

# JTLS-GO

## Version Description Document

November 2022



DEPARTMENT OF DEFENSE  
JOINT STAFF J7  
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JOINT THEATER LEVEL SIMULATION - GLOBAL OPERATIONS  
(JTLS-GO 6.0.9.0)

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## ABSTRACT

The Joint Theater Level Simulation - Global Operations (JTLS-GO<sup>®</sup>) is an interactive, computer-based, multi-sided wargaming system that models air, land, naval, and Non-Governmental Organization (NGO) functions within a combine joint and coalition environment.

This *JTLS-GO Version Description Document (VDD)* describes the new features of the Version 6.0.9.0 delivery of the configuration-managed JTLS-GO software suite.

JTLS-GO 6.0.9.0 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. There were no functional improvements implemented as Engineering Change Proposals (ECPs) within this release. For consistency with other release VDDs, an empty Chapter 2 is included in this document. 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:

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## 1.0 INTRODUCTION

### 1.1 SCOPE

This *JTLS-GO Version Description Document (VDD)* describes Version 6.0.9.0 of the configuration managed Joint Theater Level Simulation - Global Operations (JTLS-GO<sup>®</sup>) software suite. JTLS-GO 6.0.9.0 is a Maintenance delivery for the JTLS-GO 6.0 series of releases.

JTLS-GO 6.0.9.0 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.

There is a single Engineering Change Proposals (ECPs) implemented for this release as described in [Chapter 2.0](#). All software corrections are summarized in [Chapter 3.0](#). [Chapter 4.0](#) lists all known remaining code errors.

### 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 6.0.6.0)
- *JTLS-GO Air Services User Guide* (JTLS-GO Document 03, Version 6.0.0.0)
- *JTLS-GO Controller Guide* (JTLS-GO Document 04, Version 6.0.4.0)
- *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 6.0.8.0)
- *JTLS-GO WHIP Training Manual* (JTLS-GO Document 10, Version 6.0.6.0)
- *JTLS-GO Player Guide* (JTLS-GO Document 12, Version 6.0.4.0)

- *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 Technical Coordinator Guide* (JTLS-GO Document 16, Version 6.0.3.0)
- *JTLS-GO Entity Level Server User Guide* (JTLS-GO Document 19, Version 6.0.4.0)
- *JTLS-GO Federation User Guide* (JTLS-GO Document 20, Version 6.0.6.0)
- *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 DDS User Guide* (JTLS-GO Document 06, Version 6.0.9.0)
- *JTLS-GO Installation Manual* (JTLS-GO Document 09, Version 6.0.9.0)
- *JTLS-GO Version Description Document* (JTLS-GO Document 17, Version 6.0.9.0)
- *JTLS-GO DDS Training Manual* (JTLS-GO Document 23, Version 6.0.9.0)

### 1.2.4 Delivered Software Components

JTLS-GO 6.0.9.0 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 138.

- 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 (JOBED)
- JTLS Geographic Information System (GIS) Terrain Building Program
- JTLS Master Integrated Database (MIDB) Tool

Instructions for installing JTLS-GO 6.0.9.0 are provided in the *JTLS-GO Installation Manual*. Installing a previous version of JTLS-GO prior to installing JTLS-GO 6.0.9.0 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 6.0.9.0, 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 6.0.9.0 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 7.9 (ES), 64-bit architecture.

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

RedHat Linux 7.9 - this operating system license must be purchased.

Oracle Linux 7.9 - 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 7.9 - 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 6.0.9.0 has been tested on the following operating systems:

Red Hat Linux Enterprise Edition Version 7.9.

CentOS Linux Version 7.9.

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

Although JTLS-GO 6.0 is only approved for use on a RedHat Linux 7.9 system, several users have already upgraded their JTLS-GO Linux servers to RedHat 8. There have been no reported problems running the JTLS-GO 6.0 series on RedHat 8 Linux servers, as long as the servers are not Federal Information Processing Standards (FIPS) enabled. Each user organization needs to decide whether to move to RedHat 8 with a FIPS-disabled environment. To summarize:

- JTLS-GO 6.0 series on RedHat 7.9 can be run in a FIPS-enabled or disabled mode.
  - JTLS-GO 6.0 series on RedHat 8.0 must be run in a FIPS-disabled mode.
  - JTLS-GO 6.1 series must be run on RedHat 8 and can be run in a FIPS enabled or disabled mode.
- JTLS-GO 6.0.9.0 is delivered with the Adoptium project Temurin Java Development Kit (JDK) 1.8 Update 352 package, which is equivalent to the current version of OpenJDK. This delivered version of the JDK has changed since the last release of JTLS-GO. The Temurin JDK is optimized for speed, while AdoptOpenJDK that was delivered with all previous versions in the JTLS-GO 6.0 series, was optimized for memory. All tests indicate that there is an increase in the amount of memory needed by our Java applications, but the increase is not significant. Both the ICP and DCP have the option for an organization to increase the maximum memory heap for the WHIP and DDSC. For large scenarios and databases, an organization should consider increasing the maximum heap size.
  - JTLS-GO uses IcedTea to provide the Java Web Start capability to start the JTLS-GO web-enabled applications. JTLS-GO supports IcedTea version 1.8.4. 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 1.8.4 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,

- 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 6.0.9.0. 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 (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. The code was compiled using Simscript III Version 5.3.
- 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-2.0>HLA 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 order to fulfill this DoD Cybersecurity requirement, JTLS-GO has moved to Adoptium™ JDK, a full OpenJDK Java environment with a licensing paradigm 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, Adoptium produces an equivalent version using infrastructure, build and test scripts to produce pre-built binaries of the OpenJDK class libraries. All Adoptium binaries and scripts are open source licensed and available for free.
- Within two-weeks of the Adoptium JDK release, JTLS-GO provides a bug 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 bug released versions when distributed.

Contact the U.S. Government Program Manager, Ms. Jessica Camacho (jessica.l.camacho.civ@mail.mil) to obtain the completed Cybersecurity paperwork and a current Gate completion certificate.

### 1.3.3 JTLS-GO High Level Architecture Compliance

The JTLS-GO 6.0.9.0 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 6.0.9.0 delivery. Users may obtain a full installation package of the RTI software from Pitch Corporation ([www.pitch.se](http://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.

STR JTLS-2022-15608 Grid Lower-Left Location Not Exact On Restart was released with JTLS-GO 6.0.6.0 in March 2022.

This STR required a change to the ASCII checkpoint format. Any saved checkpoints from versions of the JTLS-GO 6.0 series earlier than JTLS-GO 6.0.6.0 will not work with JTLS-GO 6.0.9.0.

STR JTLS-2022-15660 Convoy Didn't Load All Specified Supplies required an ASCII checkpoint format change. Any saved checkpoints made with JTLS-GO 6.0.7.0 will not work with JTLS-GO 6.0.8.0 and above.

#### 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

No new symbols have been added to the JTLS-GO Default Symbol Set. The JTLS-GO Development Team suggests not making any modifications to the delivered Default Symbol Set, 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. If in the future, the JTLS-GO Default Symbol Set is changed, a procedure to make these symbols available to all your scenarios will be delivered as part of the release. Such a procedure will not work if the end-user organization alters the official JTLS-GO Default 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.

The JTLS-GO 6.0.4.0 release, included a procedure needed to correct STR JTLS-2021-15237 which required changes to some post-update database triggers. If the following procedure was not accomplish with the release of JTLS-GO 6.0.4.0, it should be performed after the installation of this Maintenance release. Please:

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

This chapter summarizes model capabilities added to JTLS-GO 6.0.9.0 as a result of implementing Engineering Change Proposals (ECPs).

### 2.1 JTLS-2022-15852 Magic Move Squadron To Ship Rejection Message

#### Summary of Model Change Request

A Controller attempted to magic move a rotary-wing squadron to a naval vessel that was not helo-capable. The magic move order was properly rejected, but the message did not specify the reason why. In fact, any magic move order of a squadron to a ship that was rejected for any valid reason always resulted in an identical message that lacked specificity. Although not an error, the usefulness of the message was limited.

#### Design Summary

The logic that checked the validity of a squadron magic moved to a specific naval vessel generated a general rejection message "...no suitable ships...", regardless of the reason. To make the rejection message more useful to the Controller, the logic was enhanced to generate a new message with several sub-messages, each explaining the reason for the rejection of the magic move order.

### 2.2 JTLS-2022-15907 Sunrise/Sunset Times For Location Weather Report

#### Summary of Model Change Request

The Location Weather Report should be enhanced to include sunrise and sunset times and light conditions.

#### Design Summary

The sunrise and sunset times (if any) for the next 24-hour period were added to the top of the Location Weather Report. The light condition (Day or Night) was also added to each prediction date time group in the report. Column headings were also added.



### 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-2022-15694 Crash Pushing Change Manual Pair Flag

The model crashed while re-running a portion of an exercise in which a Change Mission Parameter Order was submitted via the JTLS-GO Push capability. The re-run portion of the exercise resulted in a mission being destroyed prior to the receipt of the Change Mission Parameter Order to change the mission's Manual Pair Flag. The model attempted to change the flag for the destroyed mission and the model crashed.

The code properly checked to determine if the mission still existed or not, and correctly determined that the mission did not exist. The model incorrectly did not pass over the Change Manual Pair portion of the logic under this circumstance. The code logic error was corrected.

#### 3.2 JTLS-2022-15696 Make Sealane Optimization Consistent

The individual ship sealane optimization algorithm is executed when a direct great circle path will run into land. If a ship cannot travel in a straight line, a sealane is the best choice. This algorithm has no distance or time limits imposed, but the formation version of this algorithm did impose a distance and time limit.

The formation algorithm was altered to remove the distance and time limitations for finding a sealane route. The two algorithms are now consistently implemented.

#### 3.3 JTLS-2022-15697 Road Arc Unknown Network Logic Error Cause

A logic error was generated that indicated a road arc had a distance of zero. There was not enough information provided to help find the issue.

The code was changed to provide the information. When the logic error is found again, the underlying issue can be found and solved.

#### 3.4 JTLS-2022-15700 Improve Warning 1277

The wording for SVPR Warning 1277 is confusing, and an option to display the HUP entire combat system list needed to be added.

The current wording of the SVPR correction list was reviewed and some modifications made as well as adding the option to display the entire HUP combat system list for review and modification

### 3.5 JTLS-2022-15702 Errors And Warnings Confusing Wording

**The phrase “Automatically Set...” in Warning 1279, and similar phrases in other Error and Warning messages, can be confusing for some of our foreign customers.**

The wording for Warning 1279 was changed from “Automatically Set” to “Set”. Other Errors and Warnings with a similar problem and those with minor spelling errors were grouped under this singular STR as they were fixed.

### 3.6 JTLS-2022-15704 Add Set Ops Capable Flag To Warning 1108

**Warning 1108 needs the capability to set the AIR OPS CAPABLE flag to NO.**

The capability to set the AIR OPS CAPABLE flag to NO was add to Warning 1108.

### 3.7 JTLS-2022-15706 Warning 1457 Numerical Values

**The values and wording of the numerical values in Warning 1457 are misleading.**

Warning 1457 reports a shortage in a unit’s Basic Load of a supply category. The SVP computes the actual value need for the prototype, but when the values are displayed, it is displaying a value that is slightly higher than the precise computed value. This prevents possible round-off issues, but confuses the end-user. The wording of the Warning message was modified to properly display both the computed value and the rounded value.

### 3.8 JTLS-2022-15708 Convoy Transported Unit Name

**A convoy completed delivery of a transported unit. The Supply Run IMT continued to display the name of the transported unit as the empty convoy returned to its origination.**

The routine that updated the JODA Data System (JDS) was incomplete. The name of the transported Unit was displayed while loaded on the convoy in the Supply Run IMT, but did not blank-out the name after the Unit was unloaded. The missing JDS update was added to do so.

### 3.9 JTLS-2022-15710 i18n Properties Generator Translation

**The user wanted to translate all files listed by the i18n Properties Generator, except the DDS related files. The language selected was Chinese - Taiwan (zh\_TW). The i18n started the translation with the WHIP order files. The translation proceeded until after about the eighth file, at which point every line fed to the i18n for translation resulted in a thrown exception with the message “[google-api-translate-java] Error retrieving translation”.**

When the i18n Properties Generator receives a line of text to translate, it creates and runs a thread. This allows multiple lines in a given file to be translated concurrently. Some files will have hundreds, and even thousands, of lines to be translated. Having a large number of concurrent threads making translation requests to the Google Translate API may overwhelm the API. Eventually the API may start throwing exceptions with the "Error retrieving translation" message.

This was not an issue when the i18n was initially developed. It may be possible that Google has either recently introduced an additional quota limit, or put more restrictions on an existing quota - this is not clearly documented.

Although the Exception and its message does not indicate what the problem is, it is being assumed that one of the following two quotas has been reached:

- The number of translation requests per unit of time.
- The number of characters to translate per unit of time.

Based on these quotas, the i18n no longer creates and runs a thread for each line in the file. All lines are now translated sequentially on a single thread. If an exception with the "Error retrieving translation" is now thrown, an attempt is made to translate the line again after a randomly drawn delay time. Testing indicated that for message (.mdf) files, the delay can range from 20 to 80 seconds, and for all other files this can range from 20 to 30 seconds. Up to five attempts can be made per line. This should be sufficient - testing showed that when multiple attempts had to be made, the number of attempts never exceeded two.

### 3.10 JTLS-2022-15712 Warning 1333 Confusing

**Warning 1333 is referencing a CRUISE load, but the aircraft type does not have one.**

The source code had a hard coded "CRUISE" value for the Target Type Group name. This gave the warning a totally meaningless presentation.

The Warning was rewritten with proper variables instead of hard coding. The SVPR correction messages were also rewritten to provide the user more information for correcting the problem.

The same problem existed for Error 317 and was corrected.

### 3.11 JTLS-2022-15716 Floating Point Violation Crash

**The model crashed on game start during the routine CALCULATE.AREA.RATIO. A user performed a copy, rather than a deep copy, of a Combat Arms Type. The new Combat Arms Type was being used by a Combat System belong to a Tactical Unit Prototype. The copy created a new record in the Combat Arms Type table, but there were no records in the CCP\_CAT\_BASE\_DENSITY, CCP\_CAT\_TT\_DENSITY and CCP\_CAT\_UP\_DENSITY tables.**

**When the model was calculating the area ratios for the Tactical Unit Prototype/Command Control Prototype combinations, there was a divide by zero crash.**

When the model is reading in the data associated with the Command Control Prototype Combat Arms Type Densities and Command Control Prototype Supply Type Densities, if there are records missing in the table, the default density is set to 1.0. This is the equivalent value the DDS inserts when a new density record is created.

### 3.12 JTLS-2022-15718 Air Transport Supplies Offload Never Finished

**An Air Transport order was submitted with a list of supplies to pick up from an airbase and deliver to a FARP. One of the supply categories in the list did not exist at the airbase. The mission loaded the supplies that were present and flew to the FARP as expected. The supplies carried by the mission were offloaded at the FARP, but the mission remained in offload status well past the End Time displayed in the Air Tasking Orders IMT. The Manage Air Mission Tasks order was required to cancel the Offload task so that the mission could return home.**

The logic that offloads each supply category from a mission uses two lists: the list of supplies carried by the mission and the list of supplies requested to be offloaded. When each supply category is offloaded, that category is removed from both the mission's list and the requested list. However, if the supply category was not present on the mission, that category was not removed from the requested list.

That logic flaw caused the offload process (using elementary loading facilities) to continue indefinitely because there was always a supply category remaining in the requested list that could not be offloaded. The error was corrected by adding code to remove the supply category from the requested list if no such category was carried by the mission. This solution now causes the offloading task to terminate normally.

### 3.13 JTLS-2022-15721 Set Remaining Battery For Non-Naval Unit Crash

**The Set Individual Unit Parameter order did not have any constraints on the type of unit that could be input for changing a unit's Remaining Battery Percent. It was possible to send an order setting the value for an Airbase or any other type of unit. This caused a crash in the CEP if the TUP index for the type of unit was greater than the number of Ship Unit Prototypes.**

A constraint was added to the order so that only naval units can have the field changed.

At the same time, it was noted that the Controller could change the reason for a unit attachment from Reconstitution to Task Organization or vice-versa. It was felt that this should not be permitted since it would damage any TOE numbers if the value was changed and the unit was detached. This field was removed from the order.

### 3.14 JTLS-2022-15723 Cruise Missiles Not Displaying With Track Name

**Cruise Missiles are appearing on the WHIP without an associated real world or track name. This makes it impossible to select the missile and receive any Sitrep information.**

The problem was tracked down to the initialization routine for Cruise Missiles to the JODA. A check was being made to determine if a Side should know about the Cruise Missile. The check was if the last location time was greater than zero. During creation of the cruise missile, the last location time is set to zero if the cruise missile is known, and less than zero if it is not. The check in question should have checked if the last location time was greater than or equal to zero. This was appropriately changed.

### 3.15 JTLS-2022-15728 Periodic Report Air Mission Message Format Error

**Message 9040 is used to generate the Periodic Report Air Mission. An error was found in the format of this message while using the Message Deliver Program (MDP) to deliver messages to external files. An error message was visible on the Web Services Manager, which indicated that an invalid Mission Type was accessed in the scenario vocabulary data.**

This error was associated with a mis-match between the message data which was output by the CEP and the data format in the message definition file. The CEP was not sending any mission type data, but the format was expecting to receive that information. The message definition file was corrected to match the CEP output.

### 3.16 JTLS-2022-15733 Merging Formation With Ground Wait Ships Crash

**The model crashes when Formation 1, which had been ordered to move to a land location, was merged with Formation 2. Formation 1's ships were in a Ground Wait state, waiting for the formation to leave its land location, so they could move to an appropriate stationing location. The merge was processed, but the first time Formation 2 moved, the newly added units crashed because they were no longer in a Ground Wait state, but held a Ground Wait task.**

The cause of the issue was not in the formation move logic. The problem occurred when the merge procedure was executed. When the ships were removed from Formation 1, they should have cleared their wait station status. The code actually cleared the status, but too late in the logic sequence. The clearing of the ship's station wait status was moved above the logic that attempted to cancel the ship's wait task.

A similar problem was found when attempting to split a formation. This issue was also fixed.

### 3.17 JTLS-2022-15735 Inactive Formation Starts To Patrol Crash

**An inactive formation, with no ships, was given a Patrol order and the model crashed as it was gathering noise data for each ship in the formation. The problem was that there were no ships in the formation, and the model was reserving an array by the number of ships in the formation. You cannot reserve an array of zero length.**

The problem was not in the code. The problem was that the Formation Patrol order allowed to user to send a Patrol order to an inactive formation. This should never have been allowed and has been corrected.

Several other formation order panels were found to have a similar problem. These order panels were also checked.

### 3.18 JTLS-2022-15737 Mission Report Has No Location For Primary Target

**The mission report always shows the location of the primary target as zero, zero.**

An old variable was being used in the message. The new correct variable is now accessed and properly set, the first time the mission drops or fires weapons. The old variable was removed from the model.

### 3.19 JTLS-2022-15741 Convoy Supplies Not Always On JODA

**A convoy carrying known supplies did not have all of its supplies displayed on the IMT. The record for the supplies was not in the JODA.**

The issue was tracked down to a forced download of current status data from the CEP to the JODA. The code was not initializing supply categories that had a very small value for on hand. If a convoy is just starting to load supplies, it may have a small amount of supplies on board, so the forced download code skipped the supply category and did not send the convoy supply record to the JODA. As supplies are loaded on the convoy, the proper updates were being sent to the JODA, but were rejected because the object did not exist in the JODA's internal database.

The code was changed to initialize all supply categories held on the convoy.

### 3.20 JTLS-2022-15752 HRUs Not Created When Parent Unit Arrived

**In a scenario database, an aggregate unit was defined to include several child HRUs. Each of the HRUs were meant to own a SAM target. When this unit arrived at the start of the game, the HRUs were not being created, because there were insufficient supplies for the owned targets.**

Before the HRUs were created, each of the targets was created from the aggregate unit with suitable supply levels. However, when determining if the HRUs could be created, the calculation did not include the supplies which were already assigned to the targets. The code was changed to include the existing target supplies when attempting to create the HRUs. This change resolved the target supply issue for the HRUs.

### 3.21 JTLS-2022-15756 KOI Filter UI Does Not Display Side Color

**The user interface window of the KOI Filter displays the side tabs without the proper color for each side. Each of the tabs is black and unreadable.**

JTLS-GO was recently modified to use the PostgreSQL database system. In making the changes necessary to support the PostgreSQL file format, all scenario ascii files changed to slash "/" delimited values. The KOI obtains all side colors by parsing the Force Side scenario file, but was not modified to parse the Force Side scenario file using the correct delimiters. It was therefore not able to get the color name for each Side and simply used black as a default for each Side.

The KOI Filter program was modified to consider slash delimited values in the Force Side scenario file and is now able to properly discover the Side color names.

### 3.22 JTLS-2022-15760 Modifying Air Mission Packages Incorrect Messages

**If a Player attempted to modify an air mission package, and the order was rejected by the model, the resulting message was wrong. The rejection information was improperly included as part of a compliance message for the order. The Player could easily overlook the errors because of the subject of the messages.**

Because the order was rejected, the error information should have been part of a non-compliance message. The code was modified to perform all of the required checks before attempting to implement any ordered modifications to the air mission packages. For errors in the orders, messages were generated to indicate that the model was unable to comply with the requested changes.

### 3.23 JTLS-2022-15763 Transport Unit Convoy Simdebug

**A Transport Unit order was sent to a support unit that did not have cargo trucks available. The model acknowledged the order, but promptly entered simdebug mode.**

The model's logic incorrectly assumed there would always be at least one truck available for each type (cargo, tanker, HET) in the support unit, when calculating how many trucks of each type were required to transport the unit. Because there were no cargo trucks available, the truck capacity was zero, and a division by zero error caused the crash. The same crash would have occurred if there were no tanker trucks or HET trucks available.

This logic was part of the process of generating a Player message explaining why the convoy had to be canceled. To avoid the crash, the logic was corrected to handle the situation where one or more of the cargo, tanker, or HET are not available at the support unit. The Player message was expanded to accommodate the situation.

### 3.24 JTLS-2022-15765 Clearing Special Mission Flag Nonfunctional

**There is a special capabilities flag used by NATO to set some special Link 16 designators. Clearing the flag does not work.**

Once the special flag is set, there is seldom the need to clear the flag, so the faulty logic has been overlooked for some time. The logic was corrected. The flag can now be set and cleared as needed.

### 3.25 JTLS-2022-15768 Fire Missile Expanded Rejection Message

A user created a Fire Missile order for hitting an empty water location. When the user specified the Targetable Weapon, the order was accepted and the unit fired at the empty location. When the user specified that the model should select the Targetable Weapon, the user received a "Cannot Comply" message stating there was no ammunition, even though the unit did have the appropriate weapon supplies.

When the model is selecting a targetable weapon for a fire mission, it goes through all the SAM Sites capable of firing a surface-to-surface weapon and all SSM site targets. It checks all of the weapons that can legally fire and the determines the best one. Multiple weapons may be rejected, but the message only displayed the final weapon in the list. The message now lists each Targetable Weapon that is checked and lists a rejection reason.

The reason nothing was selected was because the impact location was water, so the model assumed that ships would be the target. None of the available weapons could hit ships. When the user specifies a specific weapon to fire, the model follows the order even if, in all likelihood, it will not kill anything at the impact location.

### 3.26 JTLS-2022-15770 Change Mission Parameter Order Bad Weapon Names

A Change Mission Parameter (CMP) order was submitted to change the weapons on a scheduled air mission. The model generated a compliance message that listed the quantities of each weapon type, but the weapon names were displayed as zeroes. Nevertheless, the mission correctly carried the changed weapons as specified in the order.

The routine that generates the CMP compliance message incorrectly referenced the weapon names as integers and specified an integer format in the write statement. The error was corrected by referencing the text name of the weapon and changing the format type to text in the write statement.

### 3.27 JTLS-2022-15772 Recalled Incorrect Polygon Order Panel

When the user clicked on the New or Edit Button on an order panel and recalled a polygon from a different order, the polygon became small in size and was incorrect.

The polygon was incorrectly converting the points back into radians instead of degrees, resulting in the incorrect polygon. Logic was added to prevent the situation.

### 3.28 JTLS-2022-15774 ATO Viewer No Update When Start Time Changed

A Manage Air Mission Tasks order was submitted to change the Start Orbit time for a scheduled DCA mission. The ATO Viewer displayed the new estimated launch time (left vertical bar) as calculated by the model, but the horizontal colored bar did not shift to show the new orbit start and end times (duration). The estimated landing time (right vertical bar) also did not move.

**The Air Mission Tasks IMT and the General Air Mission IMT were correctly updated and the mission flew as expected.**

The ATO viewer requires several air mission attributes from the CEP to properly display and update the graphics:

- Estimated Takeoff Time and Estimated Landing Time, to draw the vertical bars
- Actual Takeoff Time and Actual Landing Time, to draw the parentheses
- Start Task Time and End Task Time, to draw the horizontal colored duration bar.

The Start Task Time, End Task Time, and the Estimated Landing Time were not being sent to the JODA when the Manage Air Mission Tasks order was submitted. Consequently, the ATO Viewer was unable to adjust the colored bar and right vertical bar. The error was corrected by adding logic to send the missing mission attributes to the JODA.

While reviewing the code associated with the Manage Air Mission Tasks order, it was noted that when a Player changes the sequence number of an existing non-Move task, such that it is placed before (i.e. lower in sequence) than the mission's primary task, there was no logic to make that task a primary task. The missing logic was added so that the mission's time attributes are properly updated.

### 3.29 JTLS-2022-15776 Lifeboat for Downed Air Crew SVP Crash

**The Scenario Verification Program (SVP) crashed, due to a High Resolution Unit Prototype (HUP) that was used to represent the survivors of downed aircraft.**

A small boat was (optionally) assigned to the downed air crew HUP. This small boat served as a lifeboat if the aircraft went down over water. The SVP crashed because the selected small boat did not have an associated combat system in the user's scenario. In order to serve as a liferaft for a downed air crew, the small boat must have an associated combat system. Error 257 was added to the SVP to catch this crash condition.

In addition to this new error, Warnings 1445 and 1462 were reworked to properly check for suitable numbers of lifeboats at squadrons. If a squadron has multiple types of small boats, any of them were usable as liferafts. If the total number of small boats at a squadron was less than the number of aircraft, then Warning 1462 was generated. If the squadron has no lifeboats, then warning 1464 is generated. Further investigation determined that Warning 1445 was redundant, and was removed from the SVP.

### 3.30 JTLS-2022-15778 Ships In Ground Section Of Mission Recce Report

**Naval vessels detected by a Recce air mission appeared in the Naval section, and were duplicated in the Ground section, of the Mission Recce (non-DSA) Report.**

A logic error in the routine that determines whether a detection should be included in the Ground section failed to ignore naval vessels. As a result, naval vessels appeared in both the Ground and Naval sections of the report. The error was corrected.

Also, the names of ships, units, targets, and HRUs in the report were limited to 15 characters. The format width was expanded to 25 characters in the message template. The same correction was made in the Satellite Non DSA Summary Report.

### 3.31 JTLS-2022-15780 Warning 1306 Incorrect Targetable Weapons

**Warning 1306 states that a Targetable Weapon has no Air-to-Ground kill capability. It is being generated for all targetable weapons that have a guidance type. It should only be for those of with guidance type ARM. All other guidance types may be an Air-to-Air or Surface-to-Air weapon. Only ARM guidance type weapons are definitely Air-to-Ground kill capable.**

The code was set to look for any Targetable Weapon that had a guidance type specified by no Surface Kill Lethality (SKL) data. The code has been modified to only look for those that have a guidance type of ARM and no SKL.

### 3.32 JTLS-2022-15784 Duplicated Convoy Names Crash

**The number of convoys generated within a single day exceeded 10,000, so the model began to repeat convoy names. When objects are filed in a set, they cannot have the same name, as it will cause the model to crash.**

A convoy name was established by using a combination of the home unit's UIC (nine characters), a dash, two characters representing the day, and four characters for the total count of convoys for the day, for a total of 16 characters. The way convoy names are generated is similar to air missions. However, air missions are only allowed to be 16 characters long as specified in the JDS protocol, while convoy names are allowed to be up to 25 characters long. The total number of convoys per day has been increased from <10,000 to <1,000,000.

### 3.33 JTLS-2022-15787 Wrong Formation Ship Embarked Unit Capacity

**The computations and automatic correction for reporting and fixing unavailable ship capacity for embarked assets is not correct.**

The logic incorrectly counted the embarked assets twice and, when the computation was accomplished correctly, the value to which the SUP capacity was supposed to be checked was computed incorrectly. A new argument had to be added to the routine SHIPS AVAILABLE CAPACITY - depending on the use of the routine, the already embarked assets should or should not have been included.

### 3.34 JTLS-2022-15789 OTHGMS - Validate Block List Input

The OTHGold Message Service (OTHGMS) is able to load a block list of unit names. Users can enter the name of the file to be loaded from the OTHGold WHIP module. The user input was not being checked for invalid characters or other values that may lead to vulnerabilities.

The OTHGMS service and WHIP module have been updated to validate user input for the block list file name. This includes checking for invalid characters and path manipulation vulnerabilities.

### 3.35 JTLS-2022-15795 Package Escort Missions Ignored Egress Routes

An air mission package included escort missions (DCA, SEAD, and RECCE) and a strike mission (OAS), each with a specified egress route. When the escort missions left the package after supporting the strike, they did not fly their specified egress routes home. Instead, they flew directly to their home bases. Only the strike mission (OAS) flew its specified egress route home.

All missions flew their specified ingress routes to the rendezvous location, and the package flew its specified ingress and egress routes to and from the weapon release point as expected.

When the package responsibilities end for an escort mission, the logic invokes the cancel mission routine to send the mission to its return location, among other things. This routine includes an option to establish the best route home for the mission. The logic considers the egress route (specified or reverse ingress) originally assigned to the mission and adds the appropriate MOVE tasks to the pending task list. However, the option was not executed because the calling routine incorrectly passed a NO value for the FOLLOW.EGRESS.ROUTE flag.

The error was corrected by changing the calling routine argument to YES.

### 3.36 JTLS-2022-15797 Ground Unit Moves Straight Through Minefield

When a ground unit encountered a minefield, the unit moved through it without any delay. In earlier versions of JTLS-GO, a unit would stop and clear the minefield. The behavior was not as expected.

In the CEP, the current code did not include any delays in movement when a unit entered a minefield. Modifications were made to give the unit a mine clearing task when it experienced damage from a minefield. The movement is now delayed by the minefield, and clearing is performed.

### 3.37 JTLS-2022-15807 ATOT Tasking Unit Assignment Page WHIP Side

When creating the ATOT Assigned Asset links, the user can create a squadron link or indicate that a different side will task the squadron. If the squadron belongs to a different side, the user wanted the Side to be selected from the list of friendly Sides in ATOT Force Side Assignments.

Logic was added to pick the assigned friendly sides from the current list.

### 3.38 JTLS-2022-15809 Fire Missile Issues With SAM.AAA Targets

A user attempted to fire a missile from a SAM.AAA target with a future launch time. The missile would not fire if the SAM.AAA target was turned off. There was no indication to let the user know why the fire mission would not launch. Furthermore, once the SAM.AAA target was turned on, the fire mission still did not launch.

- A message is now generated to inform the user that the target is not ready/turned on,
- A logic error is no longer generated when the target is SAM.AAA instead of SSM.
- When the user turns on the SAM.AAA target, the model checks if there are any pending fire missions. If there are, the appropriate fire missions are launched.

### 3.39 JTLS-2022-15830 Weapons On Air Mission Not Saved Properly

A user entered 14,000 bullets on an air mission, not knowing that it meant 14,000 bursts each of 75 rounds of 20mm bullets. A game save could not be used when this happened, because the model crashed attempting to read in the checkpoint files.

The problem was that the model save only allowed a maximum of 9999 weapons of any single type. This was increased to the normal maximum integer value of ten digits.

### 3.40 JTLS-2022-15844 OPM Long Aircraft, Sensor Names Column Width

In the "Squadron Usage by Aircraft Class" section of the Online Player Manual (OPM), aircraft class names that exceed twenty characters in length extended into the adjacent column. Sensor type names greater than twenty characters extended into the adjacent column in the "Sensor Type Characteristics" section of the OPM. These errors obscured part of the displayed names.

The column widths in the print routines were set to twenty characters, which could not accommodate the aircraft class names and sensor type names, which can be up to twenty-five characters long. The column widths were set to twenty-six to ensure names of up to twenty-five characters will fit, with at least one blank space separating the adjacent columns.

A comprehensive review of every page in the OPM was conducted, and many other instances were found where the column widths could not accommodate object names exceeding twenty characters. These errors were also corrected.

### 3.41 JTLS-2022-15866 Destroyed More Missiles Than Airborne

A Controller Kill Aircraft order was sent to perform a Stochastic Surface-Air draw of four Patriot PAC-3 missiles against a single Theater Ballistic Missile (TBM). The draw was successful for all four intercepts, resulting in the loss of four TBMs, even though only a single TBM was targeted. The resultant message listed the loss of the four TBMs, and that "-3" TBMs were remaining.

The code was modified so that the number of destroyed missiles is limited by how many are actually in flight. This error only applied to missiles, because the code already limited aircraft losses to the number in the mission when an air mission, rather than a missile, was targeted.

#### 3.42 JTLS-2022-15868 Detected HRU Not In Mission Recce Report

**A non-covert foreign Side HRU was detected by a Recce air mission and appeared on the WHIP map. However, when the mission returned to base, the HRU did not appear in the general Mission Recce Report.**

The incorrect data type reference was used by the Simscript routine that generates the Mission Recce Report to select HRUs from the air mission's set of update data entities (i.e. the list of detected objects) to include in the report. Consequently, all detected HRUs were not recognized and excluded from the report. The data type reference was corrected.

After these corrections, the Mission Recce Report message failed to generate because of a typographical error in the Simscript code that writes the HRU section of the report. That error was also corrected.

#### 3.43 JTLS-2022-15887 New Simscript Compiler

**The CACI Products Company released a new version of the Simscript compiler for 64-bit Linux. The latest version is III-5.3.0.**

All of the JTLS-GO Simscript programs were recompiled and tested using the new compiler. All programs functioned normally. The new compiler was accepted for use in all future releases of JTLS-GO.

#### 3.44 JTLS-2022-15889 SUP Auto Engage Verbiage

**There is inconsistent use of the terms used for the SUP parameter AUTO PRECISION GUIDED.**

The Data Requirements Manual (DRM), Online Player Manual (OPM) and Ship Unit Prototype (SUP) parameter order panels all use slightly different words when describing the SUP parameter for AUTO PRECISION GUIDED. To improve the consistency, the SUP parameter order panel and OPM page were changed to use the words "Auto Precision Guided Engagement".

#### 3.45 JTLS-2022-15891 Air Mission Fire Weapon Inappropriate AIR.HOLD

**After firing its last weapon, an OAS attack mission is always put in AIR.HOLD status for no reason.**

The logic always added an AIR.HOLD after firing a weapon. This is not appropriate, unless the mission is going to fire another weapon of the same type and needs to prepare and reload.

The code was modified to add a check to see if the next task was also a fire weapon task, and it was firing the same type weapon before scheduling the AIR.HOLD. If a different weapon is being fired or the next task is not a fire weapon, the AIR.HOLD is not appropriate.

#### 3.46 JTLS-2022-15899 Transport Mission Airdrop Supplies Issue

**An Air Transport mission was ordered to airdrop supplies to a ground unit. However, the Mission Task List IMT displayed a Land task immediately before the Offload Supplies task. When the mission arrived at the specified airborne point, it attempted to execute the Land task, which it could not do because there was no runway. A “Mission Has No Suitable Landing Place” alert symbol was generated on the WHIP. The mission delivered the supplies anyway and continued normally.**

In the logic that processes the Player Air Mobility order and creates the mission's tasks, a code error did not properly take into account the supplies were to be delivered while airborne. Instead, the logic assumed the supplies were to be delivered on the ground and assigned a Land task just before the Offload Supplies task. The error was corrected by first confirming the Offload Supplies task location was not an airborne point before assigning a Land task.

The mission's carried supplies displayed on the mission's Unit Supply Data IMT did not update when a partial delivery of supplies occurred. The IMT updated only when the mission was initially loaded or when all supplies were delivered. In the logic that computes the amount of supplies delivered, there was no code to update the JDS in the partial delivery situation. The missing code was added.

If a mission loaded with a supply category that was already on the plane, the Unit Supply IMT did not show the new increased total for that supply category. The old amount remained in the IMT. Only supply categories that were not on the plane were added as a new row to the mission's Unit Supply IMT. The code error was corrected to update the JDS to show the increased total.

Note that the model properly tracked and adjusted the supplies carried by the mission itself, but simply did not update the JDS for WHIP display purposes.

#### 3.47 JTLS-2022-15900 Ship Moving Through Minefield Crash

**The CEP crashed while a ship was moving through a minefield. The movement included a route point at the same location as the ship's current location.**

The crash occurred because the model attempted to perform a calculation which involved division by zero. This was caused by the movement to the same destination as the current location. A check was added to the routine to simply exit if the location did not change while the ship was near a minefield.

#### 3.48 JTLS-2022-15904 SVPR Error And Warning Report Same Target

**Error 663 and Warning 1628 both report that the same target has no political country assigned.**

The first criteria that is checked is if a target has no political country assigned. If that is true, then there are two additional checks to determine if a warning or error should be generated. If the target is unowned and if the target is stationary. The code was written so that both could be true and the target would appear as a warning and an error. This has been corrected.

### 3.49 JTLS-2022-15905 OPM POT Target Long Name Field Too Small

**The column for the POT Long Name in the printed TUP/SUP Pot table in the OPM is too small to read the whole name.**

The program was only printing the first 14 characters of the Prototype Owned Target (POT) Long Name. The print command was changed to print the maximum field size for the POT Long Name of 30 characters.

### 3.50 JTLS-2022-15919 HRU Urgent Report Missing TST Information

**The HRU Intelligence Report prints out only the first 17 characters of owned target names. This is not enough to uniquely identify many targets, because the target name can be 40 characters long. For unowned targets there is no Time of Detection provided, making it infeasible to use the information for Time Sensitive Targeting.**

The code was modified to provide the detection time for unowned targets. The message format files were modified to include the information for unowned targets. In addition, the English version of the message format file was modified to print owned target names with 40 characters. The MTF version of the file was not modified because it already printed more than 17 characters.

### 3.51 JTLS-2022-15921 Checkpoint Restart Leaflet Crash

**Artillery was fired that used a Targetable Weapon designated for leaflets. This resulted in Leaflet Piles being created in the game, which is a method the game uses to track the fact leaflets have been dispersed and may affect morale. Eventually these Leaflet Piles are removed because the effect of the leaflets has decreased over time. These removal events are saved with the checkpoint and part of the data includes the Targetable Weapon that created the Leaflet Piles.**

**The model was saving and reading in the pointer for the weapon instead of the weapon name. On a restart there is no guarantee the pointer still points at a Targetable Weapon, let alone the correct weapon. When it does not point at a weapon, a crash will occur when the pointer is used to access the weapon, which happens shortly after the data is read.**

Instead of saving the pointer, the checkpoint was modified to save the Targetable Weapon name and to translate the name back to a pointer on a restart.

### 3.52 JTLS-2022-15926 Fire Missile Order Showing Wrong Route

**A WHIP operator was creating a Fire Missile order for a Cruise Missile and needed to avoid neutral country airspace. The order was created with a launch unit, a route, and a final target. On**

**the map, the Order preview graphic display connected the firing unit, the final target, and then the designated route. The operator incorrectly believe this was the route that would be flown.**

The data file that defines the order and specifies how to display the fields was changed so that the order of fields is now correct. The order will connect the firing unit, to the optional way-point, then to the optional route, and finally to the designated target location.

### 3.53 JTLS-2022-15929 Printing Reports Premature Close Of Input Stream

**When attempting to print a report from the Report Browser, the report would not print. The input stream that passed the print content was being prematurely closed before the print job could be created.**

The input stream was changed so that it is closed after the report print job has the complete print content.

### 3.54 JTLS-2022-15931 Message Error, Manage Aircraft Loads

**When the name of an Air Mission Load already exists when submitting an order to create a new load, the rejection message text does not contain the name of the desired load.**

The routine was using the wrong variable when creating the rejection message. The rejection message has been corrected and now properly indicates which weapon load creation order was rejected.

### 3.55 JTLS-2022-15948 Minefield Depth Restriction Not Enforced

**When a unit or HRU is told to emplace mines at a water location, the depth restrictions of the minefield are not enforced.**

When an air mission emplaces mines, it properly enforces the depth restriction of the minefield type and the water location. These restrictions were not enforced for unit-laid minefields. The routine that checks whether the location is legal for the type of minefield being emplaced is now used under all circumstances.

### 3.56 JTLS-2022-15950 Alter Orbit Order Crash

**An air mission was en route to an orbit location. An Alter Orbit quick order was sent with a different orbit location specified. The model immediately entered Simdebug mode.**

A logic flaw caused both the Move task (to the old location) and the new Orbit task to be deleted from the mission's task list. Only the Move task and the associated route should have been deleted. The model crashed trying to reference the next task, which was the now deleted Orbit task.

The logic flaw was traced to an incorrect After Action Review (AAR) reason code. The reason code was corrected, which prevented the Orbit task from being deleted.

### 3.57 JTLS-2022-15955 Manage OPAREA Issue

**During development, the Delete OPAREA option on the Manage Operations Area order was nonfunctional in JTLS-GO 6.2. However, in JTLS-GO 6.0, the Delete function worked as designed. The problem was identified and corrected in 6.2, which spurred an investigation into why the problem was not also present in 6.0.**

The JTLS-GO 6.0 logic contained an inconsistency in the Preamble that allowed OPAREAs to be deleted using the Manage Operations Area order, thereby masking the true issue.

The logic that checks the legality of a Modify or Delete request also checks the validity of a specified color change. The color field is optional and contains the order initialization value (-1) if a color is not specified by the player. If the color field contained a -1, the logic concluded (incorrectly) that the specified color was invalid, when in fact no color had been specified in the order.

The order status was assigned `.ORDER.STATUS.BAD.COLOR`, which is defined to mean 40 in the Preamble. By convention, all bad order statuses are assigned odd values in the preamble. The CEP relies on this rule, because it simply checks for an odd order status value to recognize a bad order. In this situation, because the `.ORDER.STATUS.BAD.COLOR` value was even, the order was considered good, which allowed the delete to occur. This inconsistency was corrected in 6.1 by changing the `.ORDER.STATUS.BAD.COLOR` to an odd value (i.e. 595), which matches the value in the 6.2 Preamble.

In addition, a check was added to ensure the color field is not equal to the order initialization value before checking the validity of the specified color. Without this new check, the logic would not follow through to delete the OPAREA.

### 3.58 JTLS-2022-15959 Add Flight Path Validation

**A process to check the connection of flight paths between bases needed to be added to the SIP User Code Routines**

A new routine was added to the User Code Routines under the Alter Data function of the SIP. The user will have two options:

1. The Basic Base to Base check. This check is performed for each Force Side with checking to see if there is a flight path connection from each base on a Side to every other base on the Side.

2. The Mission type check goes a little further. For every squadron on a Force Side whose home base is not NAVAL, check every mission type for the aircraft type used by the squadron. If the aircraft has a mission load during DAY conditions, then check to see if a flight path exists between the homebase of the squadron and every other airbase in the same Side.

The output file for either option is may be found in the `./data/scenario/scenario_name/reports` directory. The output consists of 4 basic messages:

1. A Flight Path node cannot be found in the vicinity of the starting base
2. A Flight Path node cannot be found in the vicinity of the ending base
3. A Flight Path node cannot be found in the vicinity of the neither the starting base nor ending base.
4. The starting and ending bases share a single flight path node.

Further information on the messages can be found in the *JTLS-GO DDS User Guide*.

### 3.59 JTLS-2022-15962 JTLS-GO Documentation Updated

**The JTLS-GO documentation suite needed to be updated, to account for the changes that have been made to the system since the previous maintenance release (JTLS-GO 6.0.8.0).**

The JTLS-GO documentation has been updated.

## 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 6.0.6.0 represents a major release of new functionality, all outstanding errors have been reviewed. If the error could not be reproduced, it was considered obsolete and no longer relevant to JTLS-GO. These errors have been removed from consideration for correction at this time. This chapter contains the remaining errors that could be reproduced. As development team assets become available, these remaining known issues will be corrected.

In future maintenance releases, newly uncovered outstanding errors related to JTLS-GO will be listed in this chapter, along with information 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 and functionality 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                                      |

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|        |   |
|--------|---|
| 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  |

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|       |   |
|-------|---|
| 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   |

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|          |  |
|----------|--|
| 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  |

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|           |   |
|-----------|---|
| 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.)           |

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|         |  |
|---------|--|
| 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  |

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|        |  |
|--------|--|
| 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 6.1.0.0 DATABASE CHANGES**

No database format changes were made to this security release of the JTLS-GO 6.0 database. All previous JTLS-GO 6.0 databases will work with this version of the software.



## **APPENDIX C. VERSION 6.0.6.0 REPOSITORY CHANGES**

No changes were made to the JTLS-GO 6.0.7.0 data repository.