JTLS-GO

Version Description Document

May 2021

DEPARTMENT OF DEFENSE
JOINT STAFF J7
116 LAKE VIEW PARKWAY
SUFFOLK, VA 23435-2697

**JOINT THEATER LEVEL SIMULATION - GLOBAL OPERATIONS
(JTLS-GO 6.0.3.0)**

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ABSTRACT

The Joint Theater Level Simulation - Global Operations (JTLS-GO®) is an interactive, computer-based, multi-sided wargaming system that models combined joint and coalition air, land, naval, and Non-Governmental Organization (NGO) environments.

This *JTLS-GO Version Description Document (VDD)* describes the new features of the Version 6.0.3.0 delivery of the configuration-managed JTLS-GO software suite.

JTLS-GO 6.0.3.0 is a Maintenance release of the JTLS-GO 6.0 series that includes an updated repository of standard data, a demonstration scenario based in the western Pacific, as well as some minor model functionality improvements implemented as Engineering Change Proposals (ECPs), These ECPs are summarized in Chapter 2. Code modifications that represent corrections to known Software Trouble Reports (STRs) are described in Chapter 3. Remaining and outstanding STRs are described in Chapter 4.

This publication is updated and revised as required for each Major or Maintenance version release of the JTLS-GO model. Corrections, additions, or recommendations for improvement must reference specific sections, pages, and paragraphs with appropriate justification and be forwarded to:

> JTLS-GO Development Team Leader
> ROLANDS & ASSOCIATES Corporation
> 120 Del Rey Gardens Drive
> Del Rey Oaks, California 93940 USA
> jtlsdev@rolands.com

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1.0 INTRODUCTION

1.1 SCOPE

This *JTLS-GO Version Description Document* (VDD) describes Version 6.0.3.0 of the configuration managed Joint Theater Level Simulation - Global Operations (JTLS-GO®) software suite. JTLS-GO 6.0.3.0 is a Maintenance delivery for the JTLS-GO 6.0 series of releases.

JTLS-GO 6.0.3.0 includes the entire JTLS-GO suite of software, a repository of engineering level data, and a realistic demonstration scenario based on the Western Pacific theater of operations called "wespac60". Database modifications that were accomplished to upgrade the previous JTLS-GO database format to the JTLS-GO 6.0 series data format were summarized in the VDD for JTLS-GO 6.0.0.0. No data format changes were made between JTLS-GO 6.0.0.0 and this Maintenance release.

One minor North Atlantic Treaty Organization (NATO) Engineering Change Proposal (ECP) is delivered with this maintenance release and is described in Chapter 2.0. All software corrections are summarized in Chapter 3.0.

1.2 INVENTORY OF MATERIALS

This section lists documents and software that are relevant to JTLS-GO. All JTLS-GO documents included in this delivery are provided in PDF format within a documents subdirectory.

1.2.1 Obsolete/Outdated Documents

No documents have been deleted or become outdated as a result of this release.

1.2.2 Unchanged Documents

- *JTLS-GO Analyst Guide* (JTLS-GO Document 01, Version 6.0.2.0)

- *JTLS-GO Air Services User Guide* (JTLS-GO Document 03, Version 6.0.0.0)

- *JTLS-GO Data Requirements Manual* (JTLS-GO Document 05, Version 6.0.1.0)

- *JTLS-GO Director Guide* (JTLS-GO Document 07, Version 6.0.0.0)

- *JTLS-GO Executive Overview* (JTLS-GO Document 08, Version 6.0.2.0)

- *JTLS-GO Installation Manual* (JTLS-GO Document 09, Version 6.0.2.0)

- *JTLS-GO WHIP Training Manual* (JTLS-GO Document 10, Version 6.0.0.0)

- *JTLS-GO Standard Database Description* (JTLS-GO Document 14, Version 6.0.0.0)

- *JTLS-GO Software Maintenance Manual* (JTLS-GO Document 15, Version 6.0.2.0)

- *JTLS-GO Entity Level Server User Guide* (JTLS-GO Document 19, Version 6.0.0.0)

- *JTLS-GO Federation User Guide* (JTLS-GO Document 20, Version 6.0.0.0)

- *JTLS-GO C4I Interface Manual* (JTLS-GO Document 21, Version 6.0.0.0)

- *JTLS-GO DoD Architecture Framework* (JTLS-GO Document 22, Version 6.0.2.0)

- *JTLS-GO Configuration Management Plan* (JTLS-GO Document 24, Version 6.0.0.0)

1.2.3 Updated Documents

- *JTLS-GO Controller Guide* (JTLS-GO Document 04, Version 6.0.3.0)

- *JTLS-GO DDS User Guide* (JTLS-GO Document 06, Version 6.0.3.0)

- *JTLS-GO Player Guide* (JTLS-GO Document 12, Version 6.0.3.0)

- *JTLS-GO Technical Coordinator Guide* (JTLS-GO Document 16, Version 6.0.3.0)

- *JTLS-GO Version Description Document* (JTLS-GO Document 17, Version 6.0.3.0)

- *JTLS-GO DDS Training Manual* (JTLS-GO Document 23, Version 6.0.3.0)

1.2.4 Delivered Software Components

JTLS-GO 6.0.3.0 may be delivered either on a CD or as a set of compressed TAR files to be downloaded. Either method includes the complete suite of software executable code and command procedures. The following software components are included with this release:

- Combat Events Program (CEP)

- Scenario Initialization Program (SIP)

- Interface Configuration Program (ICP)

- Reformat Spreadsheet Program (RSP)

- JTLS Symbols Application (JSYMS)

- Database Development System (DDS)

      Database Configuration Program (DCP)

      DDS Client User Interface (DDSC)

- ATO Translator Service (ATOT)

- ATO Generator Service (ATOG)

- ATO Retrieval Program (ATORET)

- JTLS Convert Location Program (JCONVERT)

- Count Critical Order Program (CCO)

- JTLS HLA Interface Program (JHIP)

- After Action Review Client (AARC)

- Scenario Data Client (SDC)

- Order Entry Client (OEC)

- Order Verification Tool (OVT)

- JTLS Object Distribution Authority (JODA)

     The current JODA build number is 137.

- Web Services Manager (WSM)

- Web-Hosted Interface Program (WHIP) and its component programs:

     Apache Server (APACHE)

     JTLS XML Serial Repository (JXSR)

     Order Management Authority (OMA)

     Synchronized Authentication and Preferences Service (SYNAPSE)

     XML Message Service (XMS)

     Total Recall Interactive Playback Program (TRIPP)

- Entity Level Server (ELS)

- JTLS Operational Interface (JOI) for both OTH-Gold and Link-16 generation

- Tactical Electronic Intelligence (TACELINT) Message Service

- KML Operational Interface (KOI)

- JTLS Transaction Interface Program (JTOI)

- JTLS Interface Network Navigator (JINN)

- JTLS Order of Battle Editor (JOBE)

- JTLS Geographic Information System (GIS) Terrain Building Program

- JTLS Master Integrated Database (MIDB) Tool

Instructions for installing JTLS-GO 6.0.3.0 are provided in the *JTLS-GO Installation Manual*. Installing a previous version of JTLS prior to installing JTLS-GO 6.0.3.0 is not necessary. No other upgrade beyond installation of the compressed TAR files (or CD) is required. The software provided with this delivery is a complete release that includes all files and code required to execute JTLS-GO.

1.2.5 Released Databases

This release includes the following sample unclassified databases:

- The scenario that serves as a repository of engineering level data is called "repository60". Although not useful as a scenario, it does follow all of the database requirements for a scenario, and should be loaded into your PostgreSQL scenario table-space. With JTLS-GO 6.0.3.0, it is possible to access and copy records from the repository60 database into your own developed scenarios.

- The scenario "wespac60", which is suitable for training and demonstrations.

1.3 INTERFACE COMPATIBILITY

1.3.1 Support Software

JTLS-GO 6.0.3.0 requires the following versions of support software, including operating systems, compilers, scripting utilities, database tools, transfer protocols, and display managers.

- Operating system for the model: Red Hat Linux Enterprise Edition Version 7.8 (ES), 64-bit architecture.

  JTLS-GO 6.0 has been tested with the following versions of Linux 7:

    RedHat Linux 7.8 - this operating system license must be purchased.

    Oracle Linux 7.8 - This operating system is free to download, use, and distribute, and is provided in a variety of installation and deployment methods. It has been approved by DISA for use by U.S. Government Agencies.

    CentOS 7.8 - a free version of Linux 7 that has not been approved by DISA for use by U.S. Government agencies.

- There are no restrictions on the operating system for client workstations, except that the operating system must have a Java-enabled web browser. JTLS-GO 6.0.3.0 has been tested on the following operating systems:

    Red Hat Linux Enterprise Edition Version 7.7 and Version 7.8.

    CentOS Linux Version 7.7 and Version 7.8.

    Windows 10, which can be used only if the workstation is an external HTTP client of the simulation network.

- JTLS-GO 6.0.3.0 no longer relies on the Open Java Development Kit (OpenJDK™) to be installed at the system level using the Red Hat Package Manager (RPM). Instead, JTLS-GO 6.0.3.0 is delivered with the AdoptOpenJDK Update 292 package, which is equivalent to the current version of OpenJDK. Using AdoptOpenJDK provides two benefits:

    a. Only the JTLS-GO account on the system servers access this version of Java. An installation site can use the JTLS-GO servers for programs other than JTLS-GO without impacting the version of Java used by other programs.

    b. Security releases of AdoptOpenJDK software are produced on the same schedule as the Oracle OpenJDK security release procedure. An organization can expect to receive a bug release version of JTLS-GO within two-weeks of a new Java 1,8 security release. As long as a user organization installs all of the JTLS-GO bug releases, JTLS-GO can guarantee that the latest Java security release is being used on the servers. JTLS-GO no longer depends on system administration for implementing proper Java security update procedures.

> Note: AdoptOpenJDK Update 292 explicitly disables the deprecated Transport Layer Security (TLS) protocol versions 1.0/1.1. With this TLS protocol disabled, the Glassfish CLI commands to the Glassfish secure admin services do not work.
>
> Altering Glassfish to solve this problem would require complete recertification of the JTLS-GO Glassfish server. Instead, the JTLS-GO Development Team has decided to re-enable this deprecated TLS protocol so the system follows the current certification standard. The older TLSv1.0/1.1 is only used for accessing Glassfish secure admin services, which is always password protected. The TLS 1.2 cyphers are used for all other http/https: access requirements to Glassfish.
>
> This Glassfish issue will be fixed properly in JTLS-GO 6.1 so the new Glassfish Server can be re-certified along with all of the other JTLS-GO 6.1 software.

- JTLS-GO uses IcedTea to provide the Java Web Start capability to start the JTLS-GO web-enabled applications. JTLS-GO supports IcedTea version 1.8.3. The user has two possible avenues to access the supported version of IcedTea when starting a web-enabled

application on the JTLS-GO Linux servers. The IcedTea 1.8.3 RPM can be installed on the JTLS-GO Linux servers, or the user can set their Browser to use the proper version of IcedTea, located in the bin_support/Linux64 directory for "jnlp" applications,

Client machines should be setup to also use the supported version of IcedTea,

> Note: Red Hat Linux version 7.8 continues to be distributed with IcedTea version 1.7.1. There is an available RPM for IcedTea 1.8.3, and this should be explicitly installed on the JTLS servers and client workstations. If this is not done, then HTTP unsecured communication cannot be used with Apache and Glassfish.

- JTLS-GO database tools require a certified PostgreSQL 11.8 database server and the full PostgreSQL installation. A containerized solution, that fulfills this specification, is provided as part of the JTLS-GO download. It is not necessary to use the delivered containerized solution, but it is the easiest method to meet the requirements of JTLS-GO 6.0.3.0. There are several alternative methods available for obtaining the PostgreSQL 11.8 software. Refer to Chapter 6 of the *JTLS-GO Installation Manual* for additional installation details.

- Windows software, X11R5 server, Motif 1.2 Library, Motif Window Manager: These items are included as part of the supported versions of Red Hat Linux ES.

- TCP/IP is required for inter-process communication between the JODA data server and all user interface programs. The version of TCP/IP included with the supported versions of Red Hat Linux ES is sufficient.

- The Perl script language is used by the JTLS-GO system and game setup scripts. The version of Perl included with the supported versions of Red Hat Linux ES is sufficient. The Perl program is typically located in the /usr/bin directory. If Perl is installed in a another location, a link should be created from the /usr/bin directory to this program.

- SIMSCRIPT III Version 3-5.2.0 (SIMSCRIPT to C) translator/compiler: SIMSCRIPT is required for recompiling JTLS-GO code. It is not necessary to have a SIMSCRIPT compiler to execute JTLS-GO, because all JTLS-GO software executables are statically linked with the SIMSCRIPT libraries. The compiler is needed only if you are a U.S. Government organization that can obtain source code and plan to re-compile JTLS-GO SIMSCRIPT code. To obtain a SIMSCRIPT compiler, contact CACI Inc.

- ANSI C Compiler: It is not necessary to use a C compiler to execute JTLS-GO. This compiler is used only by U.S. Government organizations that can obtain source code and intend to re-compile any of the JTLS-GO component programs. The C Compiler version delivered with the supported versions of Red Hat Linux ES is sufficient.

- C++ Compiler: It is not necessary to use a C++ compiler to execute JTLS-GO. This compiler is used only by U.S. Government organizations that can obtain source code and intend to re-compile any of the JTLS-GO HLA component programs. The C++ Compiler version delivered with the supported versions of Red Hat Linux ES is sufficient.

- The JTLS-GO DDS (Database Development System) application uses these open source libraries:

  JFreeChart, licensed under LGPL (GNU LESSER GENERAL PUBLIC LICENSE) by Object Refinery Limited, http://www.object-refinery.com

  JCommon, licensed under LGPL2.1 (GNU LESSER GENERAL PUBLIC LICENSE version 2.1 or later) by Object Refinery Limited, http://www.object-refinery.com

  Commons-math3-3.0.jar, licensed under Apache Software Foundation (Apache License, Version 2.0) http://www.apache.org/licenses/LICENSE-2.0HLA Compliance

- KML Operational Interface (KOI)

  The Keyhole Markup Language (KML) Operational Interface (KOI) server utility enables the model to feed operational simulation data to any version of Google Earth™. The display capabilities and data transfer features of this terrain viewer are sufficiently robust to be used as a base-level operational interface. Operational Players who may be restricted from using the COP, C2PC, or other C4I systems may be able to install and use Google Earth and configure the KOI to provide a capability that resembles C4I for observing perception Force Side data.

  Chapter 3 of the *JTLS-GO C4I Interface Manual* describes requirements and procedures for using the KOI capabilities.

- JTLS-GO 6.0 implements SSH Tunneling between Apache and the services and among the services. Rigorous testing should be done prior to use in any exercise, and particular attention should be paid to network performance under load.

1.3.2 JTLS-GO Cybersecurity Compliance

Because of recent incidents of intrusions into software systems, the United States Department of Defense (DoD) has implemented a strong and strictly enforced Cybersecurity program. JTLS-GO, as software that executes on DoD systems, must comply to the mandates of the program, along with all of the third party software used by JTLS-GO, such as PostgreSQL and Java.

One of the DoD requirements is that the software must implement a methodology that ensures that the end user keep the software up-to-date and all security patches are properly installed. In previous versions of JTLS-GO, Java 8, as delivered by Oracle, fulfilled this mandate by implementing an expiration date for its software. After a certain date, all Java related programs

stopped working, whether connected to an open network or not. All JTLS-GO releases were closely linked to the Java expiration date.

OpenJDK^{TM} has not implemented an expiration date. In order to fulfill this DoD Cybersecurity requirement, JTLS-GO has moved to AdoptOpenJDK, a full OpenJDK Java environment with licensing alternatives allowing an application to deliver the software. The following procedure has been established and approved by the JS/J7 Cybersecurity branch:

- Within days of an Oracle Java security release, AdoptOpenJDK produces an equivalent version using infrastructure, build and test scripts to produce prebuilt binaries of the OpenJDK class libraries. All AdoptOpenJDK binaries and scripts are open source licensed and available for free.

- Within two-weeks of the AdoptOpenJDK release, JTLS-GO provides a Maintenance release version (JTLS-GO 6.0.n.0) including a full Version Description Document (VDD) for download to all authorized agencies. All DoD agencies using JTLS-GO will be in full compliance with this specific Cybersecurity mandate as long as they download and use the Maintenance released versions when distributed.

Contact the U.S. Government Program Manager, Mr. Donald Weter (donald.e.weter.civ@mail.mil) to obtain the completed Cybersecurity paperwork and a current Authority to Operate certificate.

1.3.3 JTLS-GO High Level Architecture Compliance

The JTLS-GO 6.0.3.0 release is fully High Level Architecture (HLA) compliant, and includes all the programs required to run JTLS-GO in an HLA mode. JTLS-GO currently belongs to one federation known as GlobalSim. GlobalSim is a comprehensive constructive simulation solution for joint training and wargaming that helps commanders and all levels of staff prepare for a range of operational scenarios.

The solution combines JTLS-GO with CAE's GESI constructive tactical entity-level simulation system. CAE's GESI constructive simulation system is designed to run complex and comprehensive exercises from the company level up to division level. The GESI system is used to represent a virtual battlefield, including weapons, vehicles, aircrafts, ground forces and more.

Combining JTLS-GO and GESI brings together operational and tactical level constructive simulations to prepare commanders and staff to make timely, informed and intelligent decisions across the full spectrum of operations, including conventional combat, disaster relief, and operations other than war.

From the JTLS-GO perspective, all software needed to run GlobalSim is included in this delivery. JTLS-GO uses the Federation Object Model (FOM) located in the $JGAME/data/hla directory, Federation testing of JTLS-GO with CAE's GESI model have been accomplished. Future plans include expanding the capabilities of the GlobalSim federation.

The HLA RTI (Run Time Infrastructure) executive program (rtiexec) recommended for use with this release is Pitch pRTI Evolved 4.4.2.0. However, this program is not included in the JTLS-GO 6.0.3.0 delivery. Users may obtain a full installation package of the RTI software from Pitch Corporation (www.pitch.se). For information about executing the HLA RTI Executive and other HLA-related software, refer to the appropriate HLA documentation and user guides.

1.4 DATABASE MODIFICATIONS

Significant database structure differences exist between JTLS-GO 6.0.0.0 and the previous JTLS-GO 5.1 series database structure. There are no data format changes as a result of this Maintenance release.

To upgrade your JTLS 5.1 scenario to JTLS-GO 6.0 compatibility, see instructions listed in the *JTLS-GO DDS User Guide*, Chapter 3.1.

1.4.1 JTLS-GO Using Legacy Default Symbol Set

If a user organization is still using the pre-JTLS-GO 5.0.0.0 legacy default symbol set, prior to unloading your JTLS-GO 6.0.0.0 formatted data from your PostgreSQL database server into the JTLS-GO 6.0.0.0 scenario American Standard Code for Information Interchange (ASCII) text files, you must execute the JSYMS program using the procedure outlined in the *JTLS-GO DDS User Guide*, Appendix B.11. This procedure will reorganize the structure of the <scenario_name>.gs and databases symbol.scf file.

1.4.2 JTLS-GO Using New Default Symbol Set

You should not make any modifications to the Default Symbol Set delivered with JTLS-GO 6.0.3.0, but end-user organizations are free to use the Default Symbol Set in their scenarios and alter the scenario symbol set to meet specific organizational needs. Some new symbols have been created to meet end-user requirements. No previously existing symbols were deleted nor were any of the preexisting symbol names changed.

This means that the user can easily move in this new symbol set. Please follow the steps outlined in the *JTLS-GO DDS Users Guide*, Section B.13, Updating Scenario Symbol Set.

1.4.3 Standard Repository Changes

R&A has continued to improve and expand the unclassified data repository, "repository60." The DDS comparison and synchronization function can be used to determine if any of the changes delivered are of use to a JTLS-GO user organization.

> If JTLS-GO 6.0.1.0 was not installed, then the procedure to update Database triggers due to JTLS-GO 6.0.1.0 STR JTLS-2020-14976 needs to be executed after installing this version of the software. In order to update your database, perform the following:
>
> 1. Unload your scenario using the JTLS-GO Menu, Options 1 -> 1 -> 5.
>
> 2. Load your scenario using the JTLS-GO Menu, Options 1 -> 1 -> 4.

1.5 INSTALLATION

The *JTLS-GO Installation Manual,* a Portable Document Format (pdf) file available for direct download, is part of this JTLS-GO delivery, It provides detailed instructions for installing the new version of JTLS-GO and the installation of PostgreSQL 11.8 required to operate JTLS-GO 6.0 series of software.

2.0 ENGINEERING CHANGE PROPOSALS

No Engineering Change Proposals (ECPs) were added to this Maintenance Release of JTLS-GO.

2.1 JTLS-2021-15176 Add JTOI ICC 3.4.0

Summary of Model Change Request

The JTOI must be changed in order to support the new ICC 3.4.0 version.

Design Summary

The Javamenu program and jtlsmenu script have been updated to include the new ICC 3.4.0 version. A new project, jtoi_icc340, has been added to handle the new ICC version.

3.0 SOFTWARE TROUBLE REPORTS

Software Trouble Reports (STRs) describe software code errors that have been discovered by JTLS-GO users or developers and have been corrected.

Chapter 4.0 describes STRs that remain outstanding from previous versions. These issues are being addressed and solutions will be included in future Maintenance releases in the JTLS-GO 6.0 series.

3.1 JTLS-2021-15147 Push Order Convoy Missing Supplies

A Push order was submitted to automatically send supplies from a support unit to a ground unit every hour. The Show Push report verified the hourly automatic push shipments were in effect, but no supplies were listed. The new convoy was displayed on the Supply Run IMT, but the Query Supply Run Status order showed no supplies to be loaded and offloaded. After the Load task was finished, no supplies were taken from the support unit. When the empty convoy arrived at the receiving unit, a Player message stated no supplies were available to offload.

The Push order panel kept the supply list in a suborder Set that was inconsistent with other convoy-related orders (as well as the LOGIN BUILD order), and the underlying Simscript routine was unable to find the supply list.The Push order panel was corrected to maintain consistency with other convoy-related orders.

3.2 JTLS-2021-15149 SAM Advance Weapon Shortages

Supply shortages for SAM/AAA advanced targetable weapons are not reported.

The Scenario Verification Program (SVP) code only looked for and reported shortages for primary SAM/AAA weapons. The code has been modified to include reporting shortages for the SAM/AAA advanced targetable weapon.

3.3 JTLS-2021-15153 Various SVPR Corrections And Enhancements

Numerous SVPR corrections and enhancements were made:

1. *Error 254 should allow the user to correct all entries at one time.*

2. *Error 428 is unclear and could use a "set value'"option.*

3. *Inconsistent use of the concept of the words "Update" and "Set".*

4. *Warning 1119 reports combat systems that are actually in use.*

5. *Warning 1127 needs a correction option to set the sensor range to cover the A/C jump distance.*

6. *Warning 1151 needs an automatic correction option for combat system attrition types.*

7. *Warning 1207 needs improvements to its automatic correction actions.*

8. *Warning 1258 should not report unmanned vehicles.*

9. *Warning 1275 should have an automatic set option.*

10. *Improve correction message text by adding supply category name*

11. *Warning 1348 should be reworded to enable sorting by aircraft load name.*

The following changes were made to the SVPR:

1. Error 254 is displayed when a sensor is defined as an Active_Sonar and has a power of 0, meaning the sensor cannot detect. The user was previously allowed to correct one record at a time, but the user is now allowed to open the sensor table with all Error 254 records and update each record individually, or update all records with the same value at once.

2. Error 428 can be used to identify ships that are short the wet or dry capacity to carry the units scheduled to be embarked on them. The wording does not clearly explain whether the wet or dry capacity is wrong, and a correction action to automatically update the appropriate value was needed.

    Error 428 was divided into Errors 414 and 415, for wet and dry capacity respectively, and a correction action was added to each to set the carry capacity value just slightly higher than needed.

3. The most common term for changing the value of a variable in the SVP is the word "Set", but the word "Update" was used in several places. The word "Set" is now used consistently.

4. Warning 1119 is supposed to report only supply categories that are not in use in the scenario, but is reporting some supply categories that are used. The code checked TUPs and SUPs, but was not checking to see if the supply category was needed by an HUP. It is possible the supply category is needed by HUP but has not yet been put in the TUP/SUP prototype for the parent unit (this will generate Warning 1121).

    If the supply category is not used by any of the above, it still may be needed for a TW. If it is not needed by a TUP, SUP or HUP, but is used by a TW, then Warning 1122 will be generated.

5. Warning 1127 is generated when an aircraft load has a ground search sensor that cannot cover the range an aircraft moves in a single jump. A new correction option has been added to allow the user to set the value automatically.

6. Warning 1151 identifies inconsistencies in combat system attrition types that are linked to the same combat arms type. If combat system TANK1 is a DIRECT fire system and combat system TANK2 is an INDIRECT fire system, one or the other should be changed. Automatic correction options have been added to change either combat system to the attrition type of the other combat system.

7. Warning 1207 identified supply categories that have a consumption type of AS_USED, but a TUP/SUP supply category entry has a normal_consumption value. AS_USED supply categories should have 0.0 for the normal consumption value. An automatic set option was added to set the normal consumption value to 0. Two other automatic set options were added to change the supply category consumption type to either PER_PERSON or PER_DAY.

8. Warning 1258 reports small boats that are not in use as lifeboats for HUPs. The check was modified to not report on small boats that represent UNMANNED vehicles, such as UUVs and USVs.

9. Warning 1275 reports HUPs that do not have enough combat system personnel to support the total crew requirements needed for all the other combat systems (note that all combat systems that are special capability 'PERSONNEL' are considered when filling HUP crew requirements).

    Warning 1276 was changed to 1275, and three new warnings 1276, 1277, and 1278 were added. 1276 is used to add a new 'CREW' combat system with the correct number of personnel if there are absolutely no personnel combat systems. 1277 is used when the HUP has the special combat system that represents combat system CREW. 1278 is used when the HUP uses any other personnel category other than the one representing combat system CREW.

10. The name of the supply category and other wording was added to the corrections for Warning 1426.

11. Warning 1348 identifies weapon loads carrying mines that are not mining missions. This is not an error, but can be considered strange. The description was reworded to place the weapon load name first and mission type second. This will enable the user to sort the description column and easily see all the mission types using the questionable load making the correction decision easier.

3.4 JTLS-2021-15154 DDSC Fill Child Table Option Not Working

When the user selected the child table Fill option several DDS tables, such as the Sensor Site child table, the user received a Bad Parameter Error from the server, and no child table entries were filled.

When the Fill records request was sent to the DDS server, the client was still specifying the Oracle term "rowid" parameter. The "rowid" specification was changed to PostgreSQL term "oid" to solve the problem.

3.5 JTLS-2021-15157 JDLM Cannot Be Unit Owning Federate

Units with JDLM as their Owning Federate cause problems with WHIP selection.

The Joint Deployment Logistics Model (JDLM) is no longer a valid Federate for JTLS-GO. If there are units in the database that have JDLM as their Owning Federate, a side WHIP that owns such a unit was not able to use the order map select button. This issue only affected order panels for which the JDLM-assigned unit was part of the order selection criteria.

The WHIP was not changed; instead, SVP Error 456 has been added to identify units with JDLM as the Owning Federate. The DDS schema will prohibit the assignment of JDLM in JTLS-GO 6.1.

3.6 JTLS-2021-15158 BDA Report SSM Format Error

The BDA Report did not display the number of combat system losses caused by Surface-to-Surface (SSM) missiles. The combat system names that suffered losses were displayed, but the actual counts were not. Other combat system losses from artillery and air strikes were properly displayed in the report.

A typographical error in the message template prevented the loss counts caused by SSM attacks from being displayed in the BDA Report. The format error was corrected.

3.7 JTLS-2021-15160 Cancel Unit Offload Supplies Task Message Error

A Cache Supplies order was submitted to a ground unit. The Offload Supplies task appeared on the Unit Tasking Order IMT. After the task started executing, a Manage Land Unit Tasks order was submitted to cancel the task. The task was successfully canceled, leaving a new Supply Cache target on the WHIP holding the partially delivered supplies displayed in the Target Supplies IMT.

However, the player received a "Bad Message" translation error in the Message Browser, instead of the expected confirmation that the Offload Supplies task had been deleted.

In this case, the Supply Cache target type (subcategory) did not exist anywhere in the game. When the unit began to execute the Offload Supplies task, the model created the target and updated the WHIP map filters so that the target could be displayed on the map.

The Player message had already been started when the logic that wrote the dynamic map filters altered the output destination from the original message output file. When the logic later attempted to finish writing the Player message, the output did not go to the right output location. The message processing logic was unable to properly process the incomplete message and therefore generated the error.

The problem was fixed by saving the original message output file (unit #) in the routine that writes the dynamic filters and restoring that number at the end.

3.8 JTLS-2021-15162 Convoy Attempts Supply Cache Creation Crash

If a convoy is sent to a location to drop off supplies, and there are no suitable units in the area, the convoy creates a Supply Cache. If the convoy did not have the supplies on board to fulfill the Player's request to drop specific supplies off, the model tried to inform the Player that not all supplies were placed in the supply cache and crashed.

The rejection message assumed that the supplies were destined for a specific unit. That was not the case. The supplies, if they had existed, would have been placed in a supply cache. The model was corrected by properly removing the assumption that the supplies would always go to a unit.

3.9 JTLS-2021-15165 Survivability Prototype Supply Packet Sizes UOM

When the Controller requests the data associated with a Survivability Prototype (SP), one of the items that is printed out is the packet size for every Supply Type within the SP. The printed data was the name of the Supply Type, followed by the packet size in the user's preferred Unit of Measure (UOM), and then the UOM name.

Users do not have a UOM preference for Supply Types. They do have a UOM preference for Supply Categories, and the Supply Type was being used as a Supply Category to get that UOM. There is not a one-to-one correspondence between Supply Types and Supply Categories, and therefore the UOM conversion was wrong.

A UOM does not exist in the database for Supply Types since that data is used internally within the model for attrition and detection algorithms. There is little need for a UOM because the Player almost never deals with Supply Types. To correct the message problem, the UOM conversions were removed from the message. The *JTLS-GO Data Requirements Manual* clearly states that the UOM for the data is in the database defaults for wet and dry supplies.

3.10 JTLS-2021-15166 WHIP Replicate Fails For Command Authority

Replicating a WHIP in the ICP fails to replicate Command Authority.

The ICP code was modified and the following rules applied:

1. If replicating the Primary or Shared WHIP, replicated WHIPs have SHARED Authority.

2. If replicating a No Authority WHIP, replicated WHIPs have NO_AUTHORITY Authority.

3.11 JTLS-2021-15167 Naval Unit Incorrectly Forced Into Ground Wait

When a user enters a naval move order, the move end time is calculated and shown in the Naval Unit's Task IMT. The user then sent an order to increase the Naval Unit's speed. The Naval Unit

arrived at the end location early. The unit was forced into a ground wait because it had reached the end location, even though the task end time was set for the future.

The move end time is now updated each time the unit moves. If the user chooses to increase the speed of the naval unit or decrease the speed, the naval unit's move end time will reflect the user's speed change. Additionally, when the unit reaches the end of the move, even if the end move time estimate is in the future, the unit will not go into a wait task.

3.12 JTLS-2021-15168 HRU Create Rejection Message

When a Manned HRU could not be created because of the unavailability of combat systems, the rejection message read as if the HRU was designated to be an unmanned HRU.

The code was checking the Control Type of the HRU's Prototype to determine which message to print. The check was improperly comparing the HUP CONTROL TYPE against an internal variable called MANNED, and not MANNED CONTROL. This error led to a wrong conclusion and the inappropriate message to be printed on the message file.

3.13 JTLS-2021-15169 Radar Skip Land Flag Not Alterable

No capability existed in the model to enable the Player to change the Radar Skip Land flag from YES (its default initial value) to NO. This lack of capability caused radar sensors to detect objects only on ocean or small island terrain grids.

The purpose of the Radar Skip Land flag is to prevent detection of objects on land by radar sensors if the flag's value is YES. The model initializes the flag to YES, which means all sensors with a collection mode of RADAR cannot detect objects in non-ocean and non-small island terrain grids. A NO value enables objects to be detected in any terrain by radar sensors.

To correct this problem, the Radar Skip Land flag was added to the Set General Ground Parameters order to allow the Controller to alter the flag during model execution. Also, the flag was added to the ASCII checkpoint process and the Online Player Manual.

3.14 JTLS-2021-15170 HRU Breaking Silence Probability Error

When a covert HRU generates a report, there is a chance that it will be detected and the enemy will know its location. The database parameters HUP.PROB.COMPROMISE.ON.URGENT.REPORT and HUP.PROB.COMPROMISE.ON.NORMAL.REPORT should be used to reduce the remaining detection time until compromise. The expectation is that the larger the database number, the shorter the remaining detection time should be. This was not the case.

When computing the new remaining detection time, the model was multiplying the existing remaining detection time by the database compromise value. The model should have multiplied the existing remaining detection time by 0.10. For example, if the compromise probability is 90%, the new remaining detection time should be reduced by 90% which is equivalent to multiplying the current detection time by 10% or (1.0 - 0.9). This error was corrected.

3.15 JTLS-2021-15171 Miscellaneous SVPR Corrections

Numerous SVPR corrections and enhancements were made:

1. *Error 403 should have the capability to move the airbase to the runway.*

2. *Warning 1403 has non-functional correction options that must be fixed.*

3. *Error 419 should be a prototype error, not a unit error.*

4. *Warning 1449 should have an option to run the supply calculation tool from the unit screen.*

5. *Warning 1429 has formatting and reference errors.*

6. *Error 214 has poorly-written text and non-matching documentation.*

7. *Warning 1120 should be an error if the HUP is used.*

8. *Warning 1426 and 1605 have non-functional correction options that must be fixed.*

The following changes were made to the SVPR:

1. Error 403 identifies runways assigned to airbases that are not within the airbase radius. A new option to automatically move the airbase to the location of the runway was added.

2. Warning 1403 identifies airbases that do not have a runway assigned. Several of the correction capabilities did not function as the wording would indicate. Some corrections had their wording modified, and others were corrected by modifying code. A sixth option was added to allow the user to delete the runway with the automatic correction option.

3. Error 419 identifies when the full TOE for unit is zero. This means either no combat systems have been assigned, or the combat system score of all combat systems is zero. Because the prototype has probably not been assigned any combat systems, the error should be a prototype error, and has been changed to Error 209.

4. Warning 1449 identifies units that do not have sufficient supplies in the prototype Stockage Objective (On-Hand) to support ADA sites. The user can now use the Supply Calculation Tool in either the Unit or Prototype Table.

5. Warning 1429 identifies those units that do not have unique C4I names. There was a formatting error causing problems in the readability. The text also indicated the problem was in the unit LONG name. The C4I name is derived from the unit SHORT name. All related text and variables were modified to use the unit SHORT name.

6. Error 214 identifies SUPs, representing submarines, that have a mean time to detect or mean time to lose that is less than or equal to zero. Both values must be greater than zero. The text for the error was confusing and the documentation did not match the error. The easiest way to correct the text it was to split the error into separate error numbers 202 and 203, for the time to detect and for the time to lose.

7. Warning 1120 identifies combat systems that are used by HUPs, but no TUPs or SUPs use the combat system, rendering an HRU impossible to create from the HUP. Warning 1120 only identified the problem, whether or not and HRU was using the HUP. New Error 219 was added to specially identify the combat system used by HUPs that are used in the creation of an HRU.

8. Warnings 1426 identifies supply shortages and Warning 1605 identifies target range problems. When the corrections for these two items are used, there occasionally are issues with computer system internal rounding errors. In order to solve this problem, both warnings were modified to add a very small amount to the value needed. The amount added is very small and not considered to have any impact on the scenario effects.

3.16 JTLS-2021-15172 WHIP Quick Orders Missing Buttons

The quick order toolbar did not show all the buttons whenever the WHIP window size was not wide enough.

The layout manager for the buttons did not wrap the toolbar component according the WHIP's frame width, causing the toolbar to extend out underneath the WHIP window.

The layout managers for the quick button toolbar was changed to allow the toolbar to wrap the buttons onto a new row as the WHIP's frame width is reduced. This allows all quick order buttons to show at once, no matter the window width.

3.17 JTLS-2021-15173 Mine Order Field Number Of Mines Unclear

On the Mine Order, the Number of Mines field and its associated help was not accurately described.

The user should enter the number of weapons that should be emplaced, and each sub-munition of the weapon becomes a mine. The field title was changed to Number Mine Weapons and the field help was changed to explain the differentiation between mine weapons and mines.

3.18 JTLS-2021-15174 ATOG OCC Apportionment Screen Overflow

The ATO Generator (ATOG) module in the WHIP allows users to assign units as Tasking Headquarters for OCC missions. The page that displays these apportionments was being cut off when the number of Tasking Headquarters units exceeded five.

The ATOG module's OCC Apportionment page has been reformatted to accommodate more than five Tasking Headquarters units.

3.19 JTLS-2021-15177 Mixed Shipment Types For Supply Type

Supply Categories of a single Supply Type have mixed shipment types.

Every supply category is classified as a supply type, which provides data for density, transfer, and packet sizes. All supply categories within a supply type should all have the same basic shipment type, or the other data, such as packet size, would have no logical unit of measure. For example, users should not have a food supply category (which is considered 'DRY', with packet sizes in tons) mixed with a water supply category (which is 'WET', with packet sizes in gallons).

Warning 1161 has been added to the SVP to notify the database builder of the problem. The CEP code has also been modified to prevent a Controller from changing the supply category data with mixed data.

3.20 JTLS-2021-15178 Set TW Parameters Missing Error Checks

The Controller Set Targetable Weapon (TW) Parameters order needed additional checks to ensure consistent values existed between the weapon Effects Type and the Minefield Type attributes. The existing error check only prevented changing the Effects Type to Mines when there was no Minefield Type assigned. All other value combinations were allowed, even if inconsistent.

Additionally, it was not possible to change an existing Minefield Type to "NONE" when necessary.

Three error checks were added to prevent the following inconsistencies:

1. Changing the Effects Type to a non-Mine weapon when there is a Minefield Type assigned.

2. Changing the Minefield Type to NONE when the Effects Type is a Mine weapon.

3. Changing the Minefield Type to a valid type when the Effects Type is not a Mine weapon.

If the order fails any of the three error checks, the attempted change is rejected, although other unrelated changes are allowed to process.

The order was also enhanced to allow setting the Minefield Type to "NONE" if desired.

3.21 JTLS-2021-15179 Allow Group Insert For AAR Tables

In previous versions of JTLS-GO, the AAR Client used the Oracle PRO*C compiler, which permitted syntax to perform inserts of an array of structures, where the insert statement would specify how many items of the array were to be inserted. These group inserts consisted of a single interaction with the database server and were much faster than performing individual inserts. If a member

of the array failed to insert, the database server would inform the program of the problem row, all previous rows were still inserted, and the program could insert the remaining rows.

With the switch in JTLS 6.0 to PostgreSQL and the use of the PostgreSQL C compiler, the functionality of interactions with the server changed dramatically. First, whenever an insert error occurs it is necessary to roll back the database server, losing all uncommitted inserts. This necessitated performing a commit after every insert to avoid losing multiple records due to one bad record, greatly reducing performance.

Additionally, the Postgres C compiler only recognizes syntax to insert a predefined number of group records, preventing a variable number insert. This has resulted in the loss of the group insert capability even further reducing performance.

A good group insert capability is vital to restore the performance of the AARC.

Since the PostgreSQL C compiler only recognizes a predefined number of records for a group insert, and since the insert code is auto-generated from the JDS Protocol, the decision was made to provide multiple group insert statements for varying number of records and merely execute the statement that matched the number of records to be inserted. This approach does result in a larger executable, and a doubling of the number of group insert statements results in a approximately a quadrupling of the executable size.

Based on performance testing, the development team settled on a maximum of 75 records for a group insert, as opposed to the 200 records that were handled under Oracle PRO*C. If a group insert fails, the AARC is unable to determine the problem record, so it now performs a rollback to clear the error, and then performs a single item at a time insert for the records of the group, committing after each insert. Though this error handling results in slower performance, the overall effect of performing a group insert and only performing single inserts on failure of the group insert has substantially improved the performance of the AARC.

While testing these changes, it was noted that some records were throwing vocabulary translation problems. These issues fell into three categories: convoys being inserted before the convoy type of Barge, Rail, or Truck was known; detection events being inserted without an associated sensor type; and detection events being inserted without a detecting Force Side. These omissions were fixed in the CEP code. An error was also noted in the vocabulary translation code in which one of the error messages was not properly written to the error log. This was also fixed.

A further issue was noted in that with the initial download and insert of objects from the CEP, numerous reference attributes of the objects were being zeroed. By design, this should happen if the referenced item itself is not in the database, but in this case the referenced items did exist in the database. This was tracked down to performing a filtering and insert of items, versus a filtering of all items followed by an insert of all items, in other words completing all filtering before the insert started. The code was modified to properly perform this two step process.

3.22 JTLS-2021-15180 Library Module Improper Error Message Format

The Order Management Authority (OMA) generated errors for a bad order that were not properly formatted to the OMA error log. The bad order was an intentional part of testing, but the improper formatting was wrong.

The issue was a failure to follow the standard for error messages, which includes printing the time of the error. The library code which was being used was modified to adhere to the full standard.

3.23 JTLS-2021-15181 Targetable Weapon Not Updated On JODA

One of the attributes held on the JODA for SAM/AAA Target objects is the standard weapon that can be fired. The value of this attribute is based on the Air Defense Class of the target. The value can be changed within the model by changing the corresponding Air Defense Class characteristic, but this information was not propagated to the JODA for the targets using that Air Defense Class, leaving them with the old value of the standard weapon.

When an Air Defense Class has its standard weapon changed, the code now looks for all targets that use that Air Defense Class and updates the standard weapon attribute of their JODA object.

3.24 JTLS-2021-15182 Miscellaneous SVPR Corrections

Numerous SVPR corrections and enhancements were made:

1. *Warning 1319 says AD category is UNUSED, but it is used for a POT Target.*

2. *In Warning 1623, BE Facility Objects are hard to find and work with.*

3. *In Error 306, the correction to change a minefield type to null does not work.*

The following changes were made to the SVPR:

1. Warning 1319 - We were unable to duplicate the problem. The wording of several related errors and warnings was modified to make them easier to understand.

2. Warning 1623 - The warning identifies a BE Facility whose group of objects are within the maximum DSA size, but the warning does not identify those BE Facilities. The routine was rewritten to identify each object and how far it is from the BE Facility notional center. The SVP Corrections were improved to include plotting of the center of the facility and the object identified. The appropriate unit or target table can also be open to make change to the object location.

Because the objects that make up the BE Facility can be units or targets, Error 1623 was split into Errors 1637 and 1638. This enables us to customize the resolution options based on the object type.

3. Error 306 - The auto correction to change the minefield type to a blank field was incorrectly programmed as '' when it should have been using the word NULL. The wording was also slightly modified for clarification.

During this fix, many other Error and Warnings were found to have the same issue and fixed.

3.25 JTLS-2021-15183 Database Minefield Schedule For Future

The SVP and OPM both crashed if the initialization database contained a minefield target that was scheduled to arrive in the game after time zero.

The code to create the target, based on the Player order established when the database was initialized, expected minefield parameters in incorrect data structure locations. This was corrected.

3.26 JTLS-2021-15184 JODA Does Not Display Transaction Port Info

The Sockets tab of the ICP for the JODA displays the type of socket and its status. However, for Transaction sockets, the type always displays as UNKNOWN.

This error was traced to a display function in the JDSP library that is only called by the JODA. The logic was to determine the type of socket and properly display the socket type, but for Transaction sockets the code allowed a following type "UNKNOWN" to be displayed. This has been fixed. The JODA will now display "TRANSACTION" in the type column for any sockets that are Transactions type.

3.27 JTLS-2021-15185 SVP Template Inconsistencies

The use of the apostrophe character in the SVP-Template.xml file is inconsistent and occasionally caused problems in the SVP Errors and Warnings.

The SVP-Template.xml file provides output formatting and controls the processing of the various correction options for the errors and warnings generated by the SVP. The apostrophe character could be used in general English vocabulary text and messages and is also used when defining the boundaries of database VARCHAR variables. Inconsistencies in the use of the apostrophe character were corrected.

These changes requires thousands of minor corrections throughout the file. Although a large number of the changes were tested, end users should notify R&A immediately of any error or warning correction options that may not be working properly.

3.28 JTLS-2021-15186 Unit Lift Capacity No UOM

The Unit Lift Capacity Report does not have any Unit Of Measure (UOM) information, just the values for dry and wet capacity. The Formation Lift Capacity Report has UOM information, but not the unit version. This makes it impossible to change the UOM to view the data in a UOM meaningful to the user.

The message file was corrected to output the data using the UOM_AMOUNT function.

3.29 JTLS-2021-15187 IIR Message With Duplicate CS Reports

The IIR message listed Combat System A twice. The first record said 14 systems observed and the second record said 6 systems observed.

The message was indicating that 14 systems were perfectly identified and 6 were only generally identified. The generally identified systems should not have used the Combat System name but should have been reported as the Combat Arms Equivalent.

3.30 JTLS-2021-15189 No Traceback Timestamp For Crashed Services

The JXSR crashed, but the traceback contained in the error log for the crash had no timestamp to indicate when the crash occurred.

All services are built with the JDSP library, which contains a function that can be called whenever an unexpected signal is received by the service. This function gathers the program trace at the time of the signal and writes the trace to the error log. This function was modified to include the GMT (Z) system time at the instant the signal was received.

3.31 JTLS-2021-15190 Package Mission Egress Route Improper Save

A mission that belongs to an air mission package has the following route: Starts from home, follows the mission ingress route to the rendezvous point, follows the package ingress route to the target area, follows the package egress route, then picks up the mission's egress route back home. The order parsing routine was not properly picking up the mission's egress route.

The model was looking for the mission's egress route on Player Order Set 2 and the order panel was placing the egress route on Player Order Set 4. The order panel was changed to place the mission egress route properly on Player Order Set 2.

3.32 JTLS-2021-15191 Show Needed Sensor Power For Error/Warning

Warning 1275 and Error 254 need to show the needed sensor power in order to make the correction.

Error 254 and Warning 1275 identify Active-Sonar sensors with a sensor power that is less than what is needed for the sensor to reach its maximum range.

Both were updated to show the needed power in the problem description for its maximum distance, and an SVPR resolution option was added to automatically update the sensor power.

3.33 JTLS-2021-15192 Warning 1111 Printing Duplicate Entries

Warning 1111 appears to be printing duplicate entries.

Warning 1111 reports combat systems that represent non-HET-capable trucks that have been given a non-zero-tonnage of HET carrying capability. The error is being reported correctly, but lacked a detailed description of the problem. Multiple combat systems may be assigned the same special transportation class capability, but the warning is not showing the combat system name. The warning has been expanded to include the combat system name.

3.34 JTLS-2021-15193 Fill Paint On Circle And Rectangle

On a fill color change of a circle or rectangle, the inside area did not change to the color the user selected.

The fill color change problem was corrected by adding logic to complete the painting.

3.35 JTLS-2021-15194 LOGFAS Profile Initialization File Crashes SIP

The LOGFAS Profile Initialization file generation procedure caused the SIP to crash, because the program was attempting to create the file in a non-existent directory.

There was an error in the creation of the file name. The file name was corrected.

3.36 JTLS-2021-15195 LOGFAS Targets Not In Initialization File

JTLS-GO 6.0 added NIC and RIC codes to several types of targets: Air Defense Targets, Bridge Classes, Combat Arms Type Targets, Communication Center Targets, Jammer Type Targets, Sensor Type Targets, and Surface to Surface Missile Targets. The data exists in the database, but the LOGFAS initialization file does not contain the target items.

The code was expanded to included owned target items for all profile units and all unit holdings.

3.37 JTLS-2021-15196 Confusing Help For Protected Mission List

The help for the Protected Mission List field within the Defensive Counter Air (DCA) Order was confusing because it discussed the concept of a Shadow Package. There is currently no such capability within JTLS-GO.

The reference to a Shadow Package was removed from the help and the user was informed that a DCA mission that has a protected mission list, does not fly with the protected missions; instead, it orbits as specified in the orbit instructions that are also part of the DCA order.

3.38 JTLS-2021-15197 Error 418 Misleading

Error 418 is being reported for units that do not have a regular support unit.

Error 418 reports when the maximum convoy distance is exceeded between a unit and its regular support unit, and also between a unit and any supply specific support unit. The wording of the message may lead the user to believe the problem is specific to the units regular support unit.

Error 418 was modified to specifically state the problem is with the unit's REGULAR support unit and Error 419 was added to address the same problem with the unit's supply specific support unit.

The same problem was found for distance problems when the maximum TRUCK convoy distance was exceeded. Warning 1416 was reworded to refer to the REGULAR support unit and Warning 1469 was added for the unit's supply specific support unit.

3.39 JTLS-2021-15198 Incomplete Display Of Aircraft Names On IMT

Only the first 15 characters of the names of Aircraft Classes (AC) were shown on the Information Management Tool (IMT).

The maximum length of AC names changed from 15 to 25 characters in JTLS-GO 6.0. The IMT screen definitions were not updated to account for the longer names. Corrections were made to fix the column width and data format to properly display the longer AC names.

3.40 JTLS-2021-15199 JXSR Crashes When Air Missions Removed

Running the game forward at a high rate and having several hundred flying air missions occasionally causes the JXSR to crash.

This bug was traced to a code loop in the JXSR that was removing each referrer object reference to an air mission object that was in the process of being deleted. In other words, an air mission keeps a list of all objects referring back to the mission. If the mission completes, the objects referring back to the mission need to be updated and removed from the missions list. The JXSR holds a mapping of these objects and attempts to traverse the map and delete from the map during the traversal. This causes the map to be garbled in some instances.

This code was modified to store a separate list of references to the items in the map during the traversal then delete each item in a separate loop.

3.41 JTLS-2021-15200 JODA Targetable Weapon Data DIS Code

Targetable weapon (TW) data are published on the JODA like other object data. Many weapons have assigned DIS Codes in the scenario database and in the model, but they were not published on the JODA.

Code was added to publish DIS Codes for TW. These data were required by the ELS for connections to external models.

3.42 JTLS-2021-15201 CAS Request Response Message Not Received

A CAS request order was submitted to support a ground unit in combat. The only available OAS mission authorized to fill a CAS request was out of range. A "No aircraft were assigned" message was sent to the primary ground WHIP, but not to the player WHIP where the CAS request order was submitted. Consequently, the Player had no indication why the CAS request was not filled.

To correct this problem, a Player message recipient flag was added to send all CAS response messages to the submitting Player WHIP (when known), as well as the ground function WHIP.

3.43 JTLS-2021-15202 HRU Parent Supplies Not Updated In IMT

A Create HRU order using an existing HUP was submitted to the model. The HUP included combat systems and supply categories to be taken from the parent unit. After the HRU was created, the LogSitRep showed the reduction in the parent unit's on-hand supplies, but the parent's Supply IMT did not show any reductions. Note that, unlike supplies, the combat systems were correctly reduced in the parent's Combat System IMT and LogSitRep.

When the supplies were transferred from the parent unit to the HRU, no supply update was sent to the JDS for display in the Supply IMT. A missing subroutine call was added to correct the problem.

3.44 JTLS-2021-15203 Mobility Mission Left Before Airlifted Unit Arrived

A mobility mission was tasked to airlift and then airdrop a ground unit. The unit was not yet positioned at the location of the airlift. The mission arrived at the specified point but because the unit was not there, the airlift task was immediately canceled and the mission returned home.

According to the *JTLS-GO Analyst Guide*, the mobility mission should have waited at the specified location for the ground unit to arrive. In this case, the maximum wait time was equal to the data parameter ACP.MT.LAUNCH.DELAY.MAX. Two small logic errors in the code caused the mobility mission to head home prematurely. Corrections were made, and the tests showed that the mission waited for the unit to arrive for the airlift.

3.45 JTLS-2021-15204 Oil Slick Assignment Incorrect

The logic used to determine the type of oil slick and debris field that surrounds a damaged naval unit was not computed properly.

When a naval unit is damaged, several damage records are created. Multiple damage records can be created for the different types of supplies that are damaged when a naval compartment is damaged. All of the different damaged supplies were not considered when assigning the proper oil slick and debris field flags for the naval unit. All supply categories are now considered.

3.46 JTLS-2021-15216 Warning 1468 Needs Reorder Value

Warning 1468 leaves the reorder level field empty when the automatic SVPR correction is executed.

Warning 1468 is reported when a unit has ZERO supplies available to support an air mission load for at it's assigned squadrons. It has been updated to set the reorder level for the supply category to 50% of the Starting On Hand value.

3.47 JTLS-2021-15217 Empty SLP Column In Login Data

A table exists on the OPM Login Arrival page that details the supplies within the Login event. In previous versions of JTLS-GO, this table would list the supply category name, the SLP equivalent name, and the amount for each supply that was part of the Login event.

When the concept of an SLP equivalent name was removed, the table was modified to put the supply category name twice. This was redundant, and was not working because a bad argument was being passed. While this did not cause any problems in this version of JTLS-GO, it caused a crash in JTLS-GO 6.1, and it was decided to fix it in JTLS-GO 6.0.

Because the concept of SLP equivalent names no longer exists, and printing the same name twice is redundant, the column that used to contain the SLP equivalent name was removed.

3.48 JTLS-2021-15218 DDS Flight Path Node Names Disappeared

When reloading the DDS map display while in Flight Path Edit Mode, the names of the nodes disappeared and would not display.

The Flight Paths editor incorrectly handled the node name file. DDS code was modified to correct the problem.

3.49 JTLS-2021-15219 BE Facility And Object On Same Side

The SVP was not identifying when BE Facilities and Objects were on the same side, which is an incorrect situation.

BE Objects should not be on the same Force Side as BE facilities. Force Side A owns the BE Facility and since a BE Facility is an intelligence collection concept, the facility should contain only foreign objects. The SVP code failed to catch these problems. The check in the SVP has been added.

3.50 JTLS-2021-15220 Allow Only One Special Fuel Category

For each of the three special capability fuel categories (Air, Ground and Navy), there should only be one supply category.

Each of the special fuel categories can only have one supply category assigned. New SVP errors have been added to notify the user if this rule has been broken. This error was discovered during JTLS-GO 6.1 testing in which multiple fuel types can be represented.

3.51 JTLS-2021-15221 Rewording DDS SLP Table Column Label

The column "Time to DIS Convoy" should read "Time to Dispatch Convoy".

The label and message were reworded in the DDS GUI files. The term DIS has a specific meaning in combat simulations, which was confusing to DDS users.

3.52 JTLS-2021-15222 DDS Screens Use Confusing Terminology

The DDS screen use the terms "Routine Support Unit" and "Regular Support Unit" for the unit-specific Supply Category Support Unit. This is inconsistent.

Terminology was changed from "Regular" to "Routine" in the DDS GUI files.

3.53 JTLS-2021-15223 DDS BE Facility Table Column Label

The title label changed from "Force Side" to "Collecting Force Side" on the BE Facility table screen.

The title label was changed in the DDS GUI files.

3.54 JTLS-2021-15226 Link-16 Missile Detections Not Working

After-Boost-Phase Link-16 missile detections were not working. Detected missiles simply stopped moving.

The logic was not properly updated for multiple Link-16 networks. The logic was corrected.

4.0 REMAINING ERRORS

Every effort has been made to correct known model errors. All reproducible errors that resulted in CEP catastrophic software failures (crashes) have been corrected. Other corrections were prioritized and completed according to their resource cost-to-benefit relationship.

As JTLS-GO represents a major release of new functionality, remaining outstanding errors have been considered to be obsolete and no longer relevant to JTLS-GO and have been removed from consideration for correction at this time. In future maintenance releases, outstanding errors related to JTLS-GO will be listed in this chapter, with information provided regarding the extent of the error, as well as suggestions to avoid or minimize the effects of the problem.

4.1 DDSC – TMU Line Mode Changes Multiple Grids

When using the line mode in the TMU, more grids than the ones the line passes through are changed. This can also cause a warning about trying to change multiple layers to appear.

4.2 DDSC – Multiple Types In DDS History Table

If records for more than one table type are selected in the DDS History table, "History Details" will display details for only one type.

4.3 WHIP - Pipeline Not Shown On IMT

A pipeline being operated by a non-detected unit is not shown in the pipeline IMT.

4.4 DDSC/WHIP/JOBE - CADRG Map Zoom

When using the CADRG map projection, if the width of the map is less than the height the zoom tool does not work correctly.

APPENDIX A. ABBREVIATIONS AND ACRONYMS

Terms are included in this Appendix to define their usage in JTLS-GO design, functionality, and documentation.

AAA	Anti-Aircraft Artillery
AADC	Area Air Defense Commander
AAL	Air-to-Air Lethality
A/C	Aircraft
ACP	Air Control Prototype
ADA	Air Defense Artillery
AEW	Airborne Early Warning
AFB	Air Force Base
AG	Air-Ground (Air-to-Ground)
AI	Air Interdiction
AIM	Air Intercept Missile
AIREF	Air Refueling
AKL	Area Kill Lethality
AMMO	Ammunition
AO	Area of Operations
AOC	Air Operations Center
APC	Armored Personnel Carrier
ARECCE	Armed Reconnaissance
ARTE	Air Route
ARTY	Artillery
ASC	Automatic Supply Calculation
ASCII	American Standard Code for Information Interchange
ASW	Anti-Submarine Warfare
ATC	Aircraft Target Category
ATGM	Anti-Tank Guided Missile
ATK	Attack
ATO	Air Tasking Order
ATORET	Air Tasking Order Retrieve Program
ATOT	Air Tasking Order Translator
AWACS	Airborne Warning And Control System
AZ	Altitude Zone

BADGE	Bilateral Air Defense Ground Environment (used by Japan Defense Agency)
BAI	Battlefield Air Interdiction
BDA	Battle Damage Assessment
BDE	Brigade
BN	Battalion
C3	Command, Control, and Communications
C3I	Command, Control, Communications, and Intelligence
C4I	Command, Control, Communications, Computers, and Intelligence
CA	Civil Affairs
CADRG	Compressed ARC Digitized Raster Graphics
CAP	Combat Air Patrol
CAS	Close Air Support
CAT	Category
CCF	Central Control Facility
CCP	Command Control Prototype
CCU	Controller Change Unit
CEP	Combat Events Program
CMDR	Commander
COP	Common Operational Picture
CP	Combat Power
CS	Combat System
CSP	Combat System Prototype
CTAPS	Contingency Tactical Air Planning System
CTG	Commander Task Group
CTRL	Control keyboard command
DCA	Defense Counter Air
DCL	Digital Command Language
DDS	Database Development System
DEMSDB	Demonstration Standard Database
DISA	Defense Information Systems Agency
DIV	Division
DMA	Defense Mapping Agency
DoD	Department of Defense
DOS	Days of Supply

DPICM	Dual Purpose Improved Conventional Munitions
DS	Direct Support
DSA	Directed Search Area
DTG	Date Time Group
EC	Electronic Combat
ECM	Electronic Counter Measure
ECP	Engineering Change Proposal
EEI	Essential Elements of Information
ELINT	Electronic Intelligence
ELS	Entity Level Server
EODA	Entity Level JTLS Object Data Authority
ETA	Estimated Time of Arrival
FARP	Forward Arming and Refueling Point
FLP	Fire Lethality Prototype
FLOT	Forward Location of Troops
FOL	Forward Operating Location
FWL	Frederick W. Lanchester (originated a differential equation model of attrition)
GAL	Gallon
GCCS	Global Command and Control System
GRTE	Ground Route
GS	General Support
GSR	General Support Reinforcing
GUI	Graphical User Interface
HARM	High-speed Anti-radiation Missile
HE	High Explosive
HELO	Helicopter
HMMWV	High Mobility Multipurpose Wheeled Vehicle
HQ	Headquarters
HRU	High Resolution Unit
HTML	Hypertext Markup Language
HTT	High resolution unit Target Type
HUP	High resolution Unit Prototype
ICM	Improved Conventional Munitions
ICP	Interface Configuration Program

ICPLogin	Interface Login Program
ID	Identifier
IFF	Identification Friend or Foe
IIP	Intelligence Information Prototype
IMT	Information Management Tool
INFO	Information
INTEL	Intelligence
JCATS	Joint Conflict And Tactical Simulation
JDA	Japan Defense Agency
JDPI	Joint Desired Point of Impact (formerly DMPI: Desired Mean Point of Impact)
JDS	JTLS Data System
JDSP	JTLS Data System Protocol
JEDI	JODA Entity Data Identifier
JMCIS	Joint Maritime Combat Information System
JMEM	Joint Munitions Effectiveness Manuals
JODA	JTLS Object Distribution Authority
JOI	JTLS Operational Interface
JPL	Jet Propulsion Laboratory
JRSG	Joint Rapid Scenario Generation (formerly JIDPS: Joint Integrated Database Preparation System)
JSDF	Japanese Self-Defense Force
JTLS	Joint Theater Level Simulation
JTLS-GO	Joint Theater Level Simulation - Global Operations
JTOI	JTLS Transaction Operational Interface
JXSR	JTLS XML Serial Repository
KIA	Killed In Action
KM	Kilometer
KNOTS	Nautical miles per hour
LA	Lethal Area
LAN	Local Area Network
LAT	Latitude
LB	Login Build (JTLS order type)
LDAP	Lightweight Directory Access Protocol
LDT	Lanchester coefficient Development Tool
LOG	Logistics

LOGIN	Logistics Input
LOGREP	Logistics Report
LONG	Longitude
LOTS	Logistics Over The Shore
LR	Long Range
M&S	Modeling and Simulation
MAPP	Modern Aids to Planning Program
MB	Megabyte
MCP	Mobility Counter-mobility Prototype
MCR	Model Change Request
MG	Machine Gun
MHE	Material Handling Equipment
MIP	Model Interface Program
MOGAS	Motor Gasoline
MOPP	Mission-Oriented Protective Posture
MOSAIC	NCSA user interface software
MOTIF	X Window System graphical interface
MP	Maneuver Prototype
MPP	Message Processor Program
MSC	Major Subordinate Command
MSG	Message
MTF	Message Text Formats
MUREP	Munitions Report
MUSE	Multiple Unified Simulation Environment
NCSA	National Center for Supercomputing Applications (University of Illinois)
NEO	Noncombatant Evacuation Operations
NFS	Network File Server
NGO	Non-Governmental Organization
NIS	Network Information Service or Network Information System
NM	Nautical Mile
NTSC	Naval Telecommunications System Center
OAS	Offensive Air Support
OBS	Order of Battle Service (formerly UGU: Unit Generation Utility)
OCA	Offensive Counter-Air

OJCS	Organization of the Joint Chiefs of Staff
OMA	Order Management Authority
ONC	Operational Navigation Chart
OPM	Online Player Manual
OPP	Order Preprocessing Program
OTH	Over The Horizon
OTH Gold	Over The Horizon message specification
OTH-T	Over The Horizon-Targeting
pD	Probability of Detection
pE	Probability of Engage
pH	Probability of Hit
pK	Probability of Kill
PKL	Point Kill Lethality
POL	Petroleum, Oil, and Lubricants
POSIX	International operating system standard based on System V and BSD
PPS	Postprocessor System
PSYOPS	Psychological Operations
RAM	Random Access Memory
RDMS	Relational Database Management System
RECCE	Reconnaissance (air missions)
RECON	Reconnaissance (ground missions)
REGT	Regiment
RNS	Random Number Seed
ROE	Rules Of Engagement
RPT	Report
RSP	Reformat Spreadsheet Program
SAL	Surface-to-Air Lethality
SAM	Surface-to-Air Missile
SAM/AAA	Surface-to-Air Missile/Anti-Aircraft Artillery
SC	Supply Category
SCP	Simulation Control Plan
SDB	Standard Database
SEAD	Suppression of Enemy Air Defense
SIMSCRIPT	Simulation programming language (product of CACI, Inc.)

SIP	Scenario Initialization Program
SITREP	Situation Report
SLP	Sustainment Log Prototype
SOF	Special Operations Forces
SP	Survivability Prototype
SQL	Structured Query Language
SR	Short Range
SRP	Start/Restart Program (a JTLS component)
SRTE	Sea Route
SSM	Surface-to-Surface Missile
STR	Software Trouble Report
SUP	Ship Unit Prototype
SVP	Scenario Verification Program
SYNAPSE	Synchronized Authentication and Preferences Service
TADIL	Tactical Digital Interface Link
TCP/IP	Transmission Control Protocol/Internet Protocol
TEL	Transporter Erector Launcher
TG	Target entity attribute prefix
TGS	Terrain Generation Service (formerly TPS:Terrain Preparation System)
TGT	Target
TMU	Terrain Modification Utility
TOE	Table of Organization and Equipment
TOT	Time Over Target
TOW	Tube-launched Optically-tracked Wire-guided missile
TPFDD	Time-Phased Force Deployment Data
TTG	Target Type Group
TTL	Target Types List
TUP	Tactical Unit Prototype
TW	Targetable Weapon
UBL	Unit Basic Load
UIM/X	GUI builder tool
UNIX	POSIX-compliant operating system
UNK	Unknown
UOM	Unit Of Measure

USA	United States Army (U.S. and U.S.A. refer to United States and United States of America)
USAF	United States Air Force
USCG	United States Coast Guard
USMC	United States Marine Corps
USMTF	United States Message Text Format
USN	United States Navy
UT	Unit entity attribute prefix
UTM	Universal Transverse Mercator
VIFRED	Visual Forms Editor
VMS	Virtual Memory System
VTOL	Vertical Take-Off and Landing aircraft
WAN	Wide Area Network
WDRAW	Withdraw
WEJ	Web Enabled JTLS
WHIP	Web Hosted Interface Program
WIA	Wounded In Action
WPC	Warrior Preparation Center
WPN	Weapon
WT	Weight
WW	Wild Weasel
XMS	XML Message Service

APPENDIX B. VERSION 6.0.0.0 DATABASE CHANGES

Refer to Appendix B in the JTLS-GO Version 6.0.0.0 VDD. No database format changes were needed to this Maintenance release.

APPENDIX C VERSION 6.0.0.0 REPOSITORY CHANGES

The following changes were made to the JTLS-GO 6.0 repository.

C.1 New Supply Categories

- CL.V.AA-AIM54A.PHOENIX

- CL.V.AA-AIM54C.PHOENIX

- CL.V.AA-AIM7F.SPARROW

- CL.V.AA-AIM7M.SPARROW

- CL.V.AA-AIM7P.SPARROW

- CL.V.AA-AIM7R.SPARROW

- CL.V.AA-AIM9B.SIDEWINDER

- CL.V.AA-AIM9D.SIDEWINDER

- CL.V.AA-AIM9GHJNP.SIDEWI

- CL.V.AA-AIM9L.SIDEWINDER

- CL.V.AA-AIM9M.SIDEWINDER

- CL.V.AA-AIM9S.SIDEWINDER

- CL.V.AA-ER-AA10C.SAR

- CL.V.AA-ER-AA10D.IR

- CL.V.AA-ER-AA6.IR

- CL.V.AA-ER-AA6.SAR

- CL.V.AA-ER-AA7.IR

- CL.V.AA-ER-AA7.SAR

- CL.V.AA-ER-PL12

- CL.V.AA-MR-AA10A.SAR

- CL.V.AA-MR-AA10B.IR

- CL.V.AA-MR-AA6.IR

- CL.V.AA-MR-AA6.SAR

- CL.V.AA-MR-AA7.SAR

- CL.V.AA-MR-AA7-IR

- CL.V.AA-MR-ASPIDE.AAM

- CL.V.AA-MR-PL11

- CL.V.AA-MR-R.DARTER.V4

- CL.V.AA-MR-TC2.SKYSWORD

- CL.V.AA-R550.MAGIC1

- CL.V.AA-R550.MAGIC2

- CL.V.AA-R550.MAGIC2.MK2

- CL.V.AA-SR-A.DARTER

- CL.V.AA-SR-AA2C

- CL.V.AA-SR-AA2D

- CL.V.AA-SR-AA8A

- CL.V.AA-SR-AA8B

- CL.V.AA-SR-ASRAAM

- CL.V.AA-SR-FN6.AAM

- CL.V.AA-SR-HELSTREAK.HVM

- CL.V.AA-SR-IRIS.T

- CL.V.AA-SR-MISTRAL.ATAM

- CL.V.AA-SR-PL2B

- CL.V.AA-SR-PL3

- CL.V.AA-SR-PL5B.IR

- CL.V.AA-SR-PL5B.RF

- CL.V.AA-SR-PL5E

- CL.V.AA-SR-PL7

- CL.V.AA-SR-PL7B

- CL.V.AA-SR-PL8

- CL.V.AA-SR-PL9.AAM

- CL.V.AA-SR-PL9C.AAM

- CL.V.AA-SR-QW1.AAM

- CL.V.AA-SR-QW2.AAM

- CL.V.AA-SR-SA14.AAM

- CL.V.AA-SR-SA16.AAM

- CL.V.AA-SR-SA18.AAM

- CL.V.AA-SR-SA7.AAM

- CL.V.AA-SR-SHAFRIR2

- CL.V.AA-SR-STINGER.AAM

- CL.V.AA-SR-TC1.SKYSWORD

- CL.V.AA-SR-TY90.AAM

- CL.V.AA-SR-U.DARTER

- CL.V.ARTY-105MM.1DPICM-IS

- CL.V.ARTY-105MM.1DPICM-US

- CL.V.ARTY-105MM.1HE-NEW

- CL.V.ARTY-105MM.1HE-OLD

- CL.V.ARTY-105MM.1ICM

- CL.V.ARTY-105MM.1RAP

- CL.V.ARTY-107RIM.1DPICM

- CL.V.ARTY-107RIM.1HE

- CL.V.ARTY-120RIM.1DPICM

- CL.V.ARTY-120RIM.1HE

- CL.V.ARTY-120RIM.1RAP

- CL.V.ARTY-120SBM.1DPICM

- CL.V.ARTY-120SBM.1HE-ER

- CL.V.ARTY-120SBM.1HE-NEW

- CL.V.ARTY-120SBM.1HE-OLD

- CL.V.ARTY-120SBM.1HE-RAP

- CL.V.ARTY-122MM.1BB

- CL.V.ARTY-122MM.1CLGP

- CL.V.ARTY-122MM.1DPICM

- CL.V.ARTY-122MM.1HE-NEW

- CL.V.ARTY-122MM.1HE-OLD

- CL.V.ARTY-122MM.1RAP

- CL.V.ARTY-130MM.1BB

- CL.V.ARTY-130MM.1DPICM

- CL.V.ARTY-130MM.1HE

- CL.V.ARTY-130MM.1RAP

- CL.V.ARTY-152MM.1BB

- CL.V.ARTY-152MM.1CHEM

- CL.V.ARTY-152MM.1CLGP-LR

- CL.V.ARTY-152MM.1CLGP-SR

- CL.V.ARTY-152MM.1DPICM-CH

- CL.V.ARTY-152MM.1DPICM-ER

- CL.V.ARTY-152MM.1DPICM-IS

- CL.V.ARTY-152MM.1DPICM-RU

- CL.V.ARTY-152MM.1HE-NEW

- CL.V.ARTY-152MM.1HE-OLD

- CL.V.ARTY-152MM.1RAP

- CL.V.ARTY-155MM.1BB

- CL.V.ARTY-155MM.1CHEM

- CL.V.ARTY-155MM.1CLGP

- CL.V.ARTY-155MM.1DPICM

- CL.V.ARTY-155MM.1HE-NEW

- CL.V.ARTY-155MM.1HE-OLD

- CL.V.ARTY-155MM.1ICM

- CL.V.ARTY-155MM.1LEAFLETS

- CL.V.ARTY-155MM.1MINES-AP

- CL.V.ARTY-155MM.1MINES-AT

- CL.V.ARTY-155MM.1RAP

- CL.V.ARTY-155MM.EXCALIBUR

- CL.V.ARTY-160MM.1HE-HEAVY

- CL.V.ARTY-160MM.1HE-LIGHT

- CL.V.ARTY-175MM.1DPICM

- CL.V.ARTY-175MM.1HE

- CL.V.ARTY-180MM.1HE

- CL.V.ARTY-180MM.1PEN

- CL.V.ARTY-180MM.1RAP

- CL.V.ARTY-203MM.1BB

- CL.V.ARTY-203MM.1CHEM

- CL.V.ARTY-203MM.1DPICM

- CL.V.ARTY-203MM.1HE-RU

- CL.V.ARTY-203MM.1HE-US

- CL.V.ARTY-203MM.1ICM-RU

- CL.V.ARTY-203MM.1ICM-US

- CL.V.ARTY-203MM.1RAP-RU

- CL.V.ARTY-203MM.1RAP-US

- CL.V.ARTY-240SBM.1HE

- CL.V.ARTY-RKTS.107CH2ER

- CL.V.ARTY-RKTS.107CH2HE

- CL.V.ARTY-RKTS.122RU2HE.0

- CL.V.ARTY-RKTS.122RU2HE.N

- CL.V.ARTY-RKTS.122RU2HESR

- CL.V.ARTY-RKTS.122RU2RAP

- CL.V.ARTY-RKTS.130CH2ER

- CL.V.ARTY-RKTS.130CH2HE

- CL.V.ARTY-RKTS.140RU2HE

- CL.V.ARTY-RKTS.220RU1HE

- CL.V.ARTY-RKTS.SMERCHHEX1

- CL.V.AS-AGM114ABC

- CL.V.AS-AGM114F

- CL.V.AS-AGM114K

- CL.V.AS-AGM114M

- CL.V.AS-AGM119.PENGUIN2

- CL.V.AS-AGM119.PENGUIN3

- CL.V.AS-AGM12D.BULLPUPB

- CL.V.AS-AGM12E.BULLPUPA

- CL.V.AS-AGM130A.IIR

- CL.V.AS-AGM130A.TV

- CL.V.AS-AGM130C.PEN.IIR

- CL.V.AS-AGM130C.PEN.TV

- CL.V.AS-AGM142.BF.IIR

- CL.V.AS-AGM142.BF.TV

- CL.V.AS-AGM142P.PEN.IIR

- CL.V.AS-AGM142P.PEN.TV

- CL.V.AS-AGM154E

- CL.V.AS-AGM65AB.TV

- CL.V.AS-AGM65D.IR

- CL.V.AS-AGM65E.SAL

- CL.V.AS-AGM65E2L.SAL

- CL.V.AS-AGM65F.IR

- CL.V.AS-AGM65G.IR

- CL.V.AS-AGM65H.TV

- CL.V.AS-AGM65J.TV

- CL.V.AS-AGM65K.TV

- CL.V.AS-AGM65K.TV.D.CAL

- CL.V.AS-AGM65L.TV.SAL

- CL.V.AS-ARM-LR.AS16B

- CL.V.AS-ARM-LR.AS4B

- CL.V.AS-ARM-LR.AS6B

- CL.V.AS-ARM-LR.HARPY.BOMB

- CL.V.AS-ARM-LR.HARPY.UAV

- CL.V.AS-ARM-LR.KH31AD

- CL.V.AS-ARM-LR.KH58USHKE

- CL.V.AS-ARM-LR.YJ91

- CL.V.AS-ARM-SR.AS37

- CL.V.AS-ARM-SR.AS9

- CL.V.AS-ARM-SR.KH23PS

- CL.V.AS-ARM-SR.KH25

- CL.V.AS-ARM-SR.KH25MAE

- CL.V.AS-ARM-SR.KH31P

- CL.V.AS-ARM-SR.KH58

- CL.V.AS-ARM-SR.KH58USHE

- CL.V.AS-ARM-SR.TC2A

- CL.V.AS-AS34.KORMORAN1

- CL.V.AS-AS34.KORMORAN2

- CL.V.AS-ASM1.TYPE80

- CL.V.AS-ASM1C.TYPE91

- CL.V.AS-ASM2

- CL.V.AS-ASM2.TYPE93

- CL.V.AS-ASM2.TYPE96

- CL.V.AS-AT-9K114.OLD

- CL.V.AS-AT-9K121.NEW

- CL.V.AS-AT-9M117.NEW

- CL.V.AS-AT-9M117M.NEW

- CL.V.AS-AT-9M120.OLD

- CL.V.AS-AT-9M120F.OLD

- CL.V.AS-AT-9M14-2.OLD

- CL.V.AS-AT-9M14-2F.OLD

- CL.V.AS-AT-9M14-2M.OLD

- CL.V.AS-AT-9M14P.OLD

- CL.V.AS-AT-9M17.OLD

- CL.V.AS-AT-9M17P.OLD

- CL.V.AS-AT-AR1.CH.UAV.AT

- CL.V.AS-AT-AS11.FR.FRAG.O

- CL.V.AS-AT-AS11.FR.HC.O

- CL.V.AS-AT-AS11.FR.SAP.O

- CL.V.AS-AT-AS12.FR.FRAG.O

- CL.V.AS-AT-AS12.FR.SAP.O

- CL.V.AS-AT-AS12.FR.SC.O

- CL.V.AS-AT-BLUEARROW7.NEW

- CL.V.AS-AT-GBU44B.NEW

- CL.V.AS-AT-HJ10.NEW

- CL.V.AS-AT-HJ8A.OLD

- CL.V.AS-AT-HJ8C.OLD

- CL.V.AS-AT-HJ8E.NEW

- CL.V.AS-AT-NIMROD.NEW

- CL.V.AS-AT-PAWS3LR.NEW

- CL.V.AS-AT-SPIKE.ER.NEW

- CL.V.AS-AT-SPIKE.LR.NEW

- CL.V.AS-AT-ZT3.SWIFT.NEW

- CL.V.AS-AT-ZT35.INGWE.NEW

- CL.V.AS-BGM71AB

- CL.V.AS-BGM71C

- CL.V.AS-BGM71D

- CL.V.AS-BGM71E

- CL.V.AS-BGM71F

- CL.V.AS-BLU109.LGB

- CL.V.AS-BLU109B.PEN

- CL.V.AS-DWS39.ANTIARMOR

- CL.V.AS-DWS39.ANTIRWY

- CL.V.AS-DWS39.ANTITANK

- CL.V.AS-DWS39.CAS

- CL.V.AS-DWS39.MINE

- CL.V.AS-FAE.CBU55

- CL.V.AS-FAE.CBU72

- CL.V.AS-FAE.CH310KG

- CL.V.AS-FAE.KAB1500KR

- CL.V.AS-FAE.KAB1500LG

- CL.V.AS-FAE.KAB500KR

- CL.V.AS-FIRE.MK77.227KG

- CL.V.AS-FIRE.MK77.340KG

- CL.V.AS-GBU15.MK84.IIR

- CL.V.AS-GBU15.MK84.TV

- CL.V.AS-GBU15E.MK84.TV

- CL.V.AS-GBU15P.B109.IIR

- CL.V.AS-GBU15P.B109.TV

- CL.V.AS-GBU15PE.B109.TV

- CL.V.AS-GBU24P.BPG2000

- CL.V.AS-GBU24P.PWY3.B109

- CL.V.AS-GBU24P.PWY3.B116

- CL.V.AS-HOT1.OLD

- CL.V.AS-HOT2.OLD

- CL.V.AS-HOT2MP.OLD

- CL.V.AS-IR-LR.KEPD150

- CL.V.AS-IR-LR.KEPD350

- CL.V.AS-IR-SR.C701T

- CL.V.AS-IR-SR.GCS1.225KG

- CL.V.AS-IR-SR.GCS1.340KG

- CL.V.AS-IR-SR.KH25MTP

- CL.V.AS-IR-SR.KH38MTE

- CL.V.AS-IR-SR.OPHER.MK82

- CL.V.AS-IR-SR.OPHER.MK83

- CL.V.AS-IR-SR.PGM3A.BF

- CL.V.AS-IR-SR.PGM3A.PEN

- CL.V.AS-IR-SR.PGM3B.BF

- CL.V.AS-IR-SR.PGM3B.PEN

- CL.V.AS-LG1000F.KAB500L

- CL.V.AS-LG1000F.KAB500LG

- CL.V.AS-LG1000F.LT2.500KG

- CL.V.AS-LG1000F.MATRA400B

- CL.V.AS-LG1000F.NORCO500

- CL.V.AS-LG1000P.MATRA400P

- CL.V.AS-LG3000F.KAB1500LF

- CL.V.AS-LG3000F.KAB1500LG

- CL.V.AS-LG3000P.KAB1500.B

- CL.V.AS-LG3000P.KAB1500.P

- CL.V.AS-MP22.EXCALIBUR

- CL.V.AS-NAPALM.340KG

- CL.V.AS-NAPALM.454KG

- CL.V.AS-RC.KH23M

- CL.V.AS-RC.KH25MR

- CL.V.AS-RDR-LR.AS16

- CL.V.AS-RDR-LR.AS4

- CL.V.AS-RDR-LR.AS4.BSAP

- CL.V.AS-RDR-LR.AS6

- CL.V.AS-RDR-LR.C611

- CL.V.AS-RDR-LR.C802A.ER

- CL.V.AS-RDR-LR.C803A

- CL.V.AS-RDR-LR.GABRIEL4

- CL.V.AS-RDR-LR.HY41

- CL.V.AS-RDR-LR.KH41

- CL.V.AS-RDR-LR.RBS15F.MK2

- CL.V.AS-RDR-LR.RBS15F.MK3

- CL.V.AS-RDR-MR.C201

- CL.V.AS-RDR-MR.C601

- CL.V.AS-RDR-MR.C611

- CL.V.AS-RDR-MR.C802A

- CL.V.AS-RDR-MR.HSIUNGF2AL

- CL.V.AS-RDR-MR.KH31PK

- CL.V.AS-RDR-MR.KH35

- CL.V.AS-RDR-MR.RBS15F

- CL.V.AS-RDR-MR-YJ63

- CL.V.AS-RDR-SR.C101

- CL.V.AS-RDR-SR.C701R

- CL.V.AS-RDR-SR.C704

- CL.V.AS-RDR-SR.C801A

- CL.V.AS-RDR-SR.C801A.ER

- CL.V.AS-RDR-SR.GABRIEL3

- CL.V.AS-RDR-SR.KH25MA

- CL.V.AS-RDR-SR.KH31A

- CL.V.AS-RDR-SR.MARTE.MK2

- CL.V.AS-RDR-SR.MARTE.MK2A

- CL.V.AS-RDR-SR.MARTE.MK2S

- CL.V.AS-RDR-SR.TL10A

- CL.V.AS-RWY.CUT.BAP100.9

- CL.V.AS-RWY.CUT.CH360KG

- CL.V.AS-RWY.CUT.MW1TUBE

- CL.V.AS-SAL-MR.PGM1A.BF

- CL.V.AS-SAL-MR.PGM1A.PEN

- CL.V.AS-SAL-MR.PGM1B.BF

- CL.V.AS-SAL-MR.PGM1B.PEN

- CL.V.AS-YASSER

- CL.V.CBU-AP-107.CH.2ICM

- CL.V.CBU-AP-122.CH.2ICM

- CL.V.CBU-AP-130.CH.2ICM

- CL.V.CBU-AP-FROG7B.1ICM

- CL.V.CBU-AP-NO.DONG1.1ICM

- CL.V.CBU-AP-SMERCH.APAMX1

- CL.V.CBU-AP-SSX26.ICM

- CL.V.CBU-AP-SSX26E.ICM

- CL.V.CBU-CEM-107.CH.2DPIC

- CL.V.CBU-CEM-122.CH.2DPIC

- CL.V.CBU-CEM-SR220.1DPICM

- CL.V.CBU-SF-SMERCH.AT.X1

- CL.V.MINES-122MM.CH.2MINE

- CL.V.MINES-122MM.RU.2MINE

- CL.V.MINES-ABABEEL100.MIN

- CL.V.MINES-ABABEEL50.MINE

- CL.V.MINES-CIS.DP.AIR

- CL.V.MINES-KITE.AP.MINE

- CL.V.MINES-LANDMINE.AT_AP

- CL.V.MINES-MW1TUBE.6MUSPA

- CL.V.MINES-MW1TUBE.8MIFF

- CL.V.MINES-PROSAB250

- CL.V.MINES-PSD-1.AP.MINE

- CL.V.MINES-SMERCH

- CL.V.MINES-SR220.RU.1APM

- CL.V.MINES-SR220.RU.1ATM

- CL.V.MINES-SS60.ASTRO.MIN

- CL.V.MINES-SS-X-26.MINE

- CL.V.MINES-SS-X-26E.MINE

- CL.V.MINES-VOLCANO.MINES

- CL.V.NVL.ARTY-100MMFG.HE

- CL.V.NVL.ARTY-100MMSGL.HE

- CL.V.NVL.ARTY-100MMSGM.HE

- CL.V.NVL.ARTY-100MMSGS.HE

- CL.V.NVL.ARTY-100MMVG.HE

- CL.V.NVL.ARTY-120MMFG.1AP

- CL.V.NVL.ARTY-120MMFG.1HE

- CL.V.NVL.ARTY-130MMFG.HE

- CL.V.NVL.ARTY-130MMSG.AP

- CL.V.NVL.ARTY-130MMSG.HE

- CL.V.NVL.ARTY-37MMFG.GG

- CL.V.NVL.ARTY-37MMSG.GG

- CL.V.NVL.ARTY-3INFGM.AP

- CL.V.NVL.ARTY-3INFGM.HE

- CL.V.NVL.ARTY-3INFGM.MOM

- CL.V.NVL.ARTY-3INFGM.PFF

- CL.V.NVL.ARTY-3INFGS.HE

- CL.V.NVL.ARTY-3INSGM.AP

- CL.V.NVL.ARTY-3INSGM.HE

- CL.V.NVL.ARTY-3INSGM.MOM

- CL.V.NVL.ARTY-3INSGM.PFF

- CL.V.NVL.ARTY-3INSGS.HE

- CL.V.NVL.ARTY-3INVG.HE

- CL.V.NVL.ARTY-4.5INSGM.BB

- CL.V.NVL.ARTY-4.5INSGM.HE

- CL.V.NVL.ARTY-4.5INSGS.HE

- CL.V.NVL.ARTY-40MMFGL.GG

- CL.V.NVL.ARTY-40MMFGM.GG

- CL.V.NVL.ARTY-40MMSG.GG

- CL.V.NVL.ARTY-57MMFGL.HC

- CL.V.NVL.ARTY-57MMFGL.HE

- CL.V.NVL.ARTY-57MMFGM.HE

- CL.V.NVL.ARTY-57MMFGS.HE

- CL.V.NVL.ARTY-5INERGM

- CL.V.NVL.ARTY-5INFGM.AP

- CL.V.NVL.ARTY-5INFGM.HE

- CL.V.NVL.ARTY-5INFGS.AP

- CL.V.NVL.ARTY-5INFGS.HE

- CL.V.NVL.ARTY-5INSGL.AP

- CL.V.NVL.ARTY-5INSGL.ER

- CL.V.NVL.ARTY-5INSGL.HE

- CL.V.NVL.ARTY-5INSGM.AP

- CL.V.NVL.ARTY-5INSGM.HE

- CL.V.NVL.ARTY-5INSGS.AP

- CL.V.NVL.ARTY-5INSGS.HE

- CL.V.NVL.ARTY-76MMFGL.HE

- CL.V.SS-ARM-SSX26.ARM

- CL.V.SS-BSRBM-FROG7B.1HE

- CL.V.SS-BSRBM-FROG7B.CHEM

- CL.V.SS-FAE-SMERCH.FAE

- CL.V.SS-FAE-SSX26.FAE

- CL.V.SS-HAESONG.SSM

- CL.V.SS-IRBM-T.DONG2.1HE

- CL.V.SS-IRBM-T-DONG2.CHEM

- CL.V.SS-MRBM-NODONG1.1HE

- CL.V.SS-MRBM-NODONG1.CHEM

- CL.V.SS-MRBM-NODONG2.1HE

- CL.V.SS-MRBM-NODONG2.CHEM

- CL.V.SS-MRBM-T.DONG1.1HE

- CL.V.SS-MRBM-T-DONG1.CHEM

- CL.V.SS-MR-OGHAB.230MM.HE

- CL.V.SS-RDR-LR-YUN.FENG

- CL.V.SS-RGM84AB

- CL.V.SS-RGM84C

- CL.V.SS-RGM84D

- CL.V.SS-RGM84G

- CL.V.SS-RGM84L

- CL.V.SS-SRBM-SCUD-B

- CL.V.SS-SRBM-SCUD-C

- CL.V.SS-SRBM-SSX26.HE

- CL.V.SS-SRBM-SSX26.PEN

- CL.V.SS-SRBM-SSX26E.HE

- CL.V.SS-SRBM-SSX26E.PEN

- LEAFLETS-SR220.RU.1LEAF

C.2 Created New Naval Units

- HIGBEE_US (BURKE.2A_US)

- PETERSON_US (BURKE.2A_US)

C.3 Deleted Naval Units

- RICHARD.B_US

C.4 Deleted Combat System

- BTR40.7.62MM_APC-LA.OW

C.5 Created New TW

- YUN.FENG.SSM

C.6 Created New SSM

- YUN.FENG(TEL)

C.7 Created New SKL

- YUN.FENG_SKL