape has changed to a cross with a large "V" on the lower right-hand of the symbol.
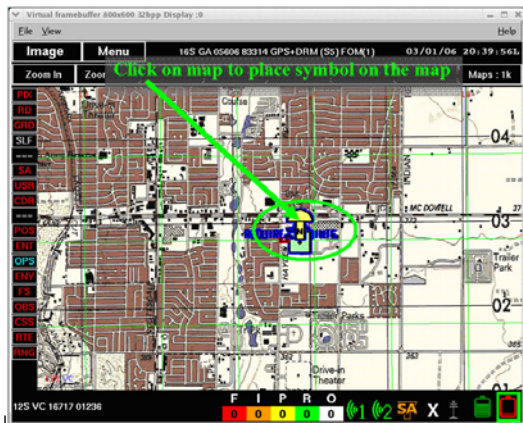
Figure 5. Place Symbol on a Map.

8. Move the cursor to the desired location on the map and top mouse click to anchor and place the symbol on the map.

MAP SYMBOLS - Continued

<div align="center">

NOTE

</div>

Symbol name will be a letter-number combination.

On certain symbols, you may be required to top mouse click, drag and top mouse click several times to create the particular symbol. If it is a multipoint symbol, once you have created the symbol, bottom mouse click to anchor the symbol in place.

The number adjacent to the symbol title is the minimum number of mouse clicks required to add that symbol.

The Operations, Enemy, Fire Support, Obstacles, Combat Service and Support, Route, and Range Overlays may be written to. Of these, the Route and Range Overlays cannot be sent.

9.   Store the Overlay by selecting the "Overlay" button and top mouse clicking on "Store Overlay."

END OF TASK

Moving a Symbol (Edit)

To move a symbol, perform the following steps:

1.   Top mouse click to select the overlay to be modified from the overlay toolbar.

2.   Top mouse click "Symbols."

3.   Top mouse click "Edit Symbol."

<div align="center">

NOTE

</div>

After selecting "Edit Symbol," when the cursor is moved into the map field, the cursor will change to a hook like figure.

4.   Move the "hook" over the symbol anchor point. You will notice that the symbol will be highlighted with a green like circle or small square representing that the symbol can now be edited. Click on the symbol to be edited.

5.   Move the "hook" and observe as a green colored line expands from the symbol.

NOTE

When an overlay has many symbols placed on the map it can become difficult to remember which symbol you are editing. The green line allows you to continuously identify the symbol you are currently editing.

6.   Top mouse click on the location you wish to move the symbol to.

7.   Observe the symbol as it will automatically move to the new selected location.

NOTE

On multipoint symbols, top mouse click to select an anchor point of the symbol and then move the cursor to a desired location. Continue as needed to move the symbol.

8.   To end the edit function, bottom mouse click.

9.   Another method to move a symbol is to bring your cursor over the symbol and bottom mouse click on the symbol

10. Observe the dialog box displaying symbol data depicting the symbol name, grid and "Pin Anno."

NOTE

Multipoint symbols cannot be edited using this functionality.

11. Top mouse click on the "Coordinates" field of the dialog box.

12. The soft keyboard will appear allowing you to enter a new grid location.

NOTE

When inputting a new grid location using the virtual key board, ensure you enter the grid exactly the same way the example grid is depicted above the soft keyboard.

13. Top mouse click the "Enter" key and the virtual key board will return to the map screen.

MAP SYMBOLS - Continued

14. Notice the symbol moved to the new inputted grid location.

END OF TASK

Renaming a Symbol (Edit)

To rename a symbol perform the following steps:

1. Move the cursor over the center mass of the symbol then bottom mouse click on the symbol.

2. When the dialog box appears with the symbol data, top mouse click on the symbol name.

3. The soft keyboard will appear to allow you to enter a new name.

4. Move the cursor over the keys and top mouse click on the keys to input the desired name in the text bar above.

5. Top mouse click on "OK" to return to the map.

6. View the annotation at the bottom left of the symbol to see the changed name of the symbol.

END OF TASK

Pin and Unpin Annotation

Pinning an annotation allows the operator to keep a symbol annotation next to a symbol even when he decides to hide annotations. When the symbol is not pinned, it is hidden when hiding annotations is performed. To Pin or Unpin symbol annotation, perform the following:

1. To Pin Annotation, move your cursor over the symbol and bottom mouse click on the symbol.

2. View the dialog box.

3. Top mouse click the cursor on "Pin Anno," and now the annotation on the symbol is Pinned.

4. To Unpin Annotation, move the cursor over the symbol and bottom mouse click on the symbol.

MAP SYMBOLS - Continued

5. View the dialog box.

6. Top mouse click the cursor on "Unpin Anno," and now the annotation on the symbol is Unpinned.

END OF TASK

Show and Hide Annotation

To show or hide symbol annotations, perform the following steps:

NOTE

Viewing symbol annotations and position report annotations is difficult when "PIX" is turned on. Top click the "PIX" button on the overlay toolbar to turn off the map. Viewing annotations is much easier when the map is turned off.

1. Top mouse click "Symbols."

2. Top mouse click "Show Anno."

3. Return to the map screen and view that annotations are displayed.

4. To Hide Annotation, top mouse click "Symbols."

5. Click "Hide Annotation" and view that annotations are hidden or not viewable

6. If annotations do not hide, it may be because the symbol has the annotation pinned. If so, follow the steps above to "Unpin Annotation."

END OF TASK

Entity Overlay Symbols

Entity overlay symbols are created through SALUTE reports, Call For Medic requests, or use of tactical symbols.

MAP SYMBOLS - Continued

NOTE

Some Entity symbols may be moved. An example is a symbol
generated when a SALUTE or Call For Medic message is created.

1. The creator of the symbol after sending the message can go back to the symbol and bottom mouse click with the cursor over top. This brings up a popup menu with fields that can be changed. One of these fields is the grid location.

2. If the originator of the symbol changes the grid, the symbol on their map location changes to the desired grid.

3. To change the symbol location on all other systems that are currently displaying the symbol, the originator should then bottom mouse click with the cursor over top of the symbol and bring up the pop up menu.

4. The originator has the option to Send Edits.

5. When Send Edits is selected, the symbol location is changed on others digital maps automatically.

6. The other option available to edit the Entity symbol is to Delete.

7. When the originator selects Delete, the symbol is removed from the originator's (and others) digital maps.

8. The Symbol annotation can also be pinned as normally done.

END OF TASK

Deleting a Symbol

To delete a symbol perform the following steps:

1. Top mouse click "Symbols."

2. Top mouse click "Delete Symbols." Cursor shape will change to a "hook."

3. Move the "hook" over the symbol anchor point. You will notice that the symbol will be highlighted with a green like circle. Top click on the symbol.

MAP SYMBOLS - Continued

4.   View the symbol disappears.

5.   Bottom mouse click to end the Delete function.

END OF TASK

Undoing a Symbol Function

To undo a symbol function:

1.   Top mouse click "Symbols."

2.   Select and top mouse click "Undo Symbol Edit/Delete."

NOTE

> When top mouse clicking the "Undo Symbol Edit/Delete" function,
> you will notice that each action that has been performed on the
> map will return to a previous action.

3.   Continue to top mouse click on the "Undo Symbol Edit/Delete" function until you have
      returned back to the desired point.

END OF TASK

Change a Symbol Size

To change the symbol size:

1.   Top mouse click "Symbols."

2.   Top mouse click symbol size field (i.e. Large --> Small).

3.   Continue to top mouse click until you are satisfied with the size of the symbol.

4.   View the change of the symbol size.

END OF TASK

Symbol Annotation

Option to change symbol from opaque to transparent.

1.   Top mouse click "Symbols."

MAP SYMBOLS - Continued

2. Top mouse click "Annotations – transparent."

3. Toggle until you get the choice you want.

4. View the change of the Annotations – transparent.

END OF TASK

Create an Overlay
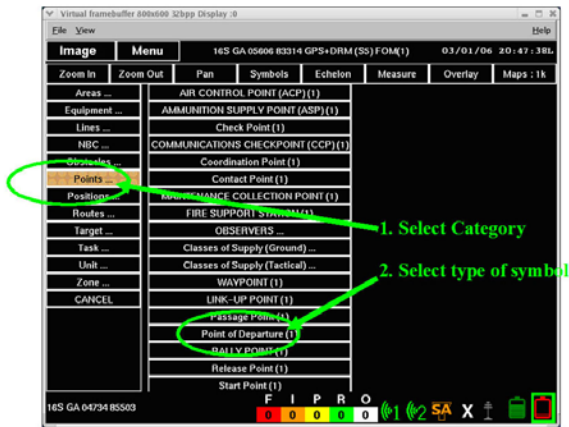
Figure 6. Select Symbol.

NOTE

Only one overlay can be written to at a time.

To create an overlay:

1. Top mouse click on the overlay button you wish to create an overlay to.

MAP SYMBOLS - Continued

2. Change the overlay button display so that it is active indicating a blue text (this allows you to write to the overlay).

3. Follow instructions in paragraph Adding a Map Symbol as needed.

END OF TASK

Map Information

To review map information:

1. Top mouse click "Maps."

2. The active map will have three asterisks (***) displayed next to map title.

3. Top mouse click on "Map Info" at the bottom of the map list to display active map information.

4. Review the Base Map Information, the Magnetic Declination, and the Grid Size (displayed in KM or in meters).

END OF TASK

Selecting Maps

To select a map:

1. Top mouse click "Maps."

2. Scroll over the list of maps in the drop down menu and then top mouse click on the desired map.

NOTE

The current displayed map will have three asterisks (***) to the right of the map name when viewing the drop down menu from the "Maps" button.

3. Ensure the map screen changes to the new selected map. Give the system time to display the selected map. There may be a slight delay due to loading the image.

END OF TASK

MAP SYMBOLS - Continued

Determine Map Scale

To determine the scale of the viewable map, there are several methods available.

1. Method 1: View the scale in the Maps button (i.e. Maps: 1k).

2. Method 2: Look at the top end of the grid lines where you will see red numbers.

    • Two digits are 1 km squares.
    • Three digits are 100 m squares.
    • Four digits are 10 m squares.

3. Method 3: Move cursor across visible screen and view the grid readout at the bottom left of the screen where you see the grid field.

END OF TASK

Deleting an Echelon
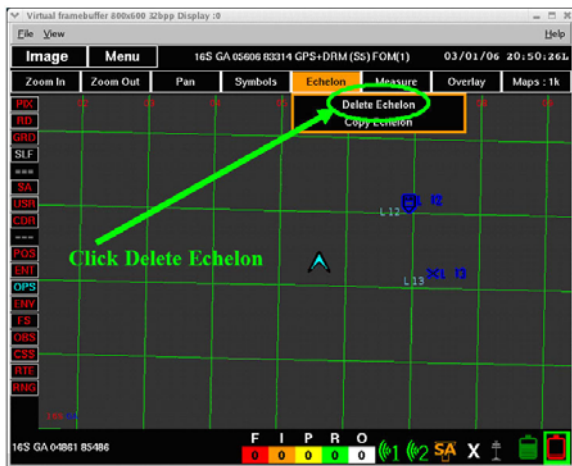
Figure 7. Delete Echelon.

NOTE

Deleting an echelon can only be performed if you have received an overlay and it is displayed on your map. An additional button will be displayed in the Overlay toolbar field. The button will identify who sent you the overlay. See instructions in paragraphs Receiving an Order, Applying an Order, Receiving an Overlay, and Applying an Overlay. After applying an overlay, the inbox message is automatically deleted. On the Map toolbar locate the Echelon button. The echelon functionality is not active if the Echelon button is grayed out. If the Echelon button is active (black background), and you want to delete an echelon, follow the procedures below.

To delete an echelon:

MAP SYMBOLS - Continued

1. Top mouse click the "Echelon" button on the top tool bar. A drop down menu will appear.

2. Top mouse click "Delete Echelon." Another drop down menu will appear displaying the listed echelons.

3. Observe the available echelons that are shown in the drop down menu.

4. Top mouse click on the echelon you want to delete.

5. Observe that the echelon is removed from the Overlay Toolbar. Deleting a specific echelon removes the applied overlay permanently.

END OF TASK

Copy an Echelon

NOTE

You can copy an echelon once you have received and applied it from your "Inbox." Once you have applied the echelon and it is viewable on the map, you may notice that you are not able to edit the echelon overlay. You must copy the echelon overlay to one of your own functional overlay buttons to then edit the overlay.

To copy an echelon:

1. First top mouse click on your own "USR" overlay button of preference such as "OPS." A "USR" overlay button must be active.

2. Top mouse click the "Echelon" button on the top tool bar. A drop down menu will appear.

3. Top mouse click "Copy Echelon."

4. Ensure the overlays are copied to the USR layer, (any overlay button) by viewing your map.

END OF TASK

Measuring Distances

To measure distance on the digital map, you have several methods available:

1. Method 1:

   a. Top mouse click the "Measure" button on the top tool bar. Observe the cursor will change to a ruler

   b. Move ruler to the start point.

   c. Top mouse click on the start point.

   d. Drag the cursor to the end point. Notice a green line will expand from the start point.
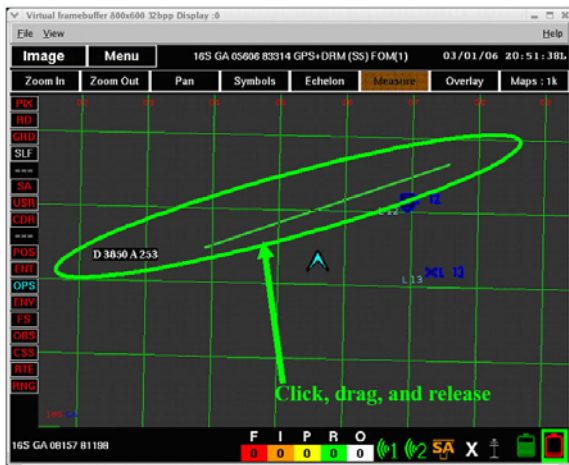
Figure 8. Distance and Direction.

    e.   Top mouse click on the end point. Notice the dialog box depicting the distance in meters and the direction in degrees.

- Distance is given in meters.
- Observe that distance and direction is displayed.
- Direction is given in degrees.
- To end Measure mode, bottom mouse click.
- Measure data will display until the next screen refresh is performed by the system.

2.   Method 2:

    a.   Estimate direction on the map.

    b.   Estimate distance by comparing locations of the two points and grid square resolution.

3.   Method 3, STORM (if equipped):

NOTE

STORM MFL needs to be in RC mode.

    a.   Enable STORM for lazing target.

    b.   Fire the LRF at target using the "LRF" button on the WUID.

    c.   View Distance only or Distance and Direction information.

4.   Method 4:

    a.   Place cursor on one location on the map.

    b.   View the grid location in the lower left of the screen in the cursor grid field.

    c.   Place cursor on the new location.

    d.   Compare the grid of the new location to the old location to determine distance.

    e.   View the angle between the two points to determine the azimuth (Grid).

END OF TASK

MAP SYMBOLS - Continued

Clear User Layer

To clear the User Layer:

1. Top mouse click on the "Overlay" button on the top toolbar.

2. Top mouse click "Clear USR Layer" from the drop down menu.

3. Observe as all user layers are removed from the map.

END OF TASK

Map Overlay Buttons

Table 1. Map Overlay Buttons.

Button	Functionality
PIX	When clicked, toggles between a digital version of the current map screen (if one exists) and the no map image background map screen. The no image background places the system into a mode showing only a gray screen.
RD	No functionality at this time.
GRD	Toggles the map display from a map with green grid lines to a map without grid lines. Gridlines referenced to WGS 84 standards.
SLF	Centers operator Graphic Bearing Indicator (GBI) location on map.
===	The === button docks and undocks the overlay toolbar to one of five possible locations: top, bottom, right, left, or reshape of the screen. There are two such buttons on the overlay toolbar. Place the cursor over this button to highlight the button and top mouse click.
SA	Toggles on and off the Situational Awareness overlay of buddy icons.
USR	Toggles the USR overlays on and off.
===	Same as above.
POS	Displays the current user's Position Layer and position reports.
ENT	Toggles on/off FBCB2 overlays, SALUTE, Call For Medic, Tactical Symbols.
OPS	Toggles OPS overlay between display, not display or modify modes.
EMY	Toggles EMY overlay between display, not display or modify modes.
FS	Toggles FS overlay between display, not display or modify modes.
CSS	Toggles CSS overlay between display, not display or modify modes.
RTE	Allows for placement of graphics on the map but this overlay cannot be stored and sent.
RNG	Allows for placement of graphics on the map but this overlay cannot be stored and sent.

Cursor Position Toggle

Lower left portion of the screen; top mouse click toggles between MGRS, Latitude/Longitude, degrees, minutes, and seconds.

MAP SYMBOLS - Continued

FIPR Toolbar

FIPR toolbar displayed on the bottom center portion of the screen displays number of received Flash, Immediate, Priority, and Routine messages. Blinking status indicates at least one unread message.

Filter Friendly SA Turn On/Off

NOTE

The Filter Friendly SA button is functional if the operator has configured selected personnel. This function allows the operator to de-clutter the map screen and view only the friendly filtered personnel configured. The button is located at the bottom of the map screen to the right of the Push To Talk button 2, (PTT2) icon.

With the Filter Friendly SA button turned on, only those personnel (configured) selected will be displayed.

To Use the Filter Friendly Function:

1.   Turn on the SA Filter by top mouse clicking on the filter icon (the background turns white). The white background symbol appears as though it were a funnel.

2.   Turn off the SA Filter by top mouse clicking on the filter icon and removing the white background.

END OF TASK

MESSAGES

NOTE

When the LW-SI system is first powered on, the operator should pre-configure "Address a Digital Message" and set as default the recipients for each type of message.

The LW-SI Soldier has five digital messages available to create:

- Free Text
- Call For Medic (CFM)
- Call For Fire (CFF)
- SALUTE (Enemy Intelligence)
- Add Tactical Symbol

Create a Message
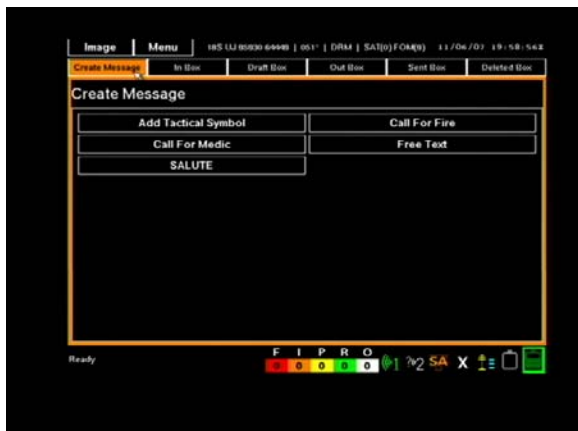
Figure 9. Create a Message Screen.

There are several methods that can be used to create a digital message:

MESSAGES - Continued

1. Method 1:

    a.   Top mouse click on "Menu" button.

    b.   Top mouse click on "Message" button.

    c.   Top mouse click on "Create Message" (Figure 9).

    d.   Top mouse click on the desired message type.

2. Method 2:

    a.   At the map screen, determine the grid location you wish to be identified in the digital message.

NOTE

The grid location you clicked on is auto-filled on all messages except "Free Text".

    b.   Double top mouse click at the desired grid location. The "Create Message" screen will then appear with the five message types.

    c.   Top mouse click on the desired message type.

3. Method 3:

NOTE

STORM MFL needs to be in RC mode.

    a.   Use the LRF of the STORM to identify a potential target.

    b.   View that two types of messages are provided: "Call for Fire" and "SALUTE."

    c.   Viewing the STORM LRF screen, use the SCU to top mouse click on the desired message to create.

END OF TASK

MESSAGES - Continued

Add Tactical Symbols

1. Place cursor on desired point on map.

2. Double top mouse click button on map.

3. Top mouse click to add tactical symbol.

4. Select tactical symbol.

5. Tactical symbol will now be displayed on map.

END OF TASK

Address a Digital Message

All digital messages will be addressed to the intended recipient in the same manner. Use the following steps to address a digital message.

1. Top mouse click on "Menu" button.

2. Top mouse click on "Message" button from the drop down menu list.

3. Top mouse click on the "Create Message" button.

4. Top mouse click any one of the types of messages. That message screen will appear.

5. Top mouse click in the field to the right of the (To:). This is where the intended recipient(s) role is displayed.

6. Scroll down the "Echelon" field and top mouse click the recipient if the recipient is listed. Once the recipient is selected, you will notice the role will appear below in the "Selections" field. Ensure that the role is yellow/gold and not grayed out.

7. If the recipient is not listed, top mouse click on the "Expand" button to enable the Expand function to expand a role to view subordinates displayed under their leader. Or locate the recipient address by performing a search function as follows:

    a. Top mouse click the "Search" button. The Search menu will open.

    b. Search on known criteria by using appropriate drop down menus in the search window.

MESSAGES - Continued

     c.   Top mouse click "Search Now" button to search.

     d.   Message will display at bottom of screen indicating number of matches.

     e.   Top mouse click "Show Results" to display search results.

8   Ensure you select the intended recipient and they are highlighted and listed under the "Selections" field.

9   If you wish to make the recipient the default for all (like) messages, top mouse click on the "Set Default" button and then top mouse click on the "Accept" button. If you wish to use this recipient for one time only, top mouse click on the "Accept" button.

END OF TASK

Send a Digital Message

1.   Perform all the steps for Creating a Message and Addressing a Message and then top mouse click on the "Next" button until you see the "Route Message" screen.

2.   Top mouse click the "Precedence" for the message. The precedence establishes the importance of the message. There are four choices for precedence.

- Flash (Audible Alert)
- Immediate (Audible Alert)
- Priority
- Routine

NOTE

Upon receipt of a Flash or Immediate precedence message, the recipient will hear an audible alert (i.e., "Incoming Flash/Immediate Message.")

3.   View one last time to ensure the "To," recipient is correct.

4.   Top mouse click the "Send" button. The message will then be sent to the selected recipients.

END OF TASK

MESSAGES - Continued

Free Text Message

Perform one of the methods above to first create a message.

1. From the Create Message screen, top mouse click on the "Free Text" button.

2. Address the message IAW Address a Digital Message by top mouse clicking on the "To:" field and selecting the recipient(s).

3. Top mouse click the "Accept" button.

4. To fill in information in the Comments field, top mouse click on the "Comments" field (a soft keyboard appears).

5. Enter your message using the soft keyboard.

6. When you are finished, top mouse click on "OK."

7. Review your message and top mouse click on "Next."

8. Top mouse click on the precedence "Flash," "Immediate," "Priority," or "Routine," radio button.

9. Top mouse click on the "Send" button to send your message IAW Send Digital Message.

END OF TASK

Call for Medic (CFM) Message

Part of LW-SI configuration and mission planning will include establishing default recipients for the CFM message.

To send a CFM Message:

1. Top mouse click on "Menu" button.

2. Top mouse click on "Message" from the "Menu" list.

3. Top mouse click on the "Create Message" button.

4. Top mouse click on the "Call for Medic" button.

5. Top mouse click on the "Self" or "Location" radio button.

MESSAGES - Continued

NOTE

If "Self" is selected, prior to the message being sent, the sender's icon will display a dotted Red Cross centered with an annotation that reads "CFM." The recipient will see the sender's icon change with the dotted Red Cross overlaid on top of the sender's icon. No matter where the sender moves to, his icon will display the Red Cross. This symbol will remain with the GBI. This symbol is displayed on the entity layer.

6. Verify that the "To:" recipient is correct. If incorrect, find proper recipient IAW paragraph Address a Digital Message above. If recipient is correct, go to next step.

7. Top mouse click on the "Comments" field. A soft keyboard will appear.

NOTE

When calling for a medic, unless specific equipment is needed or special instructions are needed, a text message is not required.

8. Enter the message you wish to send by top mouse clicking the keys on the soft keyboard.

9. Top mouse click "OK" on the soft keyboard.

10. Top mouse click on the "Next" button on the message preview screen.

11. Top mouse click the "Precedence" for the message and ensure the "To:" recipient is correct. Top mouse click on the "Send" button.

END OF TASK

Figure 10. SCU Rear View.
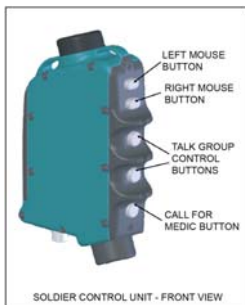
Figure 11. SCU Front View.

Call for Medic (CFM) Message Using SCU

Part of LW-SI configuration and mission planning will include establishing default recipients for the CFM message.

To Send a Call for Medic Message Using the SCU:

1. Push and hold the "Mute," "Call for Medic," "Cancel Call for Medic" button on the front of the SCU for five seconds.

2. Listen for the audible "Medic."

3. After you hear "Medic," release the button and listen for "Call for Medical Assistance Sent."

4. View the message go into and out of the Out box.

END OF TASK

MESSAGES - Continued

Call for Medic (CFM) Message by Clicking on the Digital Map

NOTE

> The Red Cross symbol is viewed on the Entity layer. Though it is viewable by all, only the sender can edit the Red Cross. The only edit function of the Red Cross is to send a "Cancel Call for Medic" message.

To send a CFM message by top mouse clicking on the digital Map:

1. Double click the top mouse button on the desired location on the digital map.

2. Top mouse click on "Call for Medic" message button.

3. Top mouse click on the "Self" or "Location" radio button.

4. Add comments, select recipients, and do other necessary steps.

5. Top mouse click on "Send."

6. Listen for audible "message sent."

7. Observe the message as it passes through and out of the "Out" box.

8. View a Red Cross on the map screen at the selected grid location.

END OF TASK

Cancel Call for Medic (CFM) Message

To send a Cancel CFM message:

1. Top mouse click on "Message" from the "Menu" button.

2. Select "Create Message."

3. Select "Call for Medic."

4. Select the "Cancel Call for Medic" radio button.

5. Click on "To" in the upper field if the recipient is incorrect otherwise go to Step 7.

MESSAGES - Continued

6. Select and accept recipient in the drop down menu.

7. Click on the "Comments" field. A soft keyboard will appear.

NOTE

When calling for a medic, unless specific equipment is needed or special instructions needs to be provided, a text message is not required.

8. Enter the message you wish to send by selecting and clicking the keys on the soft keyboard.

9. Click "OK" on the soft keyboard.

10. Select "Next" on the message preview screen.

11. Select the precedence for the message and ensure the "To" recipient is correct.

12. Click "Send".

END OF TASK

Cancel Call for Medic (CFM) Message Using SCU

NOTE

The message recipient will be the default recipient for a "Call for Medic" message.

To send a Cancel CFM message using the SCU:

1. Push and hold button three, "Mute," "Call for Medic," "Cancel Call for Medic" on the front of the SCU for ten seconds.

2. Listen for audible "Cancel Medic" and release the button.

3. Listen for "Call for Medical Assistance Canceled" message.

4. Observe the message as it passes through and out of the FIPR "Out" box.

END OF TASK

MESSAGES - Continued

Cancel Call for Medic (CFM) Message by Cursor

To send a Cancel CFM message using the cursor:

1.   Bring your cursor over top of the Red Cross with the annotation of CFM.

2.   Click the bottom mouse button.

3.   Click on "Cancel CFM".

4.   Observe the CFM symbol is removed from the digital map.

END OF TASK

Call for Fire (CFF) Message

Part of LW-SI configuration and mission planning will include establishing default recipients for the "CALL FOR FIRE" message.

To Send a CFF Message:

1.   Top mouse click on "Message" from Main Menu.

2.   Select "Create Message."

3.   Select "Call for Fire."

4.   Verify that the "To:" recipient is correct. If incorrect, find proper recipient IAW paragraph Address a Digital Message above. If recipient is correct, go to next step.

5.   Validate that the target location is correct in the "Target Location" field. If not, click and enter the correct grid using the soft keyboard and pressing enter.

6.   Select the "Fire Mission Type" in the drop down menu.

7.   Select the "Method of Control" in the drop down menu.

8.   Select the "Target Subtype" that most fits the profile of target you observe in the drop down menu.

9.   Select the "Target Count" you are able to observe in the drop down menu.

10.   Select the "Degree of Protection" in the drop down menu.

MESSAGES - Continued

11. The "Time On Target DTG" is defaulted at "NOW." Click one time on the "NOW" button and this action will automatically update the DTG in the field. Clicking on the time field brings up a soft keyboard, input the time you wish and press OK.

12. Select the "Next" button. The screen will change to the "Route Call For Fire" screen.

13. Ensure the "To" recipient is correct.

14. Select the precedence which most fits the requirement for the mission.

15. Click "Send."

END OF TASK

Create Call for Fire (CFF) Message by Clicking on the Digital Map

To create and send a CFF message by clicking on the digital map:

1. Double click the top mouse button on the desired location on the digital map.

2. Select "Call for Fire" message.

3. Perform steps 4 thru 15 of paragraph Call for Fire (CFF) Message above to send.

END OF TASK

Create Call for Fire Message by STORM LRF

To create and send a Call for Fire message by using the STORM:

1. Fire the STORM LASER Range Finder in the Range/Compass mode.

2. Observe the HMD screen. It displays a box with available reports.

3. Click on "Call for Fire."

4. Go to paragraph Call for Fire Message above to send.

END OF TASK

MESSAGES - Continued

To Send a SALUTE Message:

Part of LW-SI configuration and mission planning will include establishing default recipients for the "SALUTE" message.

1.   Click on "Message" from Main Menu.

2.   Select "Create Message."

3.   Select "SALUTE."

4.   Verify that the To: recipient is correct. If incorrect, find proper recipient IAW paragraph Address a Digital Message above. If recipient is correct, go to next step.

5.   Select the Equipment by clicking in the field and using the drop down arrow highlighting appropriate target.

6.   Select Equipment Quantity by using the up or down arrows.

NOTE

You must always select Equipment for #1 in order to create and send a SALUTE message.

7.   Select additional equipment as necessary.

8.   Change DTG by clicking in field, bringing up soft keyboard and updating that information. Select OK when done.

NOTE

If step 8 is performed, there is no need to perform step 9. You can also go straight from step 7 to step 9.

9.   Select NOW by clicking on the "NOW" button.

10. Select Enemy Activity.

11. Select Unit Speed.

12. Select Course.

MESSAGES - Continued

13. Select Enemy Location by clicking on the field and inputting the grid using the soft keyboard. Select OK when done.

NOTE

Top mouse clicking in quick succession (double clicking), on the map screen before you create the "Salute" message will automatically place the grid coordinates in the "Enemy Location:" field.

14. If sending enemy location from Observers Location, click on "Observer Location" radio button. Change observer grid, Direction to the Enemy, and Meters to the Enemy as known.

15. Select the "Next" button. The screen will change to the "Route SALUTE" screen.

16. Ensure the "To" recipient is correct.

17. Select the precedence which most fits the requirement for the mission.

18. Click "Send."

19. View report on the map screen.

END OF TASK

Create SALUTE Message by Clicking on the Digital Map

To create and send a SALUTE message by clicking on the digital map:

1. Double click the top mouse button on the desired location on the digital map.

2. Select "SALUTE" message.

3. Go through the same procedures as To Send a SALUTE Message above to send.

END OF TASK

Create SALUTE Message by STORM LRF

To create and send a SALUTE message by using the STORM:

1. Fire the STORM LASER Range Finder in the Range/Compass mode.

MESSAGES - Continued

2.   Observe the HMD screen gives a box with available reports.

3.   Click on "SALUTE."

4.   Go through the same procedures as To Send a SALUTE Message above to send.

END OF TASK

Message Toolbar In Box

NOTE

You can also access the In Box by clicking on the FIPR bar located on the bottom center of the bottom toolbar.

To check the "In Box" for messages:

1.   Top mouse click the "Menu" button

2.   Top mouse click on "Message" from Menu.

3.   Select "In Box."

4.   Click on a message to view.

END OF TASK

Message Toolbar Draft Box

To check the "Draft Box" for messages:

1.   Top mouse click the "Menu" button

2.   Top mouse click on "Message" from Menu.

3.   Top mouse click on "Draft Box."

4.   View messages saved in the draft box.

5.   Top mouse click on a message to edit and finalize.

6.   Finalize message and send or continue to save as draft.

END OF TASK

MESSAGES - Continued

Message Toolbar Out Box

To check the "Out Box" for message:

1.   Top mouse click the "Menu" button.

2.   Top mouse click on "Message" from Menu.

3.   Top mouse click on "Out Box."

NOTE

"Select All," Unselect All", "Delete Selected" are only valid options
when more than one message resides in the outbox.

4.   View messages in the "Out Box" and go to the "Out Box Status" screen. Elect to "Select
All," Unselect All", "Delete Selected", or "Resend Stale Selected". Select the message by
clicking on it to open it.

5.   Select to Stop Sending, View Message or Close the screen.

6.   After viewing message, select the TOC button and choose other options already viewed.

END OF TASK

Message Toolbar Sent Box

To check the "Sent Box" for messages:

1.   Top mouse click the "Menu" button

2.   Top mouse click on "Message" from Menu.

3.   Top mouse click on "Sent Box."

4.   Manage messages in the Sent Box by "Select All," "Unselect All," Delete Selected," or
"Delete Unprotected."

5.   Protect messages by clicking in the "Protect" column of the message field.

6.   View messages in the "Sent Box" by clicking on them.

END OF TASK

MESSAGES - Continued

Message Toolbar Deleted Box

To check the "Deleted Box" for messages:

1. Top mouse click the "Menu" button.

2. Top mouse click on "Message" from Menu.

3. Top mouse click on "Deleted Box."

4. Manage messages in the "Deleted Box" by selecting needed functionality.

5. Destroy any messages no longer needed.

END OF TASK

FIPR Menu Bar Functions

To check for messages click on the FIPR menu bar to be taken to the FIPR In or Out box.

END OF TASK

MISSIONS

Creating Mission Orders

NOTE

Creating Mission Orders is time consuming and may require you to save an Order several times until the Order is completed. Use the "Save Draft" function to save your Order until you are ready to send it.

To create a Mission Order:

1. Top mouse click on "Mission" from Main Menu.

2. Select the desired order format: "WARNORD," "OPORD," "FRAGO."

NOTE

Do not enter a Mission ID number unless you absolutely need to, or are required to. Graphics and mission applications from a previous active mission are not visible on the map screen.

3. Enter a Mission ID number.

4. Enter a "Mission Name" by clicking in the "Mission Name" field. A virtual key board will appear. Enter the text and click "OK."

5. Begin writing the order by clicking on each paragraph button on the upper order toolbar.

6. Go from section to section of the order by clicking on "Next Section" at the bottom left of the screen or by clicking on the section above the mission. Top mouse click in each paragraph field to enter the text in the virtual key board. For each paragraph of the order, you must perform this process.

7. Top mouse click "Issue" on the lower tool bar.

8. Select Overlays to send with mission by clicking on each type of overlay and placing an X in the square or clicking on "Select All."

MISSIONS - Continued

NOTE

You may create overlays ahead of time before continuing to the "Select Overlays" screen.

You do not have to send an overlay with a mission.

9. Top mouse click "Continue" on the lower toolbar.

10. Ensure the "To" recipient/s is correct on the Route Order screen.

11. Select the precedence which most fits the requirement for the mission.

12. Click "Send."

END OF TASK

Receive and Apply an Order

To receive and apply an order:

1. Top mouse click on the FIPR area at the bottom tool bar. This will take you to the "Inbox."

2. Top mouse click the message identifying the new order. The message will open.

3. Top mouse click on the "Apply" button to apply the order. The screen will change back to the "Inbox" screen.

4. Top mouse click on the "Menu" button.

5. Top mouse click on "Mission." This will bring you to the "Mission Management" box where you can view the order.

END OF TASK

MISSIONS - Continued

Receive and Apply an Overlay

<div align="center">

NOTE

</div>

Overlays can be received as part of a Mission or can be sent and received without a Mission.

To receive and apply an overlay:

1.   Top mouse click on the FIPR area at the bottom tool bar. This will take you to the "Inbox."

2.   Top mouse click the message identifying the new overlay. The message will open.

3.   Top mouse click on the "Apply" button to apply the overlay. The screen will change back to the "Inbox" screen

4.   Top mouse click on the "Menu" button.

<div align="center">

NOTE

</div>

To view an overlay on the map screen once you have applied it, ensure that the mission that the overlay applies to is set as the active mission. If you encounter a situation where the overlay is applied but you do not see the graphics on the map, most likely a different mission needs to be set as the active mission.

5.   Top mouse click on "Map" and view the overlay on the map screen.

END OF TASK

MISSIONS - Continued

Viewing an Order

To view an order:

1.   Top mouse click the "Menu" button.

2.   Top mouse click on "Mission."

3.   Top mouse click on "Orders Box."

4.   Top mouse click on an order if one is listed. The order will open and then you will be able to view the contents of the order.

END OF TASK

Creating a Mission Order by Copying a Received Order

To create a Mission Order by copying from another order:

1.   Top mouse click the "Menu" button.

2.   Top mouse click on "Mission."

3.   Top mouse click on the "Orders Box" button in the upper tool bar.

4.   Top mouse click on the order that will be copied.

5.   Click on the "Create New" button on the bottom tool bar.

6.   Ensure your role is displayed as the "Author" (sender) at the top of the order.

7.   Ensure the "Save Draft" button is no longer grayed out.

8.   Ensure text in all the fields has been copied to your mission.

9.   Select the desired mission ID and Mission Name.

10. "Save Draft," "Issue Order," or "Cancel" as needed.

END OF TASK

MISSIONS - Continued

Mission Management

NOTE

> Managing Missions on the LW-SI system merely consists of
> knowing mission ID numbers, Mission names and knowing which
> mission is set as the active mission. Ensure you know which
> mission is supposed to be set as the active mission.

To Manage Missions:

1. Top mouse click the "Menu" button

2. Top mouse click on "Mission."

3. Top mouse click on the "Missions" button in the upper tool bar.

4. Confirm there are Mission IDs and Mission Names for each of your saved missions.

5. Confirm that your current mission is set as active.

END OF TASK

Set Active Mission

To Set Active Mission:

1. Top mouse click the "Menu" button.

2. Top mouse click on "Mission."

3. Top mouse click on the "Missions" button in the upper tool bar.

4. Top mouse click on the mission to be set as the active mission.

5. Top mouse click on the "Set Active Mission" button on the bottom toolbar.

6. Observe the right side column where the state of the mission changes to "Active."

END OF TASK

MISSIONS - Continued

Deactivate Mission

<div align="center">

NOTE

</div>

Only an active mission will be seen in the Orders Box, and only the active mission overlays and echelons associated with that mission will be visible at that time.

To deactivate a mission:

1. Top mouse click the "Menu" button.

2. Top mouse click on "Mission."

3. Top mouse click on the "Missions" button in the upper tool bar.

4. Top mouse click on the mission that you want to "Deactivate."

5. Top mouse click on the "Deactivate Mission" button on the bottom tool bar.

END OF TASK

Delete Mission

<div align="center">

NOTE

</div>

Only a mission that is not active can be deleted. You cannot delete an Active mission.

If you delete the mission, it will not go to the Deleted Box; it will be removed from your system.

To Delete Mission:

1. Top mouse click the "Menu" button.

2. Top mouse click on "Mission."

3. Top mouse click on the "Missions" button in the upper tool bar.

4. Top mouse click on the mission that you want to "Delete." Notice that the "Delete Mission" button is not active.

MISSIONS - Continued

5. Top mouse click on the "Deactivate Mission" button. Notice the "Delete Mission" button is now active.

6. Top mouse click on the "Delete Mission" button on the bottom tool bar.

7. Observe a message that appears "Are you sure you wish to delete mission: (mission number and name given)?

8. Top mouse click on the "Delete" button on the bottom tool bar to delete the mission. If you do not wish to delete the mission, select "Cancel" and return to Mission Management.

END OF TASK

Manage Orders Box

To Manage Orders Box:

1. Top mouse click the "Menu" button.

2. Top mouse click on "Mission."

3. Top mouse click on "Orders Box."

4. Once you are in the Orders Box you now have the capability to:

    •   Sort orders by selecting the header of each column.
    •   Select individual orders by clicking in the box on the left of the Mission ID.
    •   Select all by clicking on "Select All."
    •   Unselect orders by clicking on each X in the box on the left or by clicking on "Unselect All."
    •   Delete selected by clicking on "Delete Selected."
    •   Ensure mission deleted by viewing mission in the Deleted Box.

END OF TASK

Send an Overlay without an Order

To send an Overlay without an Order:

1. Top mouse click on the MAPS button on the main screen and select the map you want to build the overlay on.

MISSIONS - Continued

2. Top mouse click on the overlay button you want to create the overlay to. Ensure this button is Cyan (blue) in color.

3. Build the overlay by placing symbols and graphics on the map.

4. Once you have completed the overlay, top mouse click on the "Overlay" button on the top tool bar. A drop down dialog box will appear.

5. Top mouse click on "Store Overlay."

6. Top mouse click on the "Menu" button.

7. Top mouse click on "Mission. Top mouse click on the "Send Overlay" button on the upper tool bar.

8. Top mouse click on the box next to the overlay you want to send.

9. Top mouse click on the "Continue" button on the lower tool bar.

10. Select the recipient, precedence and send.

NOTE

If sending system has an active mission, the overlay will be tagged with that Mission ID. The recipient must select the mission ID of that overlay to view it if the Mission ID number is different than the active mission of the recipients system.

END OF TASK

OPERATE THE WEAPON SUBSYSTEM

Daylight Video Sight

To operate the Daylight Video Sight, you must use the WUID.

To Operate the WUID:

1. While observing the HMD, depress the left button on the WUID. The HMD will change from the screen view to the DVS wide field of view.

2. Depress the middle rocker button on the WUID to cycle through the wide, narrow, and zoom fields of view.

END OF TASK
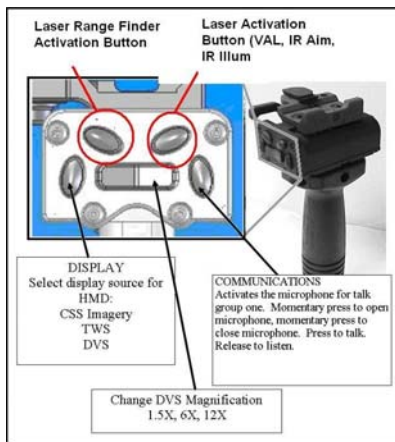
Figure 12. Weapon User Input Device (WUID).

OPERATE THE WEAPON SUBSYSTEM - Continued

Operate the Thermal Weapon Sight

1. While observing the HMD, depress the left button on the WUID two times to cycle to the TWS view. Ensure the TWS is powered on and in the emergency mode to observe through the HMD.

2. Depress the left button a third time to cycle back to the map or other view on the HMD.

END OF TASK

CONFIGURE THE LW-SI ENSEMBLE

1. Click on "Configuration" from Menu.

2. Select the system operation to be configured:

   - Alerts
   - Filter friendly SA
   - MFL
   - Routes/Waypoints
   - Talk Buttons
   - Sighting Device
   - Messaging
   - CNRS Radio
   - SCU
   - Time

END OF TASK

Configure Alerts

Figure13. Configure Alerts.

CONFIGURE THE LW-SI ENSEMBLE - Continued

To Configure Alerts, perform these steps:

1. Top mouse click on the "Menu" button and observe the drop down list of options.

2. Top mouse click on "Configuration" and observe the configuration screen.

3. Top mouse click on "Alerts" and observe the "Alerts Configuration" screen.
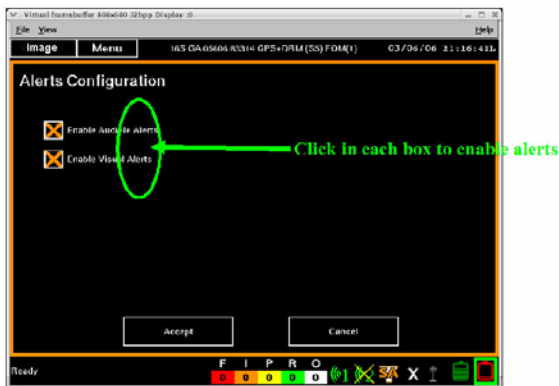
4. Click in both the "Enable Audible Alerts" and "Enable Visual Alerts" boxes. An "X" will display in each box as they are enabled, (Enable Alerts)

5. Click "Accept" and the LW-SI system alerts are enabled.

END OF TASK

Configure Filter Friendly SA

To Configure Filter Friendly SA:

1. Top mouse click on the "Menu" button and observe the drop down list.

2. Top mouse click on "Configuration." The "Configuration" menu screen will display.

3. Top mouse click on the "Filter Friendly SA" button. The screen will then display echelons.

4. Top mouse click on the role/s listed in the "Echelon" field. Notice that when you click on a role, this same role will then be listed in the "SA Reports to Display" lower field.

NOTE

Notice the role/s will turn gold in color when selected.

5. Once you have selected the Friendly SA roles, either top mouse click on "Set Default" if you want to default the listed group of roles, or just top mouse click on "Accept" to finalize configuring "Filter Friendly SA." The screen will return to the "Configuration" menu.

6. Top mouse click on the "Menu" button and then top mouse click on "Map." The map screen will appear.

CONFIGURE THE LW-SI ENSEMBLE - Continued

7.   Top mouse click on the "SA" icon on the lower tool bar. This will turn on and off the "Filter Friendly SA." When the "Filter Friendly SA" icon is turned on, the funnel on the icon will turn white. Notice when turned on that all SA except those that are configured are turned off. Now you are able to see only the configured "Filter Friendly SA."

END OF TASK

Configure Talk Buttons (Talk Groups)

NOTE

When configuring talk buttons, "Search" is not functional. Dependent on the role or duty position, though the operator can select any call group, he may not be able to talk on certain call groups. Also notice that the role(s) will turn gold in color when selected.

To configure Talk Buttons:

1.   Top mouse click on the "Menu" button and observe the drop down list.

2.   Top mouse click on "Configuration." The "Configuration" menu screen will display.

3.   Top mouse click on the "Talk Buttons" button from the Configuration Menu.

4.   Top mouse click on "Talk Button 1" from the Talk Button Configuration screen.

5.   The correct talk group for "Talk Button 1" should be visible under the "Current Talk Button 1" group.

6.   If you have to change the talk group for the selected button, there is a "Report Group" section below the "Current Talk Button 1" group.

7.   Select the correct talk group or duty position and it will be the group or duty position set under the current "Talk Button 1."

8.   If you want this to remain the talk group, that you want to talk to all the time, select the "Set Default" button on the top left side. Then click the "Accept" button and it will save it as your default

9.   If you only need to speak with this person one time, you need to only click on the "Accept" button in the top left corner.

CONFIGURE THE LW-SI ENSEMBLE - Continued

NOTE

Perform same procedures for Talk Button 2.

10. The screen returns to the "Talk Button Configuration" screen. Top mouse click on the "Close" button.

11. Be sure to conduct a "commo" check with the talk groups you have configured on each button.

END OF TASK

Mute Talk Buttons
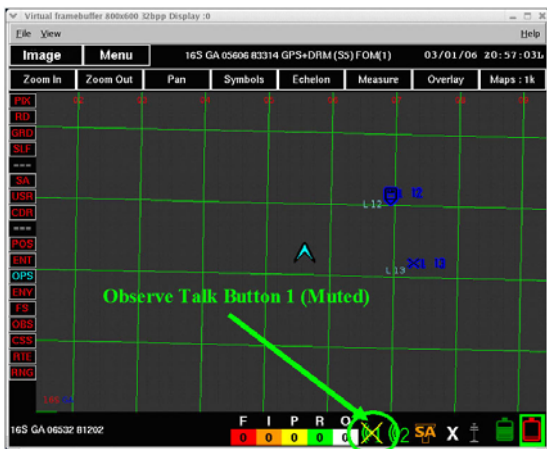
Figure 14. Mute Talk Button 1.

CONFIGURE THE LW-SI ENSEMBLE - Continued

To Mute a Talk Button:

1.   Top mouse click on the "Menu" button and observe the drop down list.

2.   Top mouse click on "Configuration." The "Configuration" menu screen will display.

3.   Top mouse click on the "Talk Buttons" button from the "Configuration" menu.

4.   Click on "Talk Button 1" from the "Talk Button Configuration" screen.

5.   Click the "Mute" button next to the "Talk Button 1."

6.   Top mouse click on the "Close" button and view the talk button icon. An "X" will display over top of the talk button icon.

END OF TASK

MAP DOCKING TOOL BAR

Roads. Currently Not Implemented.

Centers operator Graphic Bearing Indicator (GBI) location on map.

Toggles users overlays ON and OFF.

Docks and undocks the overlay toolbar to one of four screen positions (top, bottom, left, or right)

Toggles ON or OFF FBCB2 overlays and SALUTE reports

Toggles overlay stages for symbols placed on the Enemy overlay.

Toggles overlay stages for symbols placed on the Obstacles overlay.

Route (RTE) and Range Card (RNG). Allows for placement of graphics on the map but these overlays cannot be stored or sent.

PIX
RD
GRD
SLF

SA
USR

POS
ENT
OPS
ENY
FS
OBS
CSS
RTE
RNG

Toggles between a digital version of the current map screen and the no map image background map screen.

Toggles the map gridlines ON or OFF

Toggles ON and OFF the Situational Awareness overlay of buddy icons.

Displays the current users Position Layer and position reports.

Toggles overlay stages for symbols placed on the Operations overlay.

Toggles overlay stages for symbols placed on the Fire Support overlay.

Toggles overlay stages for symbols placed on the Combat Service Support overlay.

Figure 15. Map Docking Toolbar.

TOP INFORMATION BAR

Date/Time Group Field. View Local or Zulu DTG. Clicking on this field toggles between those two times.

Main Menu Button. Click on this button to produce a drop down menu. This is the main method of navigation through all the LW-SI Application.

MAP   Menu   16S GA 05606 83314 GPS+DRM (S5) FOM(1)   02/08/06 00:58:24L

Shortcut Button. Toggles between two of the LW-SI Application Subjects: Image or Map. Clicking on this button takes you to the application displayed.

Navigation Information. 10-digit grid location of the LW-SI system in MGRS, System Mode, number of Satellites acquired and Figure of Merit. Clicking on this field takes you to Navigation Configuration.

Figure 16. Top Information Bar.

MAP TOOL BAR

Zoom Out. Clicking on this button enables the operator to zoom out the map/image.

Symbols. Clicking this button provides the operator with the ability to Add, Edit, Delete and Size Symbols, Undo Symbol/Edit/Delete/Hide Annotation.

Measure. Clicking on this button allows the operator to measure across the digital map/image. Feedback provided is distance in meters and direction in Azimuth.

Maps Menu/Scale. Clicking on this button allows the operator to select a map/image to display.

| Zoom In | Zoom Out | Pan | Symbols | Echelon | Measure | Overlay | Maps : 100m |

Zoom In. Clicking on this button enables the operator to zoom in on the map/image.

Pan. Clicking on this button enables the operator to pan the map/image in a desired direction.

Echelon. Clicking on this button allows selection of an echelon to be deleted or copied. If no echelon is available, the button will not be available (as shown).

Overlay. Allows operator to store overlay or user layer.

Figure 17. Map Toolbar.

BOTTOM INFORMATION BAR

System Status Window. Displays the status of the LW-SI system. When cursor is moved over a map/image in the Map section, the location of where the cursor is positioned. Operator can click on this information to change how it is positioned, (in MGRS, and degrees, minutes, seconds of lat/long). When in the Image Editor, the cursor location is the pixel location on the image. Other information of the status of the system is shown here.

Situation Awareness Indicator. Clicking on this allows the operator to turn on or off the SA Filer.

Network Status. Displays EPLRS Network status and CNRS power level. Clicking on this icon is a shortcut to CNRS Configuration.

Talk Group Indicator. Status of configured talk groups.

16S GA 05458 83181

F   I   P   R   O
0   0   0   0   0

SA

Message Indicator. Messages in the LW-SI system In Box are shown by message priority: Flash, Immediate, Priority, and Routine. Messages in the system Out Box are also shown in the O-box. Clicking on any of the FIPR takes you to the In Box, on the O takes you to the Out Box.

Error Log. Alerts the Operator of an error on the LW-SI system. Clicking on this icon takes you to the Error Log.

Battery Status. Clicking on this area gives detailed information of system batteries.

Figure 18. Bottom Information Bar.

CONFIGURE THE LW-SI ENSEMBLE - Continued

Configure Time

To configure Time:

1. Top mouse click on "Configuration" from the menu.

2. Top mouse click on "Time" from the "Configuration" menu.

3. Select the "Local Time Zone" drop down box on the "Time Configuration" page.

4. Choose the proper time for your local time zone.

5. Once the proper time is selected, it will show in the "Local Time Zone" box.

6. Move the cursor to "Accept" and click on it.

7. This will change the time to your selected time zone and will be visible in the top right hand corner of your screen.

8. Move the cursor to the time on the top right corner of the screen and top mouse click on it.

9. This will move the time from "Local" to "Zulu" time.

10. The "Local" time will have an "L" beside it and the "Zulu" time will have a "Z" beside it.

END OF TASK

Configure Daylight Video Sight

To configure the Daylight Video Sight:

1. Top mouse click on the "Menu" button and observe the drop down list.

2. Top mouse click on "Configuration." The "Configuration" menu screen will display.

3. Top mouse click on "Sighting Device."

4. Select "Weapon System" and "Reticle color for Reticle Sights" by clicking on the down arrow on the right side to view selections.

CONFIGURE THE LW-SI ENSEMBLE - Continued

NOTE

This screen also allows you to Adjust Reticle and Center Adjust Reticle block.

Center Adjust Reticle. Selecting this brings the Reticle to the center of the screen. This will eliminate all previous settings.

5.   Click on "Adjust Reticle."

NOTE

This shows the Reticle Tool Bar and Reticle Location on the HMD. This allows the operator to start the alignment process and track the reticle location while doing so.

The Sight Alignment process can be conducted in either field of view first and then the other. There is no set order, as long as both are aligned.

END OF TASK

DVS Boresighting Procedure (Non-Firing Zeroing Procedure)

Boresighting is the process of aligning the weapon system's sights with the bore of the weapon. The Bore of the weapon is what the bullet travels down when the weapon is fired. This procedure gives the operator a "dry" zero for 300 meters using either the M-4 or the M-4/M203. Boresighting is a procedure that can be done in an assembly area, and does not require ammunition to conduct (compared to the Firing Zeroing Procedure).

WARNING

Do not stare at the Borelight LASER beam.

Do not shine the LASER into anyone's eyes.

Do not look into the LASER through Binoculars or Telescopes.

Do not point the LASER at a reflective surface such as glass or a mirror.

Use BLPS glasses or goggles to prevent damage to your eyes.

All weapons need to be cleared and on safe. There is no requirement for blank or live rounds to complete this task.

CAUTION

When handling the Borelight and attachments, do not stress the equipment at the connection points. Equipment damage could result.

Boresighting the DVS

Zeroize the LASER Boresight System (LBS) IAW TM 9-5860-226-13&P, Chapter 2, Sections 1 and 2.

Use the 10-meter Bore Light Target sheet (Figure 19) for M4 MWS with Daylight Video Sight on Left Rail.

CONFIGURE THE LW-SI ENSEMBLE - Continued

NOTE

Ensure borelight is properly aligned in bore of weapon first.

1. Toggle to the DVS using the bottom left button on the Weapon User Input Device (WUID) and confirm you can observe the 10-meter offset target in both the Wide and Narrow fields of view.

2. Toggle back to the main Graphic User Interface screen (GUI).

3. Using the SCU, access the Menu, and click on the "Configuration" block from the Menu (using the top button on the SCU and the cursor control).

4. Using the cursor, click on the block "Sighting Device" from the list. This will display the "Sighting Device Configuration" screen.

5. Select the type of weapon system and the color of reticle. Currently the LW-SI system has only the M4 reticle available, listed as the M16A4. You can access the "Adjust Reticle" and "Center Adjust Reticle" buttons.

6. Select the "Adjust Reticle" button which displays the DVS image. Select the Wide Field of View (WFOV) using the WUID. This will display the Reticle Toolbar.

NOTE

It is important to write down or record the reticle location of the DVS in both FOVs. This is in case the reticle is centered accidentally; the location of the reticle is known and can be brought back to that location.

7. Using the SCU enter and exit buttons, begin adjusting the DVS reticle to its respective DVS Aim Point on the target sheet by selecting the desired direction and watching the reticle move in the HMD, as well as watching the reticle position change.

8. An alternate technique is to change the reticle color to assist in alignment. For example, while aligning a black reticle, you may want to see the reticle change colors like the reverse reticle does. Go to the Adjust Reticle Toolbar and select "TY." This stands for "Type". You can toggle between the three types of reticles: Black, White, and Reverse.

CONFIGURE THE LW-SI ENSEMBLE - Continued

NOTE

The movement direction on the Reticle Toolbar is for the strike of the round during firing.

The spotter can aid in the viewing of the WFOV reticle desired aim point as 10 meters by using an object like an ink pen to help the LW-SI operator see where the reticle needs to be moved to.

In the WFOV, using the 10-meter offset target, each square on the 10-meter offset target is equal to one centimeter. It takes two clicks on the top button of SCU to move the reticle one square at 10-meters in the WFOV. In the NFOV, it takes nine clicks on the top button of SCU to move the reticle one square at 10-meters.

9. Once the adjustment of the reticle is complete for the WFOV, the user should toggle to the Narrow Field of View (NFOV) and use the same procedure for sight alignment.

NOTE

The DVS is aligned in the WFOV and NFOV only. The ZOOM FOV is a digital zoom. It is the center of the NFOV magnified. This is similar to the zoom of the TWS.

If the DVS is removed from the weapon, for any reason, after boresighting has been completed, the boresighting must be reaccomplished when the DVS is returned to the weapon.

10. To ensure reticle adjustments are saved, toggle out of the Adjust Reticle screen and cycle around to the DVS image again. The reticle should reside at the last position you moved it to.

CONFIGURE THE LW-SI ENSEMBLE - Continued

10-METER BORE LIGHT TARGET
M4 MWS with Daylight Video Sight on Left Rail
(300-METER ZERO)

LASER BORE LIGHT
0, 0

DVS Aim Point
NFOV
-5 CM, -2 CM

DVS Aim Point
WFOV
-5 CM, -5 CM

GRID SQUARES ARE 1 CM BY 1 CM, UNITS MUST MANUFACTURE LOCALLY

24 MAY 06
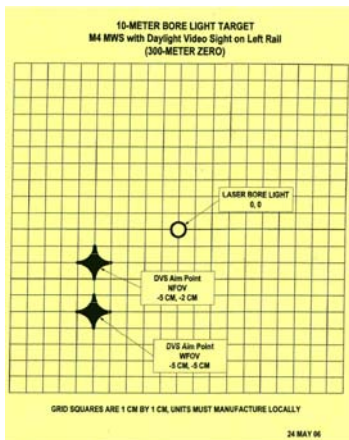
Figure 19. Sample Borelight Target.

END OF TASK

STORM Boresighting

Boresight the STORM IAW TM 9-5855-1913-13&P.

END OF TASK

TWS Boresighting

Refer to the specific individual TWS technical manual for TWS boresighting procedures.

END OF TASK

CONFIGURE THE LW-SI ENSEMBLE - Continued

Configure CNRS

Figure 20. Communication Network Radio Subsystem (CNRS).

To configure the CNRS:

1.   Top mouse click on "Configuration" from the "Main" menu.

2.   Top mouse click on "CNRS" from the "Configuration" menu.

3.   When you enter the "CNRS Radio Configuration" screen, there are two functions; "Set the Power Level" and "Time Master Initiate."

4.   To set the power level, top mouse click in the "Power Level" field to change the power level to "Low," "Medium," or "High."

5.   Check status of "TMI" button in "CNRS Radio Configuration" screen. If button is grayed out, a network already exists and no action is required. Clicking a non-grayed out "TMI" button will establish a network if none exists.

6.   Top mouse click "Close" and the screen will return back to the "Configuration" menu.

END OF TASK

CONFIGURE THE LW-SI ENSEMBLE - Continued

Configure SCU

To configure the Soldier Control Unit:

1. Top mouse click on "Configuration" from the "Main" menu.

2. View the selections listed under "Configuration."

3. Top mouse click on "SCU."

NOTE

> This brings the operator to the "SCU Configuration" screen. The SCU is configured for a right-handed operator. If you are a left-handed operator, you must click for a different selection.

4. Top mouse click on the "Accept" block if you are a right-handed operator.

5. If you are a left-handed operator, click the square next to "Set SCU for Left-Handed Shooters."

6. Top mouse click on the "Accept" block.

END OF TASK

Configure Routes/Waypoints

Configure Routes/Waypoints is currently not supported.

END OF TASK

Configure MFL

Configure MFL (STORM) is currently not supported.

END OF TASK

Configure Messaging

Configure Messaging is currently not supported.

END OF TASK

SYSTEM TEST

To conduct a System Test:

1.   Top mouse click on "System Test" from the "Main" menu.

2.   View sub-systems/components available for testing.

3.   Select systems/components to test or select "Start all Tests." View results.

4.   To close, select "Map" from menu.

END OF TASK

PURGE SYSTEM

NOTE

> Purging of system will render the LW-SI system inoperable. Purge
> system as directed by SOP.

To purge system:

1.   Open the cover located over the Purge Button on the SCU and press and hold the button
     for a three-second count.

2.   Release the button and observe on the HMD screen that the Purge process has begun
     and the 30 second timer is counting down.

3.   Either wait until the timer is complete or press "Purge Now" to purge immediately.

4.   Observe shutdown sequence.

5.   Purge is complete when system shuts down.

END OF TASK

ZERO NAVIGATION SUBSYSTEM

Figure 21. Navigation Subsystem (NSS)

NOTE

Zeroing the Navigation Subsystem will destroy any Cryptographic Keys loaded in the NSS. The NSS will still operate without the presence of Cryptographic keys. Perform Purge procedure only as directed by SOP or competent authority.

To Zero the Navigation Subsystem:

1. Locate the "ZERO" button which will be at the bottom of the NSS.

2. Lift the button cover and press the "ZERO" button. At this time the NSS will start zeroing.

END OF TASK

LOAD AN MDP

To Load an MDP:

1. Top mouse click "Menu" button. Scroll and select "MDP Management."

LOAD AN MDP - Continued

2. Select and click MDP Location from which you want to install from.

3. View screen and select MDP file you want to install.

4. Top mouse click "Install MDP."

5. View screen as system builds MDP list.

6. When "Do you want to install the following MDP file?" with the listed MDP file displays, click the install button.

7. View screen as installation of the MDP continues and wait for the screen to read "Installed MDP (file name) Successfully" then click "Close."

8. Click the "Restart System" button on the "MDP File List" screen.

END OF TASK

IMAGE EDITOR

To edit images:

1. Top mouse click on "Image Editor" from "Main" menu screen.

2. Load image by selecting "Load". Select image to be edited then select "Accept Selection."

3. Add Text.

    a. Top mouse click "Edit Text".

    b. Top mouse click "Current" for position and date/time.

    c. To add comment, place cursor in comment field, click and type specific text.

    d. Top mouse click "Accept" to display text in lower left corner.

    e. Top mouse click "Togl Text" to have text disappear/reappear.

4. Zoom In or Zoom Out. Top mouse click "Zoom In" or "Zoom Out". At maximum range the respective buttons will be orange or gray.

IMAGE EDITOR - Continued

5. Add Shape.

   a. Add a shape to image by selecting "Add Shp".

   b. To draw a line, move cursor over the image, click top SCU button, move cursor to end point, and click bottom SCU button to complete the line.

   c. To draw a box click on four different areas over the image. When drawing the line from fourth to first point, click on bottom SCU button to complete the box.

6. Edit a Shape.

   a. Top mouse click "Edit" and make changes to shape.

   b. Lines are edited only at beginning or ending of lines; boxes at corners.

   c. To accept edit click top SCU button.

   d. While in edit mode cursor is hand shaped.

   e. Click bottom SCU button to exit out of edit mode.

7. Delete a Shape.

   a. Top mouse click "Del Shp". Shape is removed.

   b. To delete another shape "Del Shp" button must be selected again.

   c. After a shape is deleted the cursor changes from hand shape back to arrow again.

8. Undo. Top mouse click "Undo" to return to previous shape.

9. Save the Image. Top mouse click "Save" to save the image in the image library.

10. Delete an Image. Top mouse click "Delete" and then select image. Image is removed.

11. Send an Image. Top mouse click "Send" and at "Route Message" screen perform regular messaging functions.

12. Import/Export Image. The import/export image buttons are not currently functional.

END OF TASK

END OF WORK PACKAGE

CHAPTER 3
OPERATOR MAINTENANCE
TROUBLESHOOTING PROCEDURES

INITIAL SETUP:
  References:
    WP 0007

INTRODUCTION

This work package lists troubleshooting symptoms, malfunctions, and corrective actions for the LW-SI.

GENERAL

Operator troubleshooting is generally limited to a visual inspection of cables, connections, and LRUs. If time and equipment permits, cables and LRUs can be swapped or replaced with cables or LRUs from a known good LW-SI system to determine the serviceability of individual components on the suspect or non-functional system.

TROUBLESHOOTING INDEX

The most common symptoms are listed alphabetically in the Symptom column of Table 1, with the corresponding numbered troubleshooting procedure listed in the Troubleshooting Procedure column. Within the numbered troubleshooting procedures, the MALFUNCTIONS are listed sequentially from most likely to least likely. Follow the CORRECTIVE ACTION troubleshooting steps in sequence and perform an OPS check or system test after each Step. Move to the next Step until the MALFUNCTION is corrected. If no corrective actions resolve the problem, the user will turn the component or system into the next higher level of maintenance for replacement or further troubleshooting.

Table 1. Troubleshooting Symptom Index

Symptom	Troubleshooting Procedure
Communications - CNRS is properly keyed, configured, and connected; but no voice/data communications are possible.	1
Communications - no voice communication with another LW-SI system using either PTT1 or PTT2	2
Communications - unable to MUTE, CFM, or Cancel Call for Medic.	3
Communications - very close range radio communication (5-10 feet) is possible, but no long range (>10 feet) radio communication is possible.	4

Table 1. Troubleshooting Symptom Index - Continued

Symptom	Troubleshooting Procedure
Cursor - unable to select screen/menu options.	5
DVS - cannot switch to all DVS magnification views.	6
DVS - cannot toggle to the DVS image thru the WUI.	7
DVS - poor DVS image quality (e.g., "white noise/lines", blurry, ghost/multiple images, random colors).	8
GPS coordinates - unable to acquire (includes question mark for a position icon, and no MGRS coordinates displayed in the navigation field at the top of the screen.	9
GPS cryptographic keys - cannot zeroize.	10
Headset - no audio.	11
Headset - volume cannot be adjusted.	12
HMD screen - brightness cannot be increased or decreased.	13
HMD - no image displayed on HMD.	14
LW-SI system - will not power up/turn-on.	15
LW-SI system - will not power down/turn-off.	16
LW-SI system - system will not PURGE.	17
MFL - cannot submit CFF or SALUTE report or place target marker using input from MFL.	18
MFL features cannot be activated through the WUI.	19
Mouse - non-functional.	20
Mouse - sluggish movement on screen.	21

Table 1. Troubleshooting Symptom Index - Continued

Symptom	Troubleshooting Procedure
Position icon - not facing in proper direction on screen.	22
Radio icon gray. After logging into the LW system, the radio icon is the color gray.	23
Radio icon red. After logging into the LW system, the radio icon is the color red.	24
Radio icon yellow. After logging into the LW system, the radio icon is the color yellow.	25
Screen - unable to back out or cancel selection.	26
TWS image - not displayed on HMD.	27
WUI - non-responsive buttons/toggle switch.	28

LAND WARRIOR-STRYKER INTEROPERABLE

TROUBLESHOOTING PROCEDURE 1
> **SYMPTOM**
> Communications - CNRS is properly keyed, configured, and connected; but no voice/data communications are possible.
> > **MALFUNCTION**
> > Problem with another LRU.
> > > **CORRECTIVE ACTION**
> > > STEP 1. Verify SCU/WUI-"push to talk" is correctly configured.
> > > STEP 2. Verify there are no malfunctions in the headset earpiece or microphone.
> > > STEP 3. Verify all cables are serviceable and properly connected.
> > > STEP 4. Refer system to maintenance for further troubleshooting.

TROUBLESHOOTING PROCEDURE 2
> **SYMPTOM**
> Communications - no voice communication with another LW-SI system using either PTT1 or PTT2.
> > **MALFUNCTION**
> > Radio keys not loaded.
> > > **CORRECTIVE ACTION**
> > > Verify the CNRS radio icon at the lower right of the map screen is not colored red. If it is colored red, radio keys need to be loaded. Refer to maintenance for key loading.

TROUBLESHOOTING PROCEDURE 2 - CONTINUED

MALFUNCTION
Talk group not configured.
CORRECTIVE ACTION
Verify the PTT1/2 button is configured for a specific talk group (no "?" symbol because the "#" icon at the bottom of the screen), and that the other LW-SI system's PTT1/2 button is configured for the same talk group.

MALFUNCTION
Headset not connected.
CORRECTIVE ACTION
Verify the headset is properly connected to the HIA.

MALFUNCTION
Microphone problem.
CORRECTIVE ACTION
STEP 1. Ensure microphone is properly connected to headset.
STEP 2. Ensure microphone is proper distance from mouth when talking.
STEP 3. Verify cables and connections IAW WP 0007.
STEP 4. Replace microphone on headset.

MALFUNCTION
Network not established.
CORRECTIVE ACTION
On CNRS configuration screen verify the "Radio" icon in the lower right portion of the screen is GREEN indication a network has been established. If icon is YELLOW a network needs to be established before voice communications can be used.

MALFUNCTION
Bad LRU.
CORRECTIVE ACTION
Refer system to maintenance for further troubleshooting.

TROUBLESHOOTING PROCEDURE 3
SYMPTOM
Communications - unable to MUTE, CFM, or Cancel Call for Medic.
MALFUNCTION
Bad MUTE, CFM, or Cancel Call for Medic Button on SCU.
CORRECTIVE ACTION
STEP 1. Verify cables and connections for IAW WP 0007.
STEP 2. Replace SCU
STEP 3. Refer system to maintenance for further troubleshooting.

TROUBLESHOOTING PROCEDURE 4
SYMPTOM
Communications - very close range radio communication (5-10 feet) is possible, but no long range (>10 feet) radio communications are possible.

TROUBLESHOOTING PROCEDURE 4 - Continued

    MALFUNCTION
    CNRS antenna not properly connected, damaged, or missing.
       CORRECTIVE ACTION
       STEP 1. Verify presence and connection of CNRS antenna. Replace
       missing or damaged antenna.
       STEP 2. Refer system to maintenance for further troubleshooting.

TROUBLESHOOTING PROCEDURE 5
    SYMPTOM
  Cursor - unable to select screen/menu options.
      MALFUNCTION
      Bad Enter/Execute Button on SCU.
       CORRECTIVE ACTION
       STEP 1. Verify cables and connections IAW WP 0007.
       STEP 2. Replace SCU.
       STEP 3. Refer system to maintenance for further troubleshooting.

TROUBLESHOOTING PROCEDURE 6
    SYMPTOM
  DVS - cannot switch to all DVS magnification views.
      MALFUNCTION
      Bad DVS
       CORRECTIVE ACTION
       STEP 1. Check the DVS.WUI interface cable, and the LRUs, for proper
       connection and bent connector pins. If any pins are bent, replace the
       appropriate cable/LRU.
       STEP 2. Refer system to maintenance for further troubleshooting.

TROUBLESHOOTING PROCEDURE 7
    SYMPTOM
  DVS - cannot toggle to the DVS image thru the WUI.
      MALFUNCTION
      Loose cable or cable connection; bent or missing pins on connector.
       CORRECTIVE ACTION
       Check the DVS/WUI interface cable, and the LRUs, for proper connection
       and bent connector pins. If any pins are bent or missing, replace the
       appropriate cable/LRU.
      MALFUNCTION
      Bad WUI
       CORRECTIVE ACTION
       Replace the WUI.
      MALFUNCTION
      Bad CCS to DVS cable/connection.

TROUBLESHOOTING PROCEDURE 7 - Continued

        CORRECTIVE ACTION
        Verify cables and connections IAW WP 0007. Replace defective cables.

TROUBLESHOOTING PROCEDURE 8
    SYMPTOM
DVS - poor DVS image quality (e.g., "white noise/lines", blurry, ghost/multiple images, random colors).
        MALFUNCTION
        Bad DVS
            CORRECTIVE ACTION
            Verify that poor image quality is in the DVS mode only by selecting other display modes using the display mode button on the WUI. If poor image quality is only on DVS mode, replace DVS.
        MALFUNCTION
        Loose cable or cable connection; bent or missing pins on connector or bad LRU.
            CORRECTIVE ACTION
            STEP 1. Check the DVS/WUI interface cable, and the LRUS, for proper connection and bent or missing connector pins. If any pins are bent or missing, replace the appropriate cable/LRU.
            STEP 2. Check the cable connection between the LW computer and the DVS, as well as the LRUs for the proper connection and bent connector pins. If any pins are bent, replace the appropriate cable/LRU.
            STEP 3. Refer system to maintenance for further troubleshooting.

TROUBLESHOOTING PROCEDURE 9
    SYMPTOM
GPS coordinates - unable to acquire (includes question mark for a position icon, and no MGRS coordinates displayed in the navigation field at the top of the screen).
        MALFUNCTION
        Covered environment. Mountains, buildings, foliage, or other obstruction may be blocking GPS signal.
            CORRECTIVE ACTION
            Physically move to an open location where GPS can be acquired (e.g. flat area where there are no obstruction between the LW and the sky).
        MALFUNCTION
        GPS antenna broken.
            CORRECTIVE ACTION
            Inspect GPS antenna/cable. If cable is severely kinked, indication that internal wire may be broken, replace antenna assembly.
        MALFUNCTION
        GPS antenna mounted improperly.

TROUBLESHOOTING PROCEDURE 9 - Continued

    CORRECTIVE ACTION
    Ensure GPs antenna is mounted so rounded portion of the antenna is facing towards the sky (not flat side up).

MALFUNCTION
Bad GPs antenna connection at NSS.

    CORRECTIVE ACTION
    STEP 1. Inspect the GPS antenna connector on the NSS. If the connector is bent, then the NSS is suspect.
    STEP 2. Unscrew the antenna connector from the NSS, and then reseat it. If the problem remains, replace the NSS.

MALFUNCTION
Cable connections.

    CORRECTIVE ACTION
    Inspect connector pins on both the NSS (if applicable) and NSS cable. Confirm NSS cable is securely fastened at both ends. Replace cable or NSS if respective pin(s) is bent.

TROUBLESHOOTING PROCEDURE 10

NOTE

    The NSS provides position location and directional orientation whether or not GPS cryptographic keys are loaded.

SYMPTOM
GPS cryptographic keys - cannot zeroize.

    MALFUNCTION
    Cryptographic keys not loaded.

        CORRECTIVE ACTION
        STEP 1. Confirm the presence/absence of cryptographic keys by performing the following:
          a. At the "Navigation Configuration - Calibration" screen, look at the "Crypto Status" data field. If the data field states "CV Zeroize Pass", then there are no GPS cryptographic keys loaded.
          b. If the data field states something other than "CV Zeroize Pass", specifically the name of the loaded cryptographic key (i.e., DS101), then GPS cryptographic keys are loaded.
        STEP 2. Turn-in to maintenance personnel.

    MALFUNCTION
    Zeroize Button on NSS not functional.

        CORRECTIVE ACTION
        Replace NSS. If Zeroing during a mission fails, perform necessary response actions IAW SOP.

TROUBLESHOOTING PROCEDURE 11
    SYMPTOM
Headset - no audio.
        MALFUNCTION
        Bad Cables or Connections.
            CORRECTIVE ACTION
            Verify headset/LRU cables and connections IAW WP 0007.
        MALFUNCTION
        Bad Headset
            CORRECTIVE ACTION
            STEP 1. Replace Headset.
            STEP 2. Refer system to maintenance for further troubleshooting.

TROUBLESHOOTING PROCEDURE 12
    SYMPTOM
Headset - volume cannot be adjusted.
        MALFUNCTION
        Bad volume control button on SCU.
            CORRECTIVE ACTION
            User can hear sounds in headset but cannot adjust the volume using the
            SCU. Replace SCU.

TROUBLESHOOTING PROCEDURE 13
    SYMPTOM
HMD screen - screen brightness cannot be increased or decreased.
        MALFUNCTION
        Bad cables or connections.
            CORRECTIVE ACTION
            STEP 1. Turn HMD ON/OFF switch from ON to OFF, and back to ON
            again.
            STEP 2. Verify cable connection from HMD to HIA IAW WP 0007.
            STEP 3. Verify cable connections fro HIA to CSS IAW WP 0007.
            STEP 4. Disconnect SCU from cable and check for bent or missing pins,
            foreign matter, debris, etc in connectors. Reconnect and verify connection
            IAW WP 0007.
            STEP 5. Refer system to maintenance for further troubleshooting.
        MALFUNCTION
        Bad brightness control switch on SCU.
            CORRECTIVE ACTION
            STEP 1. Replace SCU.
            STEP 2. Refer system to maintenance for further troubleshooting.

TROUBLESHOOTING PROCEDURE 14

SYMPTOM

No image displayed on HMD.

MALFUNCTION

HMD ON/OFF switch in OFF position.

CORRECTIVE ACTION

Check to make sure HMD switch is in the ON position. Turn switch ON and OFF numerous times to see if image returns.

MALFUNCTION

Loose cable or cable connection; bent or missing pins on connector.
Bad LRU.

CORRECTIVE ACTION

STEP 1. Check to see if HMD cable is properly connected to HIA cable.
STEP 2. Check to see if Cables/LRUs have bent or missing pins. If bent or missing pins are found, replace the appropriate cable/LRU.
STEP 3. Check to see if W3/W4 cables are properly connected.
STEP 4. Check to see if W3/W4 cables have bent or missing pins. Replace cables with bent or missing pins.
STEP 5. Refer system to maintenance for further troubleshooting.

TROUBLESHOOTING PROCEDURE 15

SYMPTOM

LW-SI system - system will not power up/turn on.

MALFUNCTION

Battery problems

CORRECTIVE ACTION

STEP 1. Check battery SOCI.
STEP 2. Replace battery with known good battery and attempt to power system on.

MALFUNCTION

Cable/connection problems

CORRECTIVE ACTION

STEP 1. Check for proper connections at both ends of W8 or W9 Cable.
STEP 2. Disconnect battery cable (W8 or W9) at both ends and check for:
    a. Bent or missing pins-replace cables with bent or missing pins.
    b. Foreign matter or debris in connectors-clean as required.
STEP 3. Swap primary battery cable (W8 or W9) to other alternate battery cable (W8 or W9).
STEP 4. Repeat step 2 for replaced cable.
STEP 5. Replace battery with a known good battery.
STEP 6. Refer system to maintenance for further troubleshooting.

TROUBLESHOOTING PROCEDURE 16
  SYMPTOM
  LW-SI system - system will not power down/turn-off.
      MALFUNCTION
      HMD retains latent (ghost) image.
          CORRECTIVE ACTION
          Switch the HMD power button OFF and then ON and see if image is still
          present.
      MALFUNCTION
      Operating system locked or frozen.
          CORRECTIVE ACTION
          STEP 1. Depress power switch on CSS unit for five seconds.
          STEP 2. Disconnect batteries.
          STEP 3. Refer to maintenance for further troubleshooting.

TROUBLESHOOTING PROCEDURE 17
  SYMPTOM
  LW-SI system - system will not PURGE.
      MALFUNCTION
      Bad PURGE button on SCU
          CORRECTIVE ACTION
          STEP 1. Replace SCU.
          STEP 2. Refer system to maintenance for further troubleshooting.

TROUBLESHOOTING PROCEDURE 18
  SYMPTOM
  MFL - cannot submit CFF or SALUTE report or place target marker using input from
  MFL.
      MALFUNCTION
      MFL LASER ranging mode switch in incorrect position.
          CORRECTIVE ACTION
          STEP 1. Make sure the MFL LASER ranging mode switch is placed in the
          RC mode, and then LASE the target again.
          STEP 2. Refer system to maintenance for further troubleshooting.

TROUBLESHOOTING PROCEDURE 19
  SYMPTOM
  MFL features cannot be activated through the WUI.
      MALFUNCTION
      MFL mode switches are OFF.
          CORRECTIVE ACTION
          Make sure the MFL Ranging/Visible LASER IR mode switch is in a
          position other than "OFF" on the MFL display screen and rotary selector
          dial. It is best to place the MFL Ranging/Visible LASER IR mode switch
          into a mode you plan to use.

MALFUNCTION

Loose LW/MFL interface cable or cable connection; bent or missing pins on connector.

CORRECTIVE ACTION

Check the LW/MFL interface cable for proper connection and bent connector pins. If any pins are bent or missing, replace the appropriate cable/LRU.

MALFUNCTION

Loose WUI/DVS interface cable or cable connection; bent or missing pins on connector.

CORRECTIVE ACTION

Check the WUI/DVS interface cable for proper connection and bent connector pins. If any pins are bent/crooked, replace the appropriate cable/LRU (the WUI control certain MFL functionality).

MALFUNCTION

Bad cable or LRU.

CORRECTIVE ACTION

If it has been verified that the MFL works as a stand-alone item, start replacing LRUs and cables above until you find the problem.

TROUBLESHOOTING PROCEDURE 20

SYMPTOM

Mouse - nonfunctional

MALFUNCTION

Operating system locked or frozen.

CORRECTIVE ACTION

STEP 1. Check to see if LW-SI system clock (upper right-hand corner of map screen) is operating. If not operating, proceed to next step. If operating, proceed to STEP 5.

STEP 2. Turn off HMD, and turn it back on.

STEP 3. Disconnect W3/W4 cables and re-connect.

STEP 4. Reboot System

STEP 5. Refer system to maintenance for further troubleshooting.

MALFUNCTION

Bad cables, LRUs, or connections.

CORRECTIVE ACTION
STEP 1. Disconnect HMD from HIA. Check connector pins on cable/LRU for damage.
STEP 2. Disconnect HIA from CSS at QDC point. Check connector pins on cable/LRU for damage.
STEP 3. Disconnect HIA from CSS at the CSS point. Check connector pins on cables/LRU for damage.
STEP 4. Disconnect SCU from CSS. Check connector pins on cable/LRUs for damage.
STEP 5. Reboot and log back into the LW-SI system.
STEP 6. Refer system to maintenance for further troubleshooting.

TROUBLESHOOTING PROCEDURE 21
SYMPTOM
Mouse - sluggish movement on screen.
MALFUNCTION
Operating system busy.
CORRECTIVE ACTION
STEP 1. This symptoms can generally be attributed to the LW-SI being overloaded with commands to process, or the CSS can be overburdened with background operations. Let the LS-SI system catch up to commands inputted (do not input any more commands) and leave the system alone for 2 minutes.
STEP 2. Reboot system
STEP 3. Refer system to maintenance for further troubleshooting.

MALFUNCTION
Bad cables, LRUs, or connections.
CORRECTIVE ACTION
STEP 1. Disconnect HIA from CDD at QDC point. Check connector pins on cable/LRU for damage.
STEP 2. Disconnect SCU from CSS. Check connector pins on cable/LRUs for damage.
STEP 3. Reboot and log back into the LW-SI system.
STEP 4. Refer system to maintenance for further troubleshooting.

TROUBLESHOOTING PROCEDURE 22

SYMPTOM

Position icon - not facing in proper direction on screen.

MALFUNCTION

NSS problem

CORRECTIVE ACTION

STEP 1. Click on the "Navigation" field located at the top center portion of the display screen.

STEP 2. At the "Nav Configuration-Calibration" screen, click on the "Calibrate Compass" button.

STEP 3. At the "Calibrate Compass" screen, read and follow the on-screen instructions and select the "Calibrate Now" button.

STEP 4. The digital compass will now calibrate. When calibration is complete, return to "Map" screen.

STEP 5. Going back to the "Map" screen, your position icon should now be facing in direction you are facing.

TROUBLESHOOTING PROCEDURE 23

SYMPTOM

Radio icon gray. After logging into the LW system, the radio icon is the color gray.

MALFUNCTION

CNRS not properly attached to LW system.

CORRECTIVE ACTION

STEP 1. Verify cable connections to LRUs.

STEP 2. Check to make sure no connector pins in either the cables or LRUs are bent. If any pins are bent, replace the appropriate LRU/cable.

STEP 3. Refer system to maintenance for further troubleshooting.

TROUBLESHOOTING PROCEDURE 24

SYMPTOM

Radio icon red. After logging into the LW system, the radio icon is the color red.

MALFUNCTION

Cryptographic keys not loaded into CNRS or CNRS was zeroized.

CORRECTIVE ACTION

Report condition to maintenance.

TROUBLESHOOTING PROCEDURE 25

SYMPTOM

Radio icon yellow. After logging into the LW system, the radio icon stays the color yellow.

MALFUNCTION

CNRS network has not been established.

CORRECTIVE ACTION

For all applicable LW systems, go to the radio configuration screen (right click (?) on the radio icon), and determine the status of the TMI button. If the button has a black background, the network has not been established by which voice/data communications are possible. Only one LW system needs to left click on the button to start the TMI for all applicable LW systems.

MALFUNCTION

CNRS has not been properly configured.

CORRECTIVE ACTION

This scenario usually involves one or more CNRS radios within the 1.3 km area not having the "TMI" button grayed out when all other local CNRS radios do have their "TMI" button grayed out. In this case, all CNRS(s) with "TMI" buttons not grayed out need to be turned into maintenance to be properly configured.

TROUBLESHOOTING PROCEDURE 26

SYMPTOM

Screen - unable to back out or cancel selection.

MALFUNCTION

Bad Back Out/Cancel button on SCU.

CORRECTIVE ACTION

STEP 1. Verify cables and connection IAW WP 0007.
STEP 2. Replace SCU
STEP 3. Refer system to maintenance for further troubleshooting.

TROUBLESHOOTING PROCEDURE 27

SYMPTOM

TWS image - not feeding to or displaying on HMD.

MALFUNCTION

Bad WUI

CORRECTIVE ACTION

Verify first you can toggle between the GUI, DVS screen, and the TWS screen (this pinpoints early on if the problem might be the WUI itself), regardless if you're not getting a TWS image on the HMD.

MALFUNCTION

Battery not charged sufficiently to operate the TWS.

CORRECTIVE ACTION

Replace or recharge battery.

MALFUNCTION

TWS not configured properly.

CORRECTIVE ACTION

STEP 1. Check the TWS works as a stand-alone item (with the TWS turned on) look through the eyecup and verify the TWS image is present. Be sure the Contrast control on the TWS is adjusted properly (with the contrast turned all the way up, the image can look whited-out).

STEP 2. Refer to Operator Troubleshooting portion of TWS technical manual.

MALFUNCTION

Loose cable or cable connection; bent or missing pins on connector.

CORRECTIVE ACTION

STEP 1. Check the W12 cable for proper connection and bent or missing connector pins. If any pins look bent or missing, replace W12 cable or TRS.

STEP 2. Refer system to maintenance for further troubleshooting.

TROUBLESHOOTING PROCEDURE 28

SYMPTOM

WUI - non-responsive buttons/toggle switch.

MALFUNCTION

Bad WUI

CORRECTIVE ACTION

STEP 1. Replace WUI.

STEP 2. Refer system to maintenance for further troubleshooting.

END OF WORK PACKAGE

CHAPTER 4 - OPERATOR MAINTENANCE INSTRUCTIONS
OPERATOR MAINTENANCE

INITIAL SETUP
   References:
      TM 9-5855-1913-13&P
      TM 11-5855-316-10
      TM 11-5855-317-10

INSPECTION

LW-SI System

Lay out the three major sub-systems (HSS, BSS, and WSS) and first perform a general visual inspection looking for obvious dirt, rips, tears, holes, cuts, abrasions, dents, cracks, leakage, breakage, rust, and or missing components.

Once a general inspection is completed and no deficiencies have been identified, then begin a thorough inspection of each sub-system to include all of its components, cables, connectors, ports, lenses, rubber boots, and seals.

Helmet Subsystem (HSS)

LW-SI ACU Cover. Inspect the cover for soiling, cuts, tears, or holes, and proper fit. Replace if needed.

END OF TASK

HIA.

1.   Inspect the back of the ACH and ensure that the Helmet Interface Assembly (HIA) is present and secure to the ACH.

2.   Inspect the HIA for cracks, dents, or breakage.

3.   Inspect the W4 cable ensuring it is properly connected to the HIA at the 4 o'clock position.

4.   The W4 cable should turn upward in a loop and then turn down and run through the keeper at the 6 o'clock position.

5.   Trace the entire W4 cable, inspecting for cuts, abrasions, and or exposed wiring.

6.   Inspect the W4 cable ensuring it has a shrink wrap label with legible cable identifier and serial numbers.

7.   Inspect the inside of the W4 cable QDC for dirt, mud, or debris. Clean as required.

INSPECTION – Continued

8. Ensure on the outside rim that a red dot guide is present to assist with quick connection of the W3 cable.

9. Inspect the internal pins to ensure they are all present, and not bent or broken.

10. Ensure the retention ring wire on the inside of the connector is present and does not appear damaged in any way.

11. Inspect the W15 cable ensuring it is properly connected to the HIA at the 8 o'clock position.

12. Trace the W15 cable to the QDC of the Head Set and disconnect the W15 cable from the headset cable.

13. Trace the entire W15 cable, inspecting for cuts, abrasions and or exposed wiring.

14. Inspect the W15 cable ensuring it has a shrink wrap label with legible cable identifier and serial numbers.

15. Inspect the face of the connector ensuring the pin guides are present and that there is no dirt, mud, or debris in any of the holes.

16. Ensure, on the outside rim, that a red dot guide is present to assist with quick connection of the cable.

Figure 1. Helmet Interface Assembly (HIA).

END OF TASK

Headset Cable.

1. Inspect the QDC of the cable for dirt, mud, or debris on the inside of the connector.

2. Ensure that a red dot guide is present on the outside rim to assist with quick connection of the W15 cable.

3. Inspect the inside pins, ensuring they are all present, and not bent or broken.

4. Ensure the retention ring wire on the inside of the connector is present and does not appear damaged in any way.

5. Trace the entire headset cable, inspecting for cuts, abrasions, and or exposed wiring.

END OF TASK

INSPECTION – Continued

Peltor Comtac II Headset. If the user has been issued the Peltor headset, inspect for the following:

1. Trace the headset cable to the left ear cup ensuring that it has a shrink wrap label with legible cable identifier and serial numbers and that both numbers are readable.

2. Inspect the Headset for cracks, dents, breakage.

3. Remove battery covers and inspect for serviceable AA batteries.

4. Check for presence of foam covers on noise cancellation sound ports.

5. Check boom mic for obvious damage and ensure it is connected properly.

END OF TASK

QuietPro Headset. If the user has been issued the Quietpro headset, inspect for the following:

1. Check headset assembly for missing cable slider, foam tips, wind protectors, or damaged transducer housing.

2. Check control unit buttons and switches for serviceability.

3. Check control unit housing for dents, cracks, or missing or damaged cable connectors.

4. Check control unit for presence of serviceable batteries and that battery cap is present, secure, and not damaged.

5. Check cables to ensure end connectors are serviceable and that cables are not cut, torn, kinked, or frayed.

END OF TASK

HMD.

1. Inspect the HMD and mount ensuring that the swivel joint has freedom of movement and that it can slide up and down the mounting bracket.

2. Inspect the HMD screen ensuring that it is clean of dirt, mud or debris and that it is not cracked or broken or that it in some way would prevent the operator from viewing clearly.

3. Inspect the eye cup ensuring that it is present, not cut or torn, and that it is free of dirt, mud or debris.

INSPECTION – Continued

4. Inspect the HMD on/off switch ensuring that it has freedom of movement.

5. Trace the cable from the HMD to the 10 o'clock position on the HIA and inspect it for cuts, abrasions and or exposed wiring.

6. Inspect the QDC on the HMD cable ensuring that the face of the plastic pin guide is present and that there is no dirt, mud or debris in any of the holes.

7. Inspect the QDC port on the HIA that the HMD QDC cable connects to and that it is free of dirt, mud or debris and that the pins are not bent, broken or missing.

8. Inspect the ACH ensuring that there are comfort pads present.

9. Inspect the head harness ensuring that it is present, free of dirt, mud or debris.

END OF TASK

Weapon Subsystem (WSS)

DVS.

1. Inspect the DVS surfaces for obvious signs of damage and loose or missing screws.

2. Inspect the DVS ARMS-17 rail attachment device for cracks or broken metal parts that are unserviceable and would prevent a tight attachment to the Rail Assembly System (RAS) on the weapon.

3. Inspect the DVS lenses for cracks or dirt that would block viewing. Check DVS lens protective cover for serviceability.

4. Inspect the four DVS ports for damage to pins or receiver connectors that would prevent the cables being attached properly.

5. Inspect cables W6, W10, W11, and W12 that attach to the DVS for:

   a. Cuts or abrasions in the cables or damage to the connectors.

   b. Check connectors for missing, bent or broken pins.

   c. Check the receiver connections for foreign matter or debris that would prevent a good connection.

INSPECTION – Continued

    d.   Ensure the retention ring wire on the inside of the W6 QDC connector is present and not damaged.

    e.   Check W6 cable outside rim for presence of red dot guide to assist with quick connection of the W6 cable to the W5 cable.

6.   Inspect the Weapon User Interface Device (WUID) for:

    a.   Obvious signs of damage.

    b.   Inspect WUID ARMS-17 rail attachment device for damage that would prevent a tight attachment to the RAS on the weapon.

    c.   Check the RAS attachment mounted on the WUID to ensure the WUID PEG (the forward hand grip) is securely mounted.

    d.   Check rubber covers of operating buttons (located at two different areas on the WUID) for damage.

    e.   Check the single connector of the WUID for bent or broken pins where the W10 cable connects.

7.   Inspect the STORM for serviceability IAW TM 9-5855-1913-13&P. Inspect cable W11 for:

    a.   Cracks, splits, cuts or exposed wiring.

    b.   Cable connector pins to see if they are bent or broken.

    c.   Check W11 cable for presence of shrink wrap identification label. All nomenclature on the label, including serial number, should be legible.

8.   Inspect the Thermal Weapons Sight (TWS) IAW applicableitem TM. Inspect cable W12 for:

    a.   Cuts, tears, or abrasions.

    b.   Check connector ends for bent or broken pins.

    c.   Check cable for presence of shrink wrap identification label. All nomenclature on the label, including serial number, should be legible.

END OF TASK

INSPECTION – Continued

Body Subsystem (BSS)

IOTV. Inspect the IOTV for:

1. Inspect cover for soiling, cuts, tears or holes and proper fit. Also check the webbing, hook and pile fasteners, stitching, snaps and buckles.

2. Check Enhanced Small Arms Protective Insert (ESAPI) plates for damage. Replace if damaged beyond repair.

END OF TASK

Battery. Inspect LI-series battery for:

1. Cracks or damage to the plastic outer housing.

2. Check the four metal electrical contacts on top of battery (used for recharging) for damage or foreign matter.

3. Check battery connector for debris or other foreign matter that would prevent a proper connection with the cable.

4. Check the QDC brass retention ring in the connector port for damage.

5. Check battery SOCI button and display for damage. Test for proper display by depressing SOCI button.

6. Check the battery charge. Recharge as required.

END OF TASK

SCU. Inspect Soldier Control Unit (Figure 2) for:
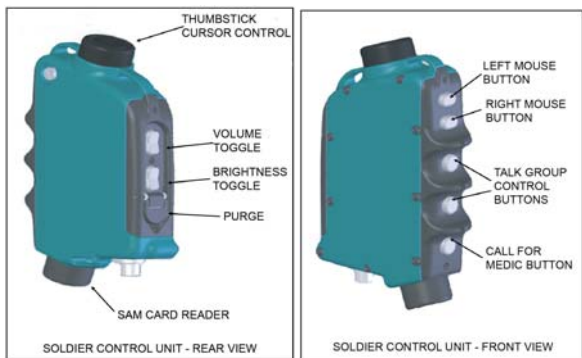
Figure 2. Soldier Control Unit (SCU).

1. Obvious damage, dents or cracks in the housing.

2. Check the connector for damaged threads, debris or foreign matter that would prevent a good connection with cable.

3. Inspect the Curser control button for damage.

4. Inspect the other buttons, the Volume and Brightness control buttons, the Push To Talk buttons and the Call For Medic button and the mouse control buttons. Check that they function properly and the rubber seals are not cut, torn, or missing from over the buttons.

5. Inspect the Purge button and Purge button cover for damage. The cover over the button should be under spring tension to protect the button from being pushed by mistake. Check for any mud or debris that would prevent use.

6. Inspect the SAM card reader and SAM card for any obstruction or damage that would prevent the system from reading the SAM card.

7.   Ensure SAM card is not cracked.

END OF TASK

CSS. Inspect the Computer Subsystem (CSS).

Figure 3. Computer Sub-System (CSS).

1.   Check the CSS for any type of dents or cracks to the housing.

2.   Check the cooling fins on the housing for mud that would produce heat build up.

3.   Check the connectors for dirt or debris that prevent a good connection with cables.

4.   Check the connectors for damage to the threads that would not allow cables to be screwed in.

5.   Check for three protective covers installed on CSS and ensure they are securely fastened and serviceable.

6.   Check to ensure power button is serviceable.

END OF TASK

INSPECTION – Continued

NSS. Inspect the Navigation Subsystem (NSS).

1.   Check the NSS for any type of dents or cracks to the housing.

2.   Check the connection ports for dirt or debris that prevent a good connection with the cables.

3.   Check the connectors for damage to the threads that would not allow cables to be screwed in.

4.   Check for protective cover on the key fill port and ensure it is present and serviceable.

5.   Check the zeroize button on the bottom of the NSS and ensure the spring-loaded protective cover is serviceable.

Figure 4. Navigation Sub-System (NSS).

END OF TASK

INSPECTION – Continued

CNRS. Inspect the Communications Network Radio Subsystem (CNRS).

1. Check the CNRS for dents or cracks to the housing.

2. Check the connectors for damage to the threads that would not allow cables to be screwed in.

3. Check to ensure two screws are in place on the battery compartment cover at the bottom of the unit.

4. The CNRS has three different type connectors. You are checking for broken or bent pins, dirt or mud in the connection holes.

5. Check for presence of protective cover for the J3 connector and ensure it is serviceable.

NOTE

Depressing the two zeroize buttons simultaneously will cause the CNRS cryptographic keys to be erased.

6. Visually inspect the two zeroize buttons adjacent to the connectors for damage to the rubber seals.

Figure 5. Communications Network Radio Sub-System (CNRS).

END OF TASK

INSPECTION – Continued

BSS Cables. Inspect BSS Cables. The BSS has a majority of the cables that are part of the LW-SI. Some cables are interchangeable and some are not. Some of the cables have QDCs and some have screw-in connectors.

1. Trace all cables inspecting for cuts, abrasions, and or exposed wiring.

2. Inspect each cable for presence of shrink wrap label with legible cable identifier and serial number.

3. Inspect inside each connector for:

   a. Presence of dirt, mud, or other debris. Clean as required.

   b. For QDC connectors, check for presence of serviceable wire retention ring.

   c. For QDC type connectors, ensure that a red dot guide is present to assist with quick connection to corresponding connector.

   d. Inspect the internal pins to ensure none are missing, bent, or broken.

Figure 6. Typical System Cables.

END OF TASK

LW-SI CABLE CONFIGURATION

The LW-SI cabling configuration is shown in Figure 7.
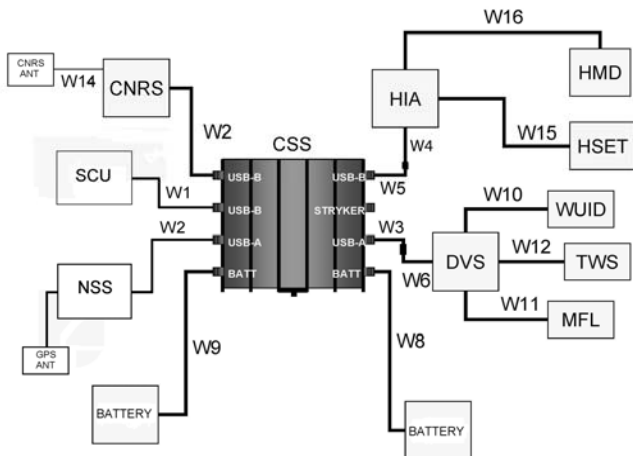
Figure 7. Cable Connections

END OF WORK PACKAGE

OPERATOR MAINTENANCE
PREVENTATIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

INTRODUCTION

General

Preventive maintenance checks and services (PMCS) are performed to keep the LW-SI in operating condition. The checks are used to find, correct, and report problems. The operator is to do the PMCS tasks shown in PMCS Table 1. PMCS is to be done before and after use of the LW-SI.

Before you use the LW-SI, perform PMCS.

After you have used the LW-SI, perform PMCS.

PMCS Column Description

Column (1) ITEM NO. The order the PMCS should be performed.

Column (2) INTERVAL. Tells when the checks should be performed.

Column (3) ITEM TO BE CHECKED OR SERVICED. Tells which items to perform the PMCS procedure on.

Column (4) PROCEDURE. Tells which procedure is to be performed. If item cannot be repaired, it must be replaced.

Column (5) EQUIPMENT NOT READY/AVAQILABLE IF. Tells what conditions render the LW-SI unfit to perform the mission.

Table 1. Preventative Maintenance Checks and Services.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF
			NOTE Minor cracks, dents, rips, tears, cuts, holes, or abrasions that do not affect serviceability of the items are permissible. Missing serial number on serial numbered items found on Before PMCS will not be cause for Equipment not Ready or Available. If found during after PMCS, will be corrected immediately. For inspection and maintenance of the ACH refer to TM 10-8470-204-10.	

Table 1. Preventative Maintenance Checks and Services - Continued.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF
1	Before After	HSS	Perform a general visual inspection of the Helmet Sub-System (HSS) to include the following sub-components: • ACH • HIA • HMD • Head Set • All cables • ACH Cover Check for dirt, mud, rips, tears, holes, cuts, abrasions, dents, cracks, leakage, breakage, rust, exposed wiring present.	Any component is missing or there is dirt, mud, rips, tears, holes, cuts, abrasions, dents, cracks, leakage, breakage, rust, exposed wiring present.
2	Before After	BSS	Perform a general visual inspection of the Body Sub-System (BSS) to include the following components: • Battery	

Table 1. Preventative Maintenance Checks and Services - Continued.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF
			• CNRS • NSS • GPS Antenna • CSS • SCU • All cables • All component mounting points • Backplate mounting assembly • IOTV Check for dirt, mud, rips, tears, holes, cuts, abrasions, dents, cracks, leakage, breakage, rust, exposed wiring present.	Dirt, cuts, tears, holes, abrasions, dents, cracks, leakage, breakage, or rust is present, or any of the required or mandatory components are missing.

Table 1. Preventative Maintenance Checks and Services - Continued.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF
3	Before After	WSS	Perform a general visual inspection of the Weapon Sub-System (WSS) to include components or applicable sub-components: • DVS • WUID • All cables	Dirt, cuts, tears, holes, abrasions, dents, crack, leakage, breakage, or rust is present, or any of the applicable components are missing.
4	Before After	ACH Exterior	Visually inspect the ACH to ensure LW-SI components are securely mounted.	LW-SI components are loose or not securely mounted to ACH.
5	Before After	Cover	Visually inspect the LW-SI ACH cover to ensure the hook and pile flaps are serviceable and secure and the cover is free from mud, dirt, cuts, tears, holes, abrasions.	Hook and pile flaps fail to secure cover to the ACH and/or mud, dirt, cuts, tears, holes, or abrasions are present.
6	Before After	HIA	1. Visually inspect the back of the ACH and ensure the HIA is present and secure. 2. Visually inspect the HIA for cracks, dents or breakage.	1. The HIA is missing or loose. 2. The HIA has cracks, dents or breakage.

Table 1. Preventative Maintenance Checks and Services - Continued.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF
7	Before After	W4 Cable	1. Visually inspect the W4 cable, ensuring it is properly connected to the HIA at the 4 o'clock position.	1. The W4 cable is not properly connected to the HIA at the 4 o'clock position.
			2. The W4 cable should turn upward in a loop and then turn down and run through the keeper at the 6 o'clock position.	2. The W4 cable does not turn upward in a loop and the turns down running through the keeper at the 6 o'clock position.
			3. Trace the W4 cable, inspecting for cuts, abrasions and/or exposed wiring.	3. The W4 cable has cuts, abrasions or exposed wiring.
			4. Visually inspect the W4 cable ensuring it has shrink wrap labels with legible cable identifier number and serial number.	4. The W4 cable is missing identification label or identification or serial number are not legible.
			5. Visually inspect the Quick Disconnect Connector (QDC) for dirt, mud or debris inside the connector.	5. Dirt, mud or debris is present inside the QDC.

Table 1. Preventative Maintenance Checks and Services - Continued.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF
			6. Ensure a red dot guide is present on the outer side rim of the QDC to assist with quick connection of the W3 cable.	6. A red dot guide is not present on the outer side of the QDC.
			7. Visually inspect the male connector pins ensuring they are all present, not bent or broken.	7. Any or all of the pins on the inside of the QDC are not present, or are bent or broken.
			8. Ensure wire retention ring inside rim of connector is present and undamaged.	8. The retention ring wire appears damaged or missing.
8	Before After	W15 Cable	1. Visually inspect the W15 cable ensuring it is properly connected to the HIA at the 8 o'clock position.	1. The W15 cable is not properly connected to the HIA and in the 8 o'clock position.
			2. Trace the W15 cable to the QDC of the head set and disconnect the W15 cable. Trace the entire W15 cable, inspecting for cuts, abrasions and/or exposed wiring.	2. The W15 cable has cuts, abrasions or exposed wiring present.

Table 1. Preventative Maintenance Checks and Services - Continued.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF
			3. Visually inspect the W15 cable ensuring it has a shrink wrap label with a legible cable identifying number and serial number.	3. The W15 cable does not have a shrink label and/or an identifying number/serial number that are present and legible.
			4. Visually inspect the female connector ensuring the plastic pin guide is present and there is no dirt, mud or debris in any of the holes.	4. The plastic pin guide is not present or there is mud, dirt or debris in any of the guide holes.
			5. On the outer side rim ensure a red dot guide is present on the headset QDC to assist with quick connection of the W15 cable.	5. A red dot guide is not present on the outer side of the Peltor® cable QDC.
9	Before After	Peltor® Head Set	1. Visually inspect the male pin connectors of the QDC of the headset cable for dirt, mud or debris.	1. Dirt, mud or debris on male pin connectors.
			2. Visually inspect the pins inside QDC connector ensuring they are all present, not bent or broken.	2. Any or all of the pins are missing, bent or broken.

Table 1. Preventative Maintenance Checks and Services - Continued.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF
			3. Ensure the retention ring wire inside of the QDC connector is present and does not appear damaged.	3. The retention ring wire appears damaged or is missing.
			4. Trace the Peltor® cable, inspecting for cuts, abrasions and/or exposed wiring.	4. The Peltor® cable has cuts, abrasions or exposed wiring present.
			5. Trace the Peltor® cable to the left ear cup ensuring it has a serviceable shrink wrap label with legible cable identification and serial numbers.	5. Data label is missing or identification or serial numbers are not legible.
			6. Visually inspect the Peltor® Headset for cracks, dents, breakage.	6. The Peltor® Headset has cracks, dents, and/or breakage.
			7. Visually inspect the soft vinyl ear cups for tears and deterioration.	7. Either ear cup has tears or deterioration.
			8. Visually inspect all hinge brackets ensuring there are no cracks, dents, or breakage.	8. Any hinge bracket has a crack/cracks, dents, or breakage.
			9. Visually inspect the ambient noise	9. Either ambient noise

Table 1. Preventative Maintenance Checks and Services - Continued.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF
			mic on each ear cup to ensure black soft foam cover is not missing or torn.	mic cover is missing or torn.
			10. Open and inspect the battery port on each ear cup ensuring a serviceable AA battery is present.	10. Serviceable AA battery is not present inside either ear cup battery housing.
			11. Place the Peltor® Headset over your ears and press and hold the external power button on the left ear cup and listen for the "On" tone. If no "On" tone is heard, replace the AA batteries and check again.	11. There is no "On Tone".
			12. Visually inspect the boom mic ensuring a soft foam cover is present over the mic.	12. No soft cover is present over the mic.
			13. Inspect to make sure the boom swivels and hinge are not cracked or broken.	13. The boom does not swivel or the hinge is cracked or broken.

Table 1. Preventative Maintenance Checks and Services - Continued.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF
			14. Trace and inspect the cabling on the boom and the cabling that runs from the hinge to the back of the left ear cup. Visually inspect for cuts, abrasions and/or exposed wiring.	14. Cuts, abrasions or exposed wiring are present on any of the cabling running from the hinge to the ear cup.
			15. Flex the Peltor® Headset ensuring it does provide tension.	15. The Peltor® Headset does not provide tension.
			16. Visually inspect the right ear cup ensuring is has both a "General Dynamics" and a "Peltor" label depicting model and serial numbers.	16. No "GD" and/or Peltor label with model and serial numbers is present.
10	Before After	QuietPro® Headset	1. Visually inspect the male pin connectors of the QDC of the headset cable for dirt, mud or debris.	1. Dirt, mud or debris on male pin connectors.
			2. Visually inspect the pins inside QDC connector ensuring they are all present, not bent or broken.	2. Any or all of the pins are missing, bent or broken.

Table 1. Preventative Maintenance Checks and Services - Continued.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF
			3. Ensure the retention ring wire inside of the QDC connector is present and does not appear damaged.	3. The retention ring wire appears damaged or is missing.
			4. Trace the QuietPro® cable, inspecting for cuts, abrasions and/or exposed wiring.	4. The QuietPro® cable has cuts, abrasions or exposed wiring present.
			5. Check headset assembly for missing slider, foam tips, or wind protectors; damaged transducer housing; kinked, cut, or frayed cables.	5. Slider, foam tips or wind protectors are missing; transducer housing is damaged, cables are cut, kinked or frayed.
			6. Check control unit buttons and switches for serviceability.	6. Buttons or switches are broken, missing or damaged.
			7. Check control unit housing for obvious damage or missing or broken cable connectors.	7. Housing is damaged or cable connectors are missing or damaged.
			8. Check control unit for presence of	8. Battery is missing or

Table 1. Preventative Maintenance Checks and Services - Continued.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF
			serviceable battery and that battery cap is present and not damaged.	discharged, or battery cap is missing or damaged.
			9. Check cables to ensure end connectors are not damaged and that cables are not cut, torn, kinked, or frayed.	9. Connectors are damaged or cable is cut, torn, kinked, or frayed.
10	Before After	HMD	1. Visually inspect the HMD and mount ensuring the swivel joint has freedom of movement and it can slide up and down the mounting bracket.	1. The HMD does not have freedom of movement or is not able to slide up and down.
			2. Visually inspect the HMD screen ensuring it is free of dirt, mud, smudges; and is not cracked or broken obscuring the users view of the display image.	2. Dirt, mud, smudges, or a cracked or broken screen obscures view of display image through HMD.
			3. Visually inspect the eye cup ensuring it is present, not cut or torn, and is free of dirt, mud or debris.	3. The eye cup is cut or torn, missing, or mud, dirt or debris is present.

Table 1. Preventative Maintenance Checks and Services - Continued.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF
			4. Visually inspect the HMD on/off switch ensuring it has freedom of movement.	4. The HMD on/off switch does not have freedom of movement or proper function.
			5. Trace the cable from the HMD to the 10 o'clock position on the HIA and inspect it for cuts, abrasions and/or exposed wiring.	5. The cable from the HMD to the HIA has cuts, abrasions or exposed wiring.
			6. Visually inspect the QDC on the HMD cable ensuring the face of the plastic pin guide is present and there is no dirt, mud or debris in any of the holes.	6. The plastic pin guide is not present or there is mud, dirt or debris in any of the guide holes.
			7. Visually inspect the QDC port on the HIA the HMD QDC cable connects to and ensure it is free of dirt, mud or debris and the pins are not bent, broken, or missing. Ensure retention wire is present and undamaged.	7. The QDC port has dirt, mud or debris and/or any or all of the pins on the inside of the QDC are not present, or are bent or broken. Retention wire is missing or damaged.

Table 1. Preventative Maintenance Checks and Services - Continued.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF
11	Before After	Component General Inspection	Inspection to ensure each component, is present, properly stowed and/or attached or placed correctly on the IOTV and no holes, cuts, abrasions, dents, cracks, leakage, breakage and rust is present and/or all components are present: • Battery • CNRS • CNRS Antenna • NSS • GPS Antenna • CSS • SCU	Any component, battery, CNRS, NSS, CSS, SCU, or antenna is not properly attached/secured to IOTV and/or holes, cuts, abrasions, dents, cracks, leakage, breakage or rust are present.
12	Before After	CSS Cable General Inspection	Inspect to ensure the CSS has the following cables present, a serial number shrink wrap label is present and is correctly numbered, and each cable is properly attached to the CSS. Refer to Figure 1 for proper cable connections/configuration.	Any cable is missing; serial number shrink wrap label with serial number is missing, or is incorrectly numbered or not properly attached.

Table 1. Preventative Maintenance Checks and Services - Continued.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF
13	Before After	W2 Cable CSS to CNRS Radio	1. Visually inspect and trace the W2 cable from the CSS (USB-B) to CNRS. Ensure a shrink wrap label with identification and serial number is present and no cuts, abrasions, or exposed wiring are present.	1. Label is missing, identification or serial number are not legible, cuts, abrasions or exposed wiring are present.
			2. Visually inspect and trace the W2 to where it is attached to the CNRS to ensure a shrink wrap label with legible serial number is present and no cuts, abrasions or exposed wiring are present and cable is properly attached to the CNRS.	2. Label is missing or serial number is not legible, cable not properly connected, or cuts, abrasions or exposed wiring are present.
14	Before After	W1 Cable CSS to SCU	1. Visually inspect and trace the W1 cable at the USB-B port of the CSS to ensure a shrink wrap label with legible identification and serial number is present, cable is connected properly, and no cuts, abrasions or exposed wiring are present.	1. Label is missing or identification or serial number are not legible, cable not connected properly, or cuts, abrasions or exposed wiring are present.

Table 1. Preventative Maintenance Checks and Services - Continued.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF
			2. Visually inspect and trace the W1 to where it is attached to the SCU and ensure it is properly connected, ensure a shrink wrap label with legible identification and serial number is present, and no cuts, abrasions or exposed wiring are present.	2. Label is missing or identification or serial number are not legible, cable not connected properly, or cuts, abrasions or exposed wiring are present.
15	Before After	W9 Cable CSS to Battery	1. Visually inspect and trace the W9 cable at the BATT port of the CSS to ensure a shrink wrap label with legible identification and serial number is present, cable is connected properly, and no cuts, abrasions or exposed wiring are present.	1. Label is missing or identification or serial number are not legible, cable not connected properly, or cuts, abrasions or exposed wiring are present.
			2. Visually inspect and trace the W9 to where it is attached to the battery and ensure it is properly connected, ensure a shrink wrap label with legible identification and serial number is present, and no cuts, abrasions or exposed wiring are	2. Label is missing or identification or serial number are not legible, cable not connected properly, or cuts, abrasions or exposed wiring are present.

Table 1. Preventative Maintenance Checks and Services - Continued.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF
			present.	
16	Before After	W5 Cable CSS to HIA	1. Visually inspect and trace the W5 cable at the USB-B port of the CSS to ensure a shrink wrap label with legible identification and serial number is present, cable is connected properly, and no cuts, abrasions or exposed wiring are present.	1. Label is missing or identification or serial number are not legible, cable not connected properly, or cuts, abrasions or exposed wiring are present.
			2. Visually inspect and trace the W5 to where it is attached to the QDC of the W4 cable to ensure it is properly connected, ensure a shrink wrap label with legible identification and serial number is present, and no cuts, abrasions or exposed wiring are present.	2. Label is missing or identification or serial number are not legible, cable not connected properly, or cuts, abrasions or exposed wiring are present.
17	Before After	W3/W6 Cable CSS to WSS	Visually inspect and trace the W3/W6 cables from the USB-B port of the CSS to where it attaches to the DVS on the weapons system to ensure a shrink wrap label with	Label is missing or identification or serial number are not legible, cable not connected properly, or cuts,

Table 1. Preventative Maintenance Checks and Services - Continued.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF
			identification and serial number is present and no cuts, abrasions or exposed wiring are present.	abrasions or exposed wiring are present.
18	Before After	W8 Cable CSS to Battery	1. Visually inspect and trace the W8 cable at the BATT port of the CSS to ensure it is properly connected, a shrink wrap label with identification and serial number is present, and no cuts, abrasions or exposed wiring are present.	1. Label is missing or identification or serial number are not legible, cable not connected properly, or cuts, abrasions or exposed wiring are present.
			2. Visually inspect and trace the W8 cable to the battery to ensure it is properly connected to the battery, a shrink wrap label with legible identification and serial number is present, and no cuts, abrasions or exposed wiring are present.	2. Label is missing or identification or serial number are not legible, cable not connected properly, or cuts, abrasions or exposed wiring are present.
19	Before After	W2 Cable CSS to NSS	1. Visually inspect and trace the W2 cable at the USB-B port of the CSS to ensure it is properly connected, a shrink wrap label with legible identification and serial number is	1. Label is missing or identification or serial number are not legible, cable not connected properly, or cuts,

Table 1. Preventative Maintenance Checks and Services - Continued.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF
			present, and no cuts, abrasions or exposed wiring are present.	abrasions or exposed wiring are present.
			2. Visually inspect and trace the W2 cable to the NSS to ensure it is properly connected, a shrink wrap label with legible identification and serial number is present, and no cuts, abrasions or exposed wiring are present.	2. Label is missing or identification or serial number are not legible, cable not connected properly, or cuts, abrasions or exposed wiring are present.
20	Before After	GPS Cable NSS to GPS Antenna.	1. Visually inspect and trace the GPS cable from its point of attachment to ensure no cuts, abrasions or exposed wiring are present.	1. Not properly attached and cuts, abrasions or exposed wiring are present.
			2. Visually inspect and trace the GPS cable to where it is attached to the GPS antenna to ensure there are no cuts, abrasions or exposed wiring present and the GPS cable is properly attached to the GPS antenna.	2. Cuts, abrasions or exposed wiring are present or the GPS cable is not properly attached to the GPS antenna.

Table 1. Preventative Maintenance Checks and Services - Continued.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF
21	Before After	GPS Antenna	Visually inspect the GPS Antenna to insure it is properly stowed with the smooth side down and is free of all holes, cracks, dents, punctures, abrasions, mud, dirt or deformities.	The smooth side is up, or there are holes, cracks, dents, punctures, abrasions, mud, dirt or deformities.
22	Before After	LI145 Battery	Visually inspect the LI145 battery by pressing the SOCI button to ensure there is a sufficient charge reflected on the visual indicator.	Battery not fully charged.
23	Before After	CNRS	Visually inspect the CNRS radio to ensure there are no holes, cracks, dents, punctures, abrasions, mud, dirt or deformities.	There are holes, cracks, dents, punctures, abrasions, mud, dirt or deformities.
24	Before After	CNRS Antenna	Visually inspect the CNRS Antenna to ensure the antenna is properly attached and there is no evidence of damage	Antenna is not attached to the CNRS or there is visible damage to the antenna.
25	Before After	W14 Cable CNRS to CNRS Antenna	Visually inspect and trace the W14 cable from the CNRS to the CNRS antenna and ensure it is properly connected, a shrink wrap label with	Cuts, abrasions or exposed wiring are present or the W14 cable is not properly

Table 1. Preventative Maintenance Checks and Services - Continued.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF
			legible identification and serial number is present, and no cuts, abrasions or exposed wiring are present.	attached to the CNRS or CNRS antenna.
26	Before After	DVS	1. Visually inspect the DVS surfaces for signs of damage or missing parts. Check to ensure all screws are present and not loose.	1. Damage is visible or screws are missing or not tight.
			2. Visually inspect the W=DVS rail grabber attachment device for cracks or broken/unserviceable metal parts that would prevent a tight attachment to the Rail Assembly System (RAS) on the weapon.	2. Cracks or broken metal parts are visible or the RAS does not fit tight on the weapon.
			3. Visually inspect both camera lenses for cracks or dirt that would block viewing.	3. There are cracks in the lenses or dirt obscures the camera's ability to view clearly.
			4. Check DVS lens protective cover is present and serviceable.	4. The DVS lens cover is not present or appears unserviceable.

Table 1. Preventative Maintenance Checks and Services - Continued.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF
			5. Visually inspect the four DVS connection ports if a cable is not attached for dirt, mud or debris and visible damage to pins or receiver connectors that would prevent the cables being attached properly or where applicable, inspect to ensure the W6, W10, W11, and W12 cables are all properly attached and a shrink wrap label with serial number is present on each cable.	5. Any of the four ports has dirt, mud, debris or other damage, labels missing or not legible.
27	Before After	W6 Cable DVS to QDC W3 CSS	1. Visually inspect and trace the W6 cable from the DVS USB port to the QDC of the W3 cable to ensure a shrink wrap label with legible identification and serial numbers is present, and no cuts, abrasions, or exposed wiring are present.	1. Label is missing or identification or serial number are not legible, cable not connected properly, or cuts, abrasions or exposed wiring are present.
			2. If applicable and the W6 cable is not connected to the W3 cable, ensure the retention ring wire on the inside of the W6 QDC connector is	2. The retention ring wire on the inside of the W6 QDC connector is missing or damaged.

Table 1. Preventative Maintenance Checks and Services - Continued.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF
			present and is not damaged.	
			3. Visually inspect the W6 QDC port for debris that would prevent a good connection.	3. Debris is present in the W6 QDC port.
			4. Visually inspect on the outside rim of the W6 QDC to ensure a red dot guide is present to assist with quick connection of the W6 cable to the W3 cable.	4. Red dot guide is missing.
28	Before After	W10 DVS WUI port to WUID	Trace the W10 cable from the point of attachment WUI port of the DVS to where it connects to the port on the WUI to ensure a shrink wrap label with legible identification and serial numbers are present, and no cuts, abrasions, or exposed wiring are present.	Label is missing or identification or serial number are not legible, cable not connected properly, or cuts, abrasions or exposed wiring are present.
29	Before After	W11 DVS MFL port to STORM (MFL)	If applicable; trace the W11 cable from the point of attachment MFL port of the DVS to where it connects to the STORM MFL to ensure a	Label is missing or identification or serial number are not legible, cable not connected

Table 1. Preventative Maintenance Checks and Services - Continued.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF
			shrink wrap label with legible identification and serial number is present, and no cuts, abrasions, or exposed wiring is present.	properly, or cuts, abrasions or exposed wiring are present.
30	Before After	W12 DVS TWS port to TWS	If applicable; trace the W12 cable from the point of attachment TWS port of the DVS to where it connects to the TWS to ensure a shrink wrap label with legible identification and serial number is present and no cuts, abrasions, or exposed wiring is present.	Label is missing or identification or serial number are not legible, cable not connected properly, or cuts, abrasions or exposed wiring are present.
31	Before After	WUID	Visually inspect the WUID to ensure there are no holes, cuts, abrasions, dents, cracks, leakage, breakage or rust and all buttons have no tears or visible damage.	Holes, cuts, abrasions, dents, cracks, leakage, breakage and rust are present.
32	Before After	WUID Rail Grabber	Visually inspect the WUID Rail Grabber rail attachment device for damage that would prevent a tight attachment to the RAS on the	Damage that would prevent a secure attachment.

Table 1. Preventative Maintenance Checks and Services - Continued.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF
			weapon.	
33	Before After	RAS Attachment	Check the RAS attachment mounted on the WUID for the mounting of the WUID PEG (the forward hand grip). Ensure it is securely mounted.	Any damage that prevents mounting of the WUID peg.
34	Before After	WUID Buttons	Check for any damage of the operating buttons located at two different areas on the WUID.	Cuts, tears or absence of the rubber button that prevents function.
35	Before After	IOTV and Backplate	Check for damage caused by small arms fire or fragments. Check for tears or holes in outer cover. Ensure the vest is not bunched or has lumps that cannot be flattened. Ensure hook and pile fasteners are serviceable and that webbing is not torn or damaged beyond repair.	Damage from small arms fire or fragments, tears or holes in outer cover, vest is bunched or has lumps that cannot be flattened, hook and pile fasteners damaged or worn, webbing is torn beyond repair.
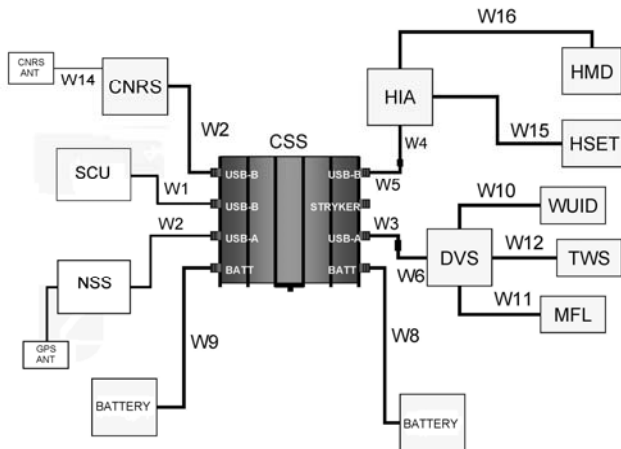
Figure 1. LW-SI Cable Connections.

Upon completing the initial inspection of the ensemble, attach the CNRS to the IOTV backboard and attach the antenna cable.

END OF WORK PACKAGE

CHAPTER 5 - SUPPORTING INFORMATION
REFERENCES

GENERAL

This work package lists related field manuals, forms, technical manuals, and miscellaneous publications.

Army Regulations
AR 700-138   Army Logistics Readiness and Sustainability

DA Pamphlets
DA PAM 750-8   The Army Maintenance Management System (TAMMS) Users Manual
DA PAM 738-751   Army Logistics Readiness and Sustainability

Field Manuals
FM 4-25.11   First Aid Information

Forms
SF 368   Product Quality Deficiency Report

Miscellaneous Pubs
SDRL C174   LW-SI Operator Guide

Technical Manuals
TM 9-5855-1913-13&P   Operator and Unit Maintenance Manual including Repair Parts and Special Tools Listing for the Illuminator, Integrated, Small Arms (STORM) AN/PSQ-23
TM 9-5855-1915-13&P   Operator and Field Maintenance Manual including Repair Parts and Special Tools Listing (RPSTL) for the Target Pointer Illuminator Aiming Light (TPIAL), AN/PEQ-2A, AN/PEQ-2B
TM 9-5860-226-13&P   Operator and Field Maintenance Manual including Repair Parts and Special Tools Listing (RPSTL) for the AN/PEM-1 LASER Borelight System (LBS-300-A2)
TM 10-8470-204-10   Operator's Manual for Advanced Combat Helmet (ACH)
TM 11-5855-301-12&P   Operator and Unit Maintenance including Repair Parts and Special Tools Listing (RPSTL) for the Light, Aiming, Infrared, AN/PAQ-4C
TM 11-5855-306-10   Operator Manual, Monocular Night Division Device MNVD), AN/PVS-14
TM 11-5855-316-10   Operator's Manual for Sight, Thermal, AN/PAS-13C
TM 11-5855-317-10   Operator's Manual for Sight, Thermal, AN/PAS-13D

END OF WORK PACKAGE

COMPONENTS OF END ITEM (COEI) AND BASIC ISSUE ITEMS (BII) LISTS

SCOPE

This work package lists COEI and BII for the LW-SI to help you inventory items for safe and efficient operation of the equipment.

GENERAL

The COEI and BII information is divided into the following lists:

Components of End Item (COEI). This list is for information purposes only and is not authority to requisition replacements. These items are part of the LW-SI. As part of the end item, these items must be with the end item whenever it is issued or transferred between property accounts. Items of COEI are removed and separately packaged for transportation or shipment only when necessary.

Basic Issue Items (BII). These essential items are required to place the LW-SI in operation, operate it and to do emergency repairs. Although shipped separately packaged, BII must be with the LW-SI during operation and when it is transferred between property accounts. Listing these items is your authority to request/requisition them for replacement based on authorization of the end item by the TOE/MTOE.

Explanation of Columns in the COEI List and BII List

Column (1) Illus Number. Gives you the number of the item illustrated.

Column (2) National Stock Number (NSN). Identifies the stock number of the item to be used for requisitioning purposes.

Column (3) Description, CAGEC, and Part Number. Identifies the Federal item name (in all capital letters) followed by a minimum description when needed. The stowage location of COEI and BII is also included in this column. The last line below the description is the part number and the Commercial and Government Entity Code (CAGEC) (in parentheses).

GENERAL - Continued

Column (4) Usable On Code. When applicable, gives you a code if the item you need is not the same for different models of equipment.

Column (5) Unit of Issue (U/I). Indicates the physical measurement or count of the item as issued per the National Stock Number shown in column (2).

Column (6) Qty Rqr. Indicates the quantity required.

Table 1. Components of End Item List (COEI).

(1) Illus Number	(2) National Stock Number (NSN)	(3) Description, Part Number/(CAGEC)	(4) Usable on Code	(5) U/I	(6) Qty Rqr
1	N/A	ANTENNA, GPS AT275-960-BTNCM-036-03-24-NM (0UVG2) 	N/A	EA	1
2	5985-01-542-5580	ANTENNA, CNRS G420-TN (65451) 	N/A	EA	1
3	N/A	ASSEMBLY, HELMET INTERFACE (HIA), WITH STRAPS AND W16 CABLE 01-P54127D002 (1VPW8) 	N/A	EA	1

Table 1. Components of End Item List (COEI) - Continued.

(1) Illus Number	(2) National Stock Number (NSN)	(3) Description, Part Number/(CAGEC)	(4) Usable on Code	(5) U/I	(6) Qty Rqr
4	N/A	BACKPLATE ASSEMBLY LOCAL MANUFACTURE	N/A	EA	1
5	6140-01-542-4380	BATTERY, RECHARGEABLE, LI145 UBBL06 (0UU59)	N/A	EA	2

Table 1. Components of End Item List (COEI) - Continued.

(1) Illus Number	(2) National Stock Number (NSN)	(3) Description, Part Number/(CAGEC)	(4) Usable on Code	(5) U/I	(6) Qty Rqr
6	N/A	CABLE, W1 P53996D001 (24600) 	N/A	EA	1
7	N/A	CABLE, W2 P53996D002 (24600) 	N/A	EA	2

Table 1. Components of End Item List (COEI) - Continued.

(1) Illus Number	(2) National Stock Number (NSN)	(3) Description, Part Number/(CAGEC)	(4) Usable on Code	(5) U/I	(6) Qty Rqr
8	N/A	CABLE, W3 P53997D001 (24600)	N/A	EA	1
9	N/A	CABLE, W4 P53998D001 (24600)	N/A	EA	1

Table 1. Components of End Item List (COEI) - Continued.

(1)	(2)	(3)	(4)	(5)	(6)
Illus Number	National Stock Number (NSN)	Description, Part Number/(CAGEC)	Usable on Code	U/I	Qty Rqr
10	N/A	CABLE, W5 P53997D002 (24600)	N/A	EA	1
11	N/A	CABLE, W6 P53999D001 (24600)	N/A	EA	1

Table 1. Components of End Item List (COEI) - Continued.

(1) Illus Number	(2) National Stock Number (NSN)	(3) Description, Part Number/(CAGEC)	(4) Usable on Code	(5) U/I	(6) Qty Rqr
12	N/A	CABLE, W8 P54100D001 (24600)	N/A	EA	1
13	N/A	CABLE, W9 P54100D002 (24600)	N/A	EA	1

Table 1. Components of End Item List (COEI) - Continued.

(1) Illus Number	(2) National Stock Number (NSN)	(3) Description, Part Number/(CAGEC)	(4) Usable on Code	(5) U/I	(6) Qty Rqr
14	N/A	CABLE, W10 P53996D003 (24600)	N/A	EA	1
15	N/A	CABLE, W11 P53996D004 (24600)	N/A	EA	1

Table 1. Components of End Item List (COEI) - Continued.

(1) Illus Number	(2) National Stock Number (NSN)	(3) Description, Part Number/(CAGEC)	(4) Usable on Code	(5) U/I	(6) Qty Rqr
16	N/A	CABLE, W12 P54101D001 (67720) 	N/A	EA	1
17	N/A	CABLE, W14 P54051D001 (1VPW8) 	N/A	EA	1

Table 1. Components of End Item List (COEI) - Continued.

(1)	(2)	(3)	(4)	(5)	(6)
Illus Number	National Stock Number (NSN)	Description, Part Number/(CAGEC)	Usable on Code	U/I	Qty Rqr
18	N/A	CABLE, W15 010-21071-05030-02 (24600)	N/A	EA	1
19	N/A	COVER, HELMET, LW-SI LW007-4 (1GAN3)	N/A	EA	1

Table 1. Components of End Item List (COEI) - Continued.

(1) Illus Number	(2) National Stock Number (NSN)	(3) Description, Part Number/(CAGEC)	(4) Usable on Code	(5) U/I	(6) Qty Rqr
20	N/A	INPUT DEVICE, USER, WEAPON (WUID) 01-P54040D001 (1VPW8) 	N/A	EA	1
21	N/A	DISPLAY, HELMET MOUNTED 01-P54032D001 (1VPW8) 	N/A	EA	1

Table 1. Components of End Item List (COEI) - Continued.

(1) Illus Number	(2) National Stock Number (NSN)	(3) Description, Part Number/(CAGEC)	(4) Usable on Code	(5) U/I	(6) Qty Rqr
22		**NOTE** For accountability purposes, soldiers will be issued only ONE headset and will choose between either the COMTAC II or QuietPro™ headset.			
	N/A	HEADSET, COMTAC II 50-P54050D001 (1VPW8) OR	N/A	EA	1

Table 1. Components of End Item List (COEI) - Continued.

(1) Illus Number	(2) National Stock Number (NSN)	(3) Description, Part Number/(CAGEC)	(4) Usable on Code	(5) U/I	(6) Qty Rqr
	5965-25-152-5389	HEADSET, QUIETPRO K-D2203 (N4380)	N/A	EA	1
23	5820-01-541-3711	RECEIVER-TRANSMITTER, RADIO (RT-1922(C)/G) (CNRS) 613879-100 (1L3B8)	N/A	EA	1

Table 1. Components of End Item List (COEI) - Continued.

(1) Illus Number	(2) National Stock Number (NSN)	(3) Description, Part Number/(CAGEC)	(4) Usable on Code	(5) U/I	(6) Qty Rqr
24	N/A	SIGHT, DAYLIGHT VIDEO (DVS) 01-P54045D001 (1VPW8)	N/A	EA	1
25	N/A	SUBSYSTEM, COMPUTER (CSS) 01-P54042D001 (1VPW8)	N/A	EA	1

Table 1. Components of End Item List (COEI) - Continued.

(1) Illus Number	(2) National Stock Number (NSN)	(3) Description, Part Number/(CAGEC)	(4) Usable on Code	(5) U/I	(6) Qty Rqr
26	N/A 	SUBSYSTEM, NAVIGATION (NSS) 01-P54043D001 (1VPW8)	N/A	EA	1
27	N/A 	UNIT, SOLDIER CONTROL (SCU) 01-P54044D001 (1VPW8)	N/A	EA	1

Table 2. Basic Issue Items List (BII).

Table 2. Basic Issue Items List (BII).

(1) Illus Number	(2) National Stock Number	(3) Description, Part Number/(CAGEC)	(4) Usable on Code	(5) U/I	(6) Qty Rqr
1	N/A	TM 10-5895-1860-10, TECHNICAL MANUAL, OPERATOR'S MANUAL, LAND WARRIOR - STRYKER INTEROPERABLE (LW-SI)	N/A	EA	1

END OF WORK PACKAGE

ADDITIONAL AUTHORIZATION LIST

INTRODUCTION

Scope

This work package lists additional items you are authorized for the support of the LW-SI.

General

This list identifies items that do not have to accompany the LW-SI and that do not have to be turned in with it. These items are all authorized to you by CTA, MTOE, TDA, or JTA.

Explanation of Columns in the AAL

Column (1) National Stock Number (NSN). Identifies the stock number of the item to be used for requisitioning purposes.

Column (2) Description, Part Number/(CAGEC). Identifies the Federal item name (in all capital letters) followed by a minimum description when needed. The last line below the description is the part number and the Commercial and Government Entity Code (CAGEC) (in parentheses).

Column (3) Usable On Code. When applicable, gives you a code if the item you need is not the same for different models of equipment.

Column (4) U/I. Unit of Issue (U/I) indicates the physical measurement or count of the item as issued per the National Stock Number shown in column (1).

Column (5) Qty Recm. Indicates the quantity recommended.

Table 1. Additional Authorization List.

(1) National Stock Number (NSN)	(2) Description, Part No/(CAGEC)	(3) Usable On Code	(4) U/I	(5) Qty Recom
5855-01-361-1362	AIMING LIGHT, INFRARED, AN/PAQ-4B/(80063)	N/A	EA	1
1005-01-452-3527	ADAPTER, RAIL, WEAPON MOUNTED, M4 12973095/(19200)	N/A	EA	1

Table 1. Additional Authorization List - Continued

(1) National Stock Number (NSN)	(2) Description, Part No/(CAGEC)	(3) Usable On Code	(4) U/I	(5) Qty Recom
1005-01-452-6771	ADAPTOR RAIL, WEAPON MOUNTED, M5 12973020/(19200)	N/A	EA	1
5860-01-471-2091	BORESIGHT SYSTEM, LA LBS-300-A2/(0B107)	N/A	EA	1
6130-01-545-1981	CHARGER, BATTERY, 12-BAY CH0012/(0UU59)	N/A	EA	1
5855-01-432-0524	DEVICE, NIGHT VISION, AN/PVS-14 A3256337/(80063)	N/A	EA	1
	EPLRS NETWORK MANAGER (ENM)	N/A	EA	1
6230-01-522-6622	FLASHLIGHT U2-BK-WH/(0BJZ8)	N/A	EA	1
1005-01-490-9698	FRONT RAIL KIT 1299370/(19200)	N/A	EA	1
8470-MULTIPLE	HELMET, ADVANCED COMBAT 239-03/(81337)	N/A	EA	1
5855-01-447-8992	ILLUMINATOR, INFRARED, AN/PEQ-2A ITP-500/(0B107)	N/A	EA	1
5855-01-535-1905	ILLUMINATOR, INTEGRATED, SMALL ARMS, AN/PSQ-23 MLRF-000-A1/(0B107)	N/A	EA	1
TBD	MISSION DATA SUPPORT EQUIPMENT (MDSE)	N/A	EA	1
5810-01-026-9620	READER, PUNCHED TAPE, 0N190315/(98230)	N/A	EA	1
1010-01-442-2313	SIGHT, GRENADE LAUNCHER 12598114/(19200)	N/A	EA	1

Table 1. Additional Authorization List - Continued

(1) National Stock Number (NSN)	(2) Description, Part No/(CAGEC)	(3) Usable On Code	(4) U/I	(5) Qty Recom
1240-01-411-1265	SIGHT, REFLEX, XM68 12974278/(19200)	N/A	EA	1
5855-01-524-4314	SIGHT, THERMAL, AN/PAS-13(V)3 34-15-044-001/(80058)	N/A	EA	1
1240-01-411-6350	TELESCOPE, STRAIGHT, M145 12977124/(19200)	N/A	EA	1
5810-01-517-3587	TRANSFER UNIT, CRYPTOGRAPHIC KEY, AN/PYQ-10 200-00001-001/(3CN36)	N/A	EA	1
5810-01-248-6018	TRANSFER UNIT, CRYPTOGRAPHIC KEY, KOK-13 0N385800-502/(98230)	N/A	EA	1
8470-MULTIPLE	VEST, BODY ARMOR 1091-XS/(3T951)	N/A	EA	1
N/A	WEAPON, INDIVIDUAL (REFER TO APPLICABLE UNIT TOE)	N/A	EA	1

END OF WORK PACKAGE

EXPENDABLE AND DURABLE ITEMS

INTRODUCTION

Scope

This work package lists expendable and durable items that you will need to operate and maintain the LW-SI. This list is for information only and is not authority to requisition the listed items. These items are authorized to your by CTA 50-970, Expendable/Durable Items (Except Medical, Class V Repair Parts, and Heraldic Items), CTA 50-909, Field and Garrison Furnishings and Equipments or CTA 8-100, Army Medical Department Expendable/Durable Items.

Explanation of Columns in the Expendable/Durable Items List

Column (1) Item No. This number is assigned to the entry in the list and is references in the narrative instructions to identify the item (e.g., Use brake fluid (WP 0098, item 5))

Column (2) Level. This column identifies the lowest level of maintenance that requires the listed item (C= Crew/Operator).

Column (3) National Stock Number (NSN). This is the NSN assigned to the item which you can use to requisition it.

Column (4) Item Name, Description, Part Number (CAGEC). This column provides the other information you need to identify the item. The last line below the description is the part number and the Commercial and Government Entity Code (CAGEC) (in parentheses).

Column (5) U/I. Unit of Issue (U/I) code shows the physical measurement or count of an item, such as gallon, dozen, gross, etc.

Table 1. Expendable and Durable Items List

(1) Item No.	(2) Level	(3) National Stock Number (NSN)	(4) Item Name, Description, Part Number/(CAGEC)	(5) U/I
1	C	6135-00-985-7845	Battery, Nonrechargeable, AA 20-0571-1988 NEDA 15A (80204)	PG
2	C	6135-01-351-1131	Battery, Nonrechargeable, CR123A 5018LC/(80204)	PG

END OF WORK PACKAGE

By Order of the Secretary of the Army:

GEORGE W. CASEY, JR.
General, United States Army
Chief of Staff

Official:

JOYCE E. MORROW
Administrative Assistant to the
Secretary of the Army
0829405

Distribution: To be distributed in accordance with Initial Distribution Number (IDN) 256980 requirements for TM 10-5895-1860-10.

These are the instructions for sending an electronic 2028

The following format must be used if submitting an electronic 2028.
The subject line must be exactly the same and all fields must be included;
however only the following fields are mandatory: 1, 3, 4, 5, 6, 7, 8, 9, 10, 13, 15, 16, 17, and 27.

From: "Whoever" whomever@avma27.army.nil
To: TACOMLCMC.DAForm2028@us.army.mil
Subject: DA Form 2028
1. ***From:*** Joe Smith
2. *Unit*: home
3. ***Address:*** 4300 Park
4. ***City:*** Hometown
5. ***St:*** MO
6. ***Zip:*** 77777
7. ***Date Sent:*** 19—OCT—93
8. ***Pub no:*** 55—2840—229—23
9. ***Pub Title:*** TM
10. ***Publication:*** 04—JUL—85
11. *Change Number:* 7
12. *Submitter Rank:* MSG
13. ***Submitter FName:*** Joe
14. *Submitter MName:* T
15. ***Submitter LName:*** Smith
16. ***Submitter Phone:*** 123—123—1234
17. **Problem: 1**
18. *Page:* 2
19. *Paragraph:* 3
20. *Line:* 4
21. *NSN:* 5
22. *Reference:* 6
23. *Figure:* 7
24. *Table:* 8
25. *Item:* 9
26. *Total:* 123
27. ***Text:***
This is the text for the problem below line 27.

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