

# JTLS-GO

## Version Description Document

July 2017



DEPARTMENT OF DEFENSE  
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**JOINT THEATER LEVEL SIMULATION - GLOBAL OPERATIONS  
(JTLS-GO 5.0.6.0)**

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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 combined joint and coalition resource air, land, naval, and Non-Governmental Organization (NGO) environments.

This *JTLS-GO Version Description Document (VDD)* describes the new features of the Version 5.0.6.0 delivery of the configuration-managed JTLS-GO software suite.

JTLS-GO 5.0.6.0 is a Maintenance release of the JTLS-GO 5.0 series that includes an updated SBDKOR50 Standard Database, as well as minor model functionality changes implemented as Engineering Change Proposals (ECPs), which 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:

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## 1.0 INTRODUCTION

### 1.1 SCOPE

This *JTLS-GO Version Description Document (VDD)* describes Version 5.0.6.0 of the configuration managed Joint Theater Level Simulation - Global Operations (JTLS-GO<sup>®</sup>) software suite. JTLS-GO 5.0.6.0 is a Maintenance delivery for the JTLS-GO 5.0 series of releases.

JTLS-GO 5.0.6.0 includes the entire JTLS-GO suite of software and the SDBKOR50 Standard Database that supports a realistic scenario based on the current Korean Peninsula theater of operations. Database modifications that were accomplished to upgrade the previous JTLS-GO Standard Database to this current version are summarized in this chapter, as well as [APPENDIX B](#). Detailed descriptions of minor Engineering Change Proposals (ECPs) implemented for this release are provided in [Chapter 2.0](#).

JTLS-GO 5.0.6.0 executes on the Red Hat Enterprise Linux Version 6 64-bit operating systems. The Web-Hosted Interface Program (WHIP<sup>®</sup>) user workstation interface can be executed on any operating system from any Java-compatible Web browser.

### 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 Unchanged Documents

JTLS-GO 5.0.6.0 is a bug release of the JTLS-GO system. Other than date changes, the following documents have had no significant changes since the last release of JTLS-GO.

- *JTLS-GO Analyst Guide* (JTLS-GO Document 01, Version 5.0.6.0)
- *JTLS-GO Air Services User Guide* (JTLS-GO Document 03, Version 5.0.6.0)
- *JTLS-GO Data Requirements Manual* (JTLS-GO Document 05, Version 5.0.6.0)
- *JTLS-GO DDS User Guide* (JTLS-GO Document 06, Version 5.0.6.0)
- *JTLS-GO Director Guide* (JTLS-GO Document 07, Version 5.0.6.0)
- *JTLS-GO Executive Overview* (JTLS-GO Document 08, Version 5.0.6.0)
- *JTLS-GO WHIP Training Manual* (JTLS-GO Document 10, Version 5.0.6.0)
- *JTLS-GO Player Guide* (JTLS-GO Document 12, Version 5.0.6.0)



- *JTLS-GO Standard Database Description* (JTLS-GO Document 14, Version 5.0.6.0)
- *JTLS-GO Federation User Guide* (JTLS-GO Document 20, Version 5.0.6.0)

### 1.2.2 Updated Documents

The following documents have been changed or improved since the last release of JTLS-GO.

- *JTLS-GO Controller Guide* (JTLS-GO Document 04, Version 5.0.6.0)
- *JTLS-GO Installation Manual* (JTLS-GO Document 09, Version 5.0.6.0)
- *JTLS-GO Software Maintenance Manual* (JTLS-GO Document 15, Version 5.0.6.0)
- *JTLS-GO Technical Coordinator Guide* (JTLS-GO Document 16, Version 5.0.6.0)
- *JTLS-GO Version Description Document* (JTLS-GO Document 17, Version 5.0.6.0)
- *JTLS-GO Entity Level Server User Guide* (JTLS-GO Document 19, Version 5.0.6.0)
- *JTLS-GO C4I Interface Manual* (JTLS-GO Document 21, Version 5.0.6.0)

### 1.2.3 Delivered Software Components

JTLS-GO 5.0.6.0 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)
- Database Development System (DDS)
- JTLS Symbols Application (JSYMS)
- 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)
- Web Services Manager (WSM)
- Web Services
  - Apache Server (APACHE), version 2.4.26
  - JTLS XML Serial Repository (JXSR)
  - Order Management Authority (OMA)
  - Synchronized Authentication and Preferences Service (SYNAPSE)
  - XML Message Service (XMS)
- Web-Hosted Interface Program (WHIP)
- Total Recall Interactive Playback Program (TRIPP)
- Entity Level Server (ELS)
- JTLS Operational Interface (JOI) OTH-Gold, Link-16, and TACELINT
- KML Operational Interface (KOI)
- JTLS Transaction Interface Program (JTOI) supporting
  - ICC 2.8.2 and 3.0.2
  - NEC-CCIS
  - TBMCS
- JTLS Interface Network Navigator (JINN)
- JTLS Order of Battle Editor (JOBE)

- Database Configuration Program (DCP)
- DDS User Interface (DDS)
- JTLS Terrain Building Program

Instructions for installing JTLS-GO 5.0.6.0 are provided in the *JTLS-GO Installation Manual*. Installing a previous version of JTLS prior to installing JTLS-GO 5.0.6.0 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.

#### 1.2.4 Released Databases

This release includes the following sample unclassified databases:

- The scenario developed as the Korea Standard Database and named SDBKOR50 is a large-scale, seven-sided scenario database reflecting the approximate starting positions of units involved in the Korea Peninsula theater of operations. This example scenario was developed using unclassified data sources and is consequently not completely accurate. Discrepancies among actual units and their locations are not detrimental to the intended purpose of this database, which is to provide a recognizable and realistic scenario that demonstrates the simulation capabilities and supports JTLS training.
- The scenario DEMSDBKOR50, which is a reduced version of SDBKOR50, has also been updated.
- The scenario blank50 is the SDBKOR50 database with all force structure data removed, which can be used as a framework for building your customized database.

### 1.3 INTERFACE COMPATIBILITY

#### 1.3.1 Support Software

JTLS-GO 5.0.6.0 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 6.9 (ES), 64-bit architecture.

Security Enabled (SE) Linux must not be enabled on systems used to execute JTLS-GO or its components. Tests reveal that SE Linux-enabled systems cause frequent and random JXSR crashes and errors. Use of SE Linux to support JTLS-GO is currently not authorized.

A RedHat Linux documented loop-back interface problem continues to cause degraded performance issues on Red Hat/CentOS 6 systems. This issue negatively impacts JTLS services when executed on the same server as Apache.

While we expect Red Hat to eventually correct this issue, significant effort has been placed on JTLS-GO optimization to minimize impact of the problem. Still we recommend users with more than 25 concurrent WHIP/TRIPP users to avoid this Red Hat/CentOS loopback issue by running Apache and the SYNAPSE on different physical or virtual servers. For users with significantly more than 25 concurrent WHIP/TRIPP users, consider not running other JTLS services, such as the JXSR and XMS, on the same server used by Apache.

See the *JTLS-GO Installation Manual*, Appendix D for some recommended system tuning changes that can mitigate these performance issues.

STR JTLS-2017-13229 implements SSH Tunneling between Apache and the services and among the services. While testing has been conducted in the development environment, rigorous testing should be done prior to use in any exercise. Particular attention should be paid to network performance under load.

When using a Linux system as a client, if a dialog saying “Too many open files” appears, see the *JTLS-GO Installation Manual*, Section 5.5 for a work around. If this occurs on a server, see the *JTLS-GO Installation Manual*, Appendix D.

JTLS-GO 5.0 has been tested with the following versions of Linux 6:

RedHat Linux 6 - this operating system license must be purchased.

Oracle Linux 6 - this is a free and distributable version of Linux which has been approved for use by U.S. Government agencies by the Defense Information Systems Agency (DISA).

CentOS 6 - a free version of Linux 6 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 5.0.6.0 has been tested on the following operating systems:

Red Hat Linux Enterprise Edition Version 5 and 6.

CentOS Linux Version 5 and 6.

Windows Vista, Windows 7, and Windows 10 can be used only if the workstation is an external HTTP client of the simulation network.

- Java 8 Update 141 is required for all platforms and must be used to support all workstations.

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

One of the DoD IA 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. Java 8 has fulfilled this mandate by implementing an expiration date for its software. After a certain date, all Java related programs will stop working, whether you are connected to an open network or not.

JTLS-GO software releases are linked to the Java 8 security updates to meet this requirement. This version of JTLS-GO is released using Java 8 Update 141, which expires on 17 October 2017. A new version of JTLS-GO will be released prior to that expiration date.

- JTLS-GO database tools require use of a certified Oracle database server and the full Oracle Client installation for runtime requirements. Refer to [Section 1.5.2](#) of this chapter 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 II.5 (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-2.0>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.

### 1.3.2 JTLS-GO High Level Architecture Compliance

The JTLS-GO 5.0.6.0 release is fully High Level Architecture (HLA) compliant, and includes all the programs required to run JTLS-GO in an HLA mode. JTLS-GO has moved to a new Federation Object Model (FOM) located in the \$JGAME/data/hla directory. Federation testing of JTLS-GO is not complete, but initial tests with CAE's Gefechts Simulation (GESI) have been accomplished. Future plans include expanding the capabilities of the JTLS-GO-GESI federation, called GlobalSim continue.

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 as a federation called GlobalSim. CAE's GESI constructive simulation system is designed to run complex and comprehensive exercises from the company level up to division level. The CAE 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.

The HLA RTI (Run Time Infrastructure) executive program (rtiexec) recommended for use with this release is RTI-NG-Pro-v7.0 or Pitch pRTI Evolved 4.4.2.0. However, these programs are not included in the JTLS-GO 5.0.6.0 delivery. Users may obtain a full installation package of the RTI software from either vendor: Raytheon Company (<http://www.raytheon.com>) or 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

No database structure differences exist between JTLS-GO 5.0.6.0 and JTLS-GO 5.0.0.0.

Significant database structure differences exist between JTLS-GO 5.0.6.0 and any previous 4.1 series database.

To upgrade your JTLS 4.1 scenario to JTLS-GO 5.0 compatibility, see instructions listed in the *JTLS-GO DDS User Guide*, Chapter 3.1.

### 1.4.1 JTLS-GO Using Legacy Default Symbol Set

Prior to unloading your newly upgraded JTLS-GO 5.0.0.0 formatted data from your Oracle database server into a JTLS-GO 5.0.0.0 scenario ASCII file, you must execute the JSYMS program, which will reorganize the structure of the .gs and .scf symbols-related files. See the *JTLS-GO DDS User Guide*, Appendix B.11 for instructions.

### 1.4.2 Upgrading JTLS-GO Default Symbol Set

The JTLS-GO Default Symbol Set delivered with this release has been modified to use the US 2525C symbol standard and well as the NATO Joint Military Symbol [APP-6(c)] standard. If you choose to propagate this new Default Symbol Set to any of your scenarios that use the 4.1 Default Symbol Set, see the *JTLS-GO DDS User Guide*, Appendix B.12 and B.13 for instructions.

You should not make any modifications to the Default Symbol Set, but you are free to copy the Default Symbol Set and create your own set to meet your needs.

### 1.4.3 Standard Database Changes

Additional Standard Database changes that are applicable to JTLS-GO 5.0.6.0 are described in [APPENDIX B](#).

## 1.5 INSTALLATION

### 1.5.1 Installation Instructions

The *JTLS-GO Installation Manual*, included in the compressed TAR file that is part of this JTLS-GO delivery, provides detailed instructions for installing a new version of JTLS-GO. The *Installation Manual* can be found in the /documents subdirectory of the JTLS-GO TAR file.

With the JTLS-GO 5.0 series, there have been significant changes to the directory structure which holds the files for the Online Player Manual (OPM). Users must remove all existing files from their JTLS 4.1 or earlier version \$JGAME/{scenario} directory before setting up their scenario for execution with the JTLS 5.0 series. Prior to running Option 3 - "Setup System for a Specific Scenario" of the JTLS-GO menu, all users must remove the existing files in their scenario game directory. Failure to clean-up the \$JGAME/scenario directory will result in a program crash while generating the OPM (Option 4).

In order to complete STR JTLS-2017-13228, it was necessary to modify the ATO Spreadsheet format. The specific change is renaming the Unit Name or BE Number column to Unit name and adding a new column called Target Short Name after the Unit Name field. A New sample is included in the \$JGAME/data directory. For more details, see [JTLS-2017-13228 Spreadsheet ATO Refuel And Targeting, Section 3.69](#)

The JDS Protocol has changed with this release. Any users that hook to the JODA or EODA to get information on the existence and/or status of objects must recompile their code with the new JDSP header files, and link with the new JDSP libraries. Within the protocol, a force side has been added to all AAR objects, The BE Facility object has been assigned a damage\_percent attribute, and BE Objects have been added to link targets and units to a BE Facility.

### 1.5.2 Oracle Compatibility and Installation

A full Oracle Client installation (not Instant Client) that matches your database server version is currently a requirement for running some JTLS-GO applications. The Oracle Instant Client is not sufficient for JTLS-GO applications because Oracle utilities, such as sqldr, imp, exp, tnsping, etc., are missing. If you have applied a patchset to your database server, the same patchset should be applied to the Oracle Client installation. A 64-bit Oracle Client installation must be used. The JTLS-GO scenario/database modification process also expects Oracle 11.2.0.1 or higher full Oracle Client installation.



Some sites NFS mount their database server as Oracle Client; other sites prefer a full install of the Oracle Client to a different directory that mounts (simple NFS will suffice) to JTLS-GO. Your system administrator can choose the appropriate installation. Assigning the full Oracle Client installation location (or mount point) as the ORACLE\_HOME in the JTLS .cshrc file allows connecting to an Oracle database server (11.2.0.1 or higher - including 11gR2 XE) running on any Oracle-certified database server platform.

The new DDS application utilizes the Oracle GlassFish J2EE server, which, like the JTLS-GO WHIP Apache server, is delivered with JTLS and requires no separate installation.

Refer to Chapter 6 of the *JTLS-GO Installation Manual* for additional details pertaining to the Oracle installation.

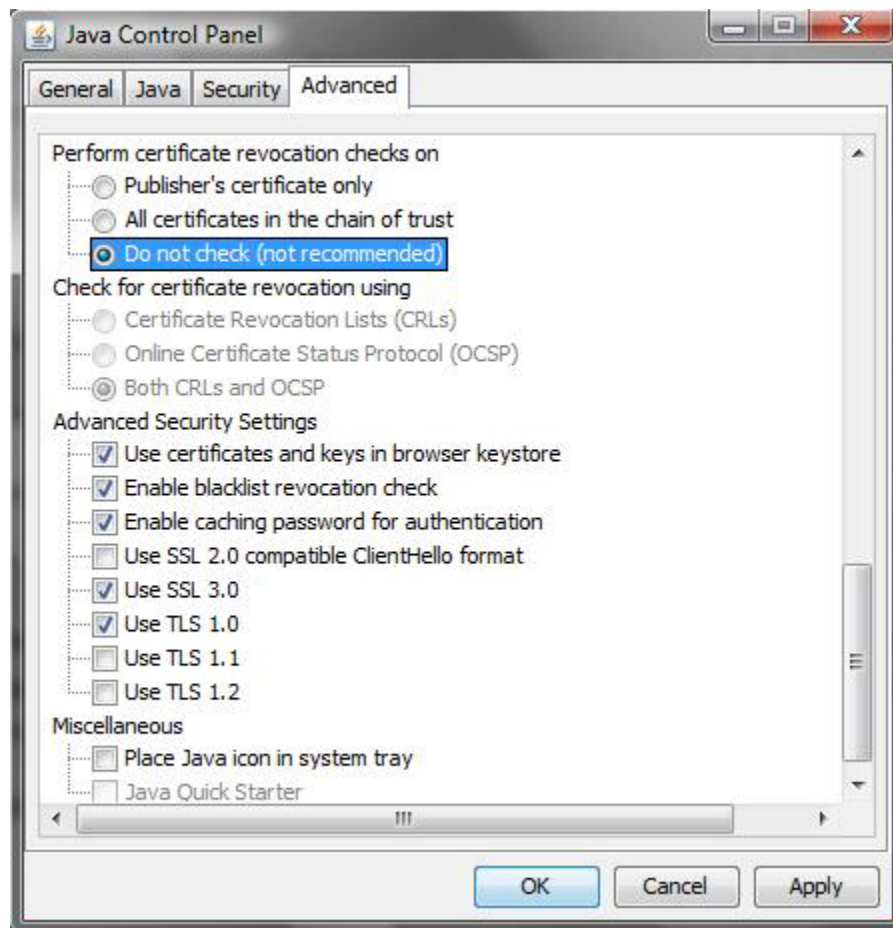
### 1.5.3 Disabling Certificate Authority

Industry standard programming practices strongly recommended that Web Start technologies be signed by a Certificate Authority (CA) to validate that an application being run comes from a trusted and registered source under the PKI. Keeping with high security standards, R&A has opted to sign its web enabled applications with a certificate from the COMODO, which uses the Public Key Infrastructure (PKI) to validate the digital signature. Local area networks, intra-nets and standalone systems that have no outside connection to the Internet must configure their installation to disable certificate revocation checks. If this step is not taken under a closed environment, the JTLS-GO web-enabled applications will experience a significant delay in start up while the PKI attempts to validate the certification on COMODO's servers via the Internet.

The following outlines the method that should be used to turn off certificate revocation checks. Again, this step should only be taken if the WHIP, TRIPP and/or DDS are going to be run in a closed environment.

Bring up the Control Panel. On Linux, typing 'jcontrol' in a terminal window will bring up the configuration panel. On Windows, go to the Windows 'Control Panel', select 'Programs' then click on 'Java'. Both Linux and Windows will display the same configuration panel.

Navigate to the 'Advanced' tab and in the list of configuration options, select the 'Do not check' radio button and click 'OK'. The image below illustrates the corresponding selection in the Control Panel.



**Figure 1.1 Control Panel**

Completing this step will allow you to run the JTLS-GO web enabled applications without any external checks and launch the application without the validation delay.

#### 1.5.4 Map Vector File Format Update

The format of the files used to display outline maps on the WHIP and DDSC has changed. Files in the new format are delivered with JTLS-GO. The files are located in `$JTLSHOME/data/maps/vector` and are in XML format.

For users who desire to use any custom files that are in the JTLS 4.1 format, a conversion script called "outlineConverter" is provided. The script can either convert individual files or a directory of files. The user can also choose to convert all types of outlines or only the shoreline outline (coded 9999 in the 4.1 format).

The script has 2 usages:

- To convert a single file:

```
outlineConverter -a <map_file> [-c shoreline]
```

- To convert all files in a directory. The file extension is assumed to be .map.

```
outlineConverter -d <directory> [-c shoreline]
```

The optional “-c shoreline” argument causes only the shoreline vectors to be converted. Rivers and national boundaries no longer follow hex-edges in JTLS-GO 5.0.6.0, but are represented as distinct lines with latitudes and longitudes. These terrain features can be individually turned on and off using the WHIP filter capability. Thus, the need to represent rivers and national boundaries in the vector maps is eliminated. The ability to represent these features, as part of the vector map, has not been removed from the WHIP, but the user should consider whether these old vector features should or should not be displayed by the vector maps.

The output files are placed in the same directory as the input files.

## 2.0 ENGINEERING CHANGE PROPOSALS

This chapter summarizes model capabilities added to JTLS-GO 5.0.6.0 as a result of implementing minor Engineering Change Proposals (ECPs).

### 2.1 JTLS-2017-13064 PKI Authentication

#### Summary of Model Change Request

Various JTLS-GO system components require Public Key Infrastructure (PKI) authentication or the use of a CAC.

#### Design Summary

The WHIP/TRIPP, DDSC, DCP, WSM and Apache were modified to use PKI authentication if specified to do so in the Interface Control Program (ICP) or DDS Configuration Program (DCP).

### 2.2 JTLS-2017-13157 Improved ELS Logging External Model Messages

#### Summary of Model Change Request

As part of its direct connection to external models (such as MUSE), the ELS publishes messages on the EODA data server. These messages contain information on events for Weapon Fire and Weapon Impacts. The ELS stored the contents of the most recent message, but it did not save a record of all of the message traffic that was sent by the ELS.

#### Design Summary

Changes were made to ensure that all of the outgoing message traffic was saved by the ELS in a log file. These data are held for the current run in execution. The data are stored in plain text and provide a history of the model interactions as the connected simulations process weapon engagements.

### 2.3 JTLS-2017-13180 Tech Tool WHIP Map Slide Copy

#### Summary of Model Change Request

There was no easy way to copy WHIP Map slides across scenarios that may be on either the local or a remote host machine, much like WHIP order groups are copied across scenarios in the Tech Tool.

## Design Summary

A Map Slide Copy tab was added to the Tech Tool to allow users to copy map slides across scenarios over a network from or to a remote host, including being able to copy the map slides on the local host's available scenarios.

### 2.4 JTLS-2017-13215 External Order For Perception Support

#### Summary of Model Change Request

When the ELS is connected to the external models NWARS and MUSE, the desire is maintain a shared level of intelligence between the external model and the JTLS-GO perception.

#### Design Summary

When intelligence is to be shared, the external models send an order to the ELS which specifies a geographic area of interest and a quality rating for the detections. The ELS takes data from this order and incorporates it into an order for the CEP. The format of this CEP order is the same as for an Area Report. The intelligence derived from this Area Report is shared with the primary Faction comprised of the Force Side which is reported on the COP. This is a single, non-repeating instance of an Area Report. The detection probabilities in the Area Report are determined based on the value of the input quality rating.

### 2.5 JTLS-2017-13231 Additional JODA Objects Added For NWARS Link

#### Summary of Model Change Request

A new link between JTLS and the NWARS model is under development. As part of this link, some additional object data were needed on the JODA data server to meet the requirements of NWARS.

#### Design Summary

The additional data requirements were for objects and attributes which were already part of the aggregate model (CEP) but these data were not yet published on the JODA. These included all of the individual units and targets which comprise the BE Facilities in the game, and, for emitter objects, a link to the emitting source object (air mission or target) was added to the existing emitters. These changes provided the required data on the JODA for future usage by NWARS.

## 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.

### 3.1 JTLS-2017-13147 Unconfigured Scenario ICP Error

When saving a scenario, the ICP checks to see what other scenarios exist on the same Apache server. If a scenario was removed from the game directory, then recopied and not fully configured, the ICP would report an error when trying to read the scenario's configuration file. The save for the current scenario would complete, but Apache could not be started.

The ICP was modified so that if it cannot read a scenario's configuration, it removes that scenario from the list of scenarios on the server.

### 3.2 JTLS-2017-13148 HRU Lookout Report Not Delivered

The XMS reported that the HRU Lookout Report, a type 5700 message, was being sent as a broadcast message, but did not appear in the vocabulary list of broadcast messages. This report was in fact misleading, since the message was being delivered without any direct recipients or broadcast recipients.

This was the main issue and it was traced to setting the recipient flags prior to starting the message. When a new message is started, all former recipient flags are cleared, which in this case removed the previously set recipients and caused the message to be sent without any specified recipients.

The setting of the message recipients was moved from the start of the routine to the bottom, just before the message is sent.

### 3.3 JTLS-2017-13149 Improper Conditional Or Assignment Syntax

There were a number of places in the Simscript code that did not adhere to the programming standard syntax. Specifically, assignments statements should always have a "LET" statement and conditional checks should use EQ, GT, LT instead of =, >, and <. Though these alternative syntax structures are permitted by Simscript, they do not meet the JTLS software standard, and cause problems when examining/searching code for specific conditions.

A search for assignment strings not using the LET operator, and conditional checks using the alternative operators, was conducted. Those found were fixed. These fixes do not affect the functionality of the model in any way, but do increase the performance and efficiency of software support personnel.

### 3.4 JTLS-2017-13150 Task Cancellation Messages

Within the CEP, there were numerous routine situations that arose, frequently without direct player interaction, that required pending execution tasks to be automatically canceled. In some cases, the tasks were canceled without any feedback to the players via the Message Browser. The tasks were simply no longer displayed on the Tasking Orders IMT. The players require notification when tasks are canceled by the model so that they have greater visibility into the process and can then take action as needed.

**Note: this STR is a continuation of STR JTLS-2017-13060.**

The multitude of places in the model where a pending execution task is destroyed were located and analyzed. Where possible, the cancellation cause was identified. If an existing player message accompanied the destruction of the task, it was replaced (in most cases) with a new message that provided a reason for the cancellation. If no such message existed, a new message was added to provide a brief explanation to the player.

### 3.5 JTLS-2017-13151 JDSP Library Windows API Not In Release Format

**The JDSP library provided with the release installation of JTLS is in Debug format. So, JODA clients developed with these libraries will not run on a native Windows 10 PC without having the additional Visual Studio software development kit installed.**

The JDSP Windows libraries are now built and delivered in Release format. In this way any JODA client that is developed for Windows will run on native Windows 10, 64 bit PC.

### 3.6 JTLS-2017-13152 SVP Warning 1457 Displays Negative Result

**When SVP Warning 1457 is displayed, the amount short appears as a negative number.**

The warning was reviewed and the code was modified to express the shortage as a positive number.

### 3.7 JTLS-2017-13153 Invalid Order Type 134

**The Operator received a message stating "Invalid Order Type 134 Detected in Routine CREATE.INTELLIGENCE.REPORT."**

Many orders sent by players have a chance of being intercepted by other sides. In this case a order directing a naval unit into port was intercepted. The order ENTER.PORT was never included in the routine CREATE.INTELLIGENCE.REPORT which is responsible for sending out the intercepted information. The routine was updated and tested.

### 3.8 JTLS-2017-13154 Tech Tool Order Group Copy Drag-And-Drop

Copying order groups was only allowed from the connected remote scenario to the Tech Tool's provided scenario. There was also a need to display the provided scenario's existing order groups and the locally available scenarios, to allow local copies to be performed without needing to make any connection, as well as to allow toggling away from the Order Group Copy tab in the Tech Tool without the Order Group Copy performing a reset of the current copy session.

Two-way drag-and-drop was implemented to allow users to copy order groups from and to the start-up scenario and the selected remote, or local, scenario. The existing order groups for the Tech Tool's start scenario are now displayed when the Tech Tool is started before any connection is made.

In addition, a user can select and perform copies on local scenarios without requiring a connection. The automatic reset feature when toggling away from the Order Group Copy tab of the Tech Tool has been removed.

### 3.9 JTLS-2017-13155 Entities Associated With Event Set ELS Crash

The ELS crashed while attempting to destroy combat systems which were still held in a set. In this case, the entities were held as part of an event which controls whether or not an entity is on fire.

The programming language for the ELS does not allow for the destruction of entities which still belong to a set. The ELS code was modified to ensure that the entities were removed from this specific set before they were destroyed. This problem affected entities which were associated with both Air Missions and with truck convoys.

### 3.10 JTLS-2017-13156 Re-Use Of ELS Aircraft Entities By MUSE

When launching an external air mission, MUSE often re-used the same entity over and over again. In some cases that entity might have been damaged or destroyed in a previous run. This condition prevented the ELS from assigning the MUSE-selected aircraft to be used in a new air mission.

The problem occurred when MUSE had an unplanned exit from its connection with the ELS. MUSE later rejoined to the ELS and attempted to re-launch an air mission using the same (damaged) aircraft entity. ELS code was modified to allow for the re-use of these entities. If MUSE created a mission using a damaged or destroyed entity, then the ELS automatically corrected the problem by resurrecting the designated aircraft.

### 3.11 JTLS-2017-13158 ELS Failed To Publish Entities For Convoys

When the CEP created an aggregate-level convoy, the ELS did not create the corresponding entity-level objects. In the past, the ELS published entities associated with trucks in convoys. Rail



**and barge convoys were not supported in the ELS. During testing it was found that the previous implementation of entity-level truck convoys was not working.**

As part of the improvements to the aggregate model, changes in the CEP were made to the manner in which convoys were created. Specifically, the type of the convoy was no longer specified on the initial creation of the convoy object. As a result, the ELS did not disaggregate the new convoy because it was unable to determine the type of convoy (truck, rail, barge).

The ELS was modified to process the creation of convoys at a different stage in the processing of data from the CEP. This change resulted in the proper creation of entities associated with truck convoys.

### 3.12 JTLS-2017-13159 Magic Air Ops Order Messages Missing

**A Controller Magic Air Ops order was submitted to adjust the fuel level on an air mission. The fuel amount was properly adjusted, but the expected verification message was not sent to the Controller's message browser.**

The Recipient Flag was not initialized prior to sending the directed message to the Player. The CEP did not know where to send the generated message. The error of omission was corrected in two places in the routine that processes the Magic Air Ops order.

### 3.13 JTLS-2017-13160 Password Protected Apache Status Blinks

**In the Web Services Manager (WSM), the Apache status indicator blinks and the Apache "Statistics" tab is blank when the server-status page is password protected.**

The WSM was modified to ask for the password when needed and provide Apache with the correct authentication data.

### 3.14 JTLS-2017-13161 CEP Crashed Following Naval Minesweeping Order

**A Naval Minesweeping Order caused a CEP crash. The ship was conducting Mine Laying Operations when the Minesweeping Order was received.**

The problem was found in Naval Minelaying, not Naval Minesweeping. The Naval Minelaying Order built poorly formed tasks when the execution time was NOW. This error crashed the CEP when any Mine Laying task was postponed or deleted.

During testing, other problems were found and resolved. The Minelaying location was not entered in the ship move route list. When a Sea Route was added to the Mine Laying order, the route was built incorrectly. The Deactivation Time was overwritten by Ship Speed in the Naval Mining Order file.

### 3.15 JTLS-2017-13162 MFP Long Exception Trace And Missing Report

The Message File Parser (MFP) displayed "System.err.println" when the number format exception occurred. Since the create\_message script did not copy 'stderr' but 'stdout', the error report was lost. Also, it displayed a long exception trace in the middle.

The program was changed to use stdout instead of stderr whenever an error condition was encountered. The program was also changed to removed the RuntimeException statement which writes exception trace.

### 3.16 JTLS-2017-13163 No Translating ATO Changes Out Of Sequence

The ATO Translator (ATOT) is capable of translating ATO initial and ATO change messages. It can translate any number of ATO changes following an initial ATO and will keep track of the active missions for the ATO period.

However, when a user skips one or more translations of ATO changes in a given ATO period, or translates the changes out of order, the mission tracking becomes corrupt. Without proper mission tracking the Translator does not know which missions have been processed, so it may withhold order generation for some missions or possibly generate orders for missions that have been deleted.

The ATOT Service was modified to compare the change number of the current ATO translation with the ATO change number of the previous translation. The translation will be allowed to continue if the current change number is either zero or equal to the previous change number plus one. Otherwise, an error message, "ATO change N is out of sequence" will reported back to the user via the ATOT module of the WHIP.

### 3.17 JTLS-2017-13164 Inconsistent Truck Locations in ELS Convoys

When the ELS published entities associated with trucks in a convoy, the truck locations were not aligned as expected. In some cases the trucks in a convoy were spaced in a row that was perpendicular to the direction of movement.

The ELS uses offset locations to position entities in a convoy. These offsets were measured relative to the aggregate position of the convoy. The offset locations changed depending on the status of the convoy. The truck entities were not evenly spaced when the convoy was loading or offloading.

However when the convoy started to move, the trucks should move into a column. This alignment in a column was not always established. Problems were found with the speed of the trucks as they were re-positioned. There were also issues in the code related to how the offset locations were computed. Significant changes were made to improve the positioning of trucks in convoys. The resulting alignments now match the expected locations of trucks in convoys.

### 3.18 JTLS-2017-13165 Unnecessary Column On JSAT Tab Of ICP

**The JSAT tab of the Interface Configuration Program (ICP) had a column titled "Request Port" that was actually the request port of the parent JODA.**

The column was unnecessary and was removed.

### 3.19 JTLS-2017-13166 Bad Checkpoint For Large National Boundaries

**If a user has a national boundary that contains more than 999 nodes, all checkpoints are bad and the national boundary data cannot be read in.**

The format statement did not expect a national boundary to have more than 999 nodes. This oversight was corrected.

### 3.20 JTLS-2017-13167 JTOI ICC Provide 2525 Symbol Codes

**ICC was not receiving updated symbol codes for ground units from the JTOI.**

Updated symbol codes are now provided to ICC through a previously unused ICC field.

### 3.21 JTLS-2017-13168 GIS Tool Too Many Terrain Layers

**JTLS scenarios are limited to 1023 terrain layers, but the GIS Tool allows more than 1023 layers to be created within a project.**

When the GIS Tool is in edit mode, the terrain layer pop-up menu now excludes the "Increase Layer Resolution" menu item if the number of terrain layers has reached 1023.

### 3.22 JTLS-2017-13169 Crash Associated With Damage To Convoy

**The model crashed when a truck convoy was damaged while it was en-route to deliver supplies.**

This crash occurred due to a problem determining the time for an event. Because the convoy was damaged, the model attempted to delay the movement of the convoy. The amount of the time delay was computed using the existing movement parameters. The time for the next move was incorrectly determined using the wrong variable. A code change was made to use the correct event time and a proper delay time was determined.

### 3.23 JTLS-2017-13170 JINN: Static XML File Export Crash

**The JINN crashed while creating the Static XML file and the export failed. The crash happened when a COMBAT\_ARMS TUP POT target existed in the database and then the JINN was told to export a hierarchy that included a unit with the TUP.**

The JINN stopped downloading COMBAT\_ARMS targets previously, because the JOBE did not use them. The code was changed to download `combat_arms_target` and `combat_arms_type` information so the export could complete normally.

### 3.24 JTLS-2017-13171 JINN: Duplicated Subordinate Units In LockFile

When a unit is selected from the Command Hierarchy, admin hold units, all subordinate units and owned targets are highlighted as well. The export or save menus proceed to write those highlighted units and targets in the Lock file. When subordinate units are written, some of them are duplicated in the file.

The array list that held subordinate units allowed duplicated unit's names. The code modified to add duplication checks before adding a unit name to the subordinate array list.

### 3.25 JTLS-2017-13172 JOBE: IMT Filter Interface Shown Incorrectly

The Data Filters menu item in the IMT "Configure" menu filtered based on the unit Side that was selected in the check box. The Force Side tab shows available Side names, which read the `<Own_Force_Side>` node from the `dynamic_voc.xml` file that the JINN wrote and packaged. However, the Side name sorted by Side numbers, not by Side names. The WSM would warn that it could not find the menu when it reloaded the ICP database.

The WSM code was changed to force the WSM to reread the menu, email, and hosts files when reloading the database.

### 3.26 JTLS-2017-13174 Unable To Restart ELS From Checkpoint

When the ELS was restarted from a checkpoint, it failed while reading a file associated with Naval Formations.

This problem occurred because the data in the checkpoint file indicated there were zero ships in the formation. The number of ships was improperly assigned to be zero during execution. This error only appeared during restart. The source of the wrong value was traced back to an improper update variable. A change was made to use the correct value and the restart problem was resolved.

### 3.27 JTLS-2017-13175 ELS OVT Errors For Zero Sensor Ranges

The ELS reported Order Verification (OVT) errors when external air missions were created in the ELS. These errors reported problems with sending invalid sensor ranges to the CEP.

When the ELS created external air missions, it sent orders to the CEP reporting the visible range of the sensors that were carried by the aircraft. The ELS sent an external update order to the CEP to specify the sensor range. These values were used to display the sensor range of the air mission as an on-demand range ring on the WHIP.

When the ELS was run in UAV mode, the sensor range had a reasonable value. However, when the ELS was run in a standard mode, then the variable holding the sensor range was zero, because it was never set to a specific value. This zero range was not suitable for the CEP, and the error was generated.

Code changes were made in the ELS to ensure that the default sensor range always had a non-zero value. If no range was specified, the aircraft are assigned a value of 30 km. This value can be changed from the ELS command line interface.

### 3.28 JTLS-2017-13176 ELS Crash Recovery Failed To Restart

**When restarting the ELS in "Crash Recover" mode, the program failed to restart. This was for a special ELS-Only checkpoint - there was no corresponding checkpoint for the CEP.**

The ELS has the capability to take a snap checkpoint. This records the state of the ELS at the time when a problem occurred. It does not have a corresponding checkpoint for the CEP, and holds ELS-only data. This crash occurred because the program was attempting to read a file that was stored in a different directory than where it was expected. Changes were made to utilize the proper directories when restarting from the ELS-only checkpoint.

### 3.29 JTLS-2017-13177 ELS Crash While Moving Linked Object

**In the aggregate model, an object (HRU or Unit) was linked to another object. When the ELS was restarted, it crashed while attempting to move a linked object to a new location associated with the linkage. The ELS was run in UAV-mode during this crash.**

This crash occurred because the ELS was attempting to perform entity-level movement for entities in object A which was linked to object B. However, the ELS was run in a UAV-mode such that not all aggregate objects in the game were being dis-aggregated. Only entities for objects near an external (UAV) air mission were created and managed by the ELS. For this crash, object A was not dis-aggregated by the ELS and therefore the entity movement required by the linkage (with object B) was not needed. A check was added to the code to verify that linked objects were being dis-aggregated before additional steps were taken to reflect movement.

### 3.30 JTLS-2017-13178 ELS Crash When HRU Killed

**The ELS crashed when an HRU was killed during combat in the model.**

This crash occurred while the ELS was attempting to destroy the HRU and remove it from all of its associated object sets. The HRU still belonged to one group of objects when the final destruction was made. This caused a crash because the programming language does not permit the destruction of objects while they still belong to another group. Code was added to clean up all of the associations before the HRU was destroyed. This was retested and no further crash occurred.

### 3.31 JTLS-2017-13179 Crash When Ordering Transported Unit To Move

**The model crashed when denying a move order for a convoy transported unit during its offload procedure.**

The model was attempting to tell the user why the order was being denied. The code used to formulate the message used an incorrect calling sequence. The issue was fixed.

### 3.32 JTLS-2017-13181 Hard-Coded Move Between Tasks

**The model was always putting a move in a convoy's task list between the load unit location and the offload unit location. Adding this hard-coded move results in the convoy always moving to the offload task location even when the load task is canceled. It also makes it difficult to alter the offload location after the convoy has started, because both the offload and the hard-code move task location must be changed.**

Prior to executing any task, the model asks if the object is at the required task location. If not, the model automatically adds a move so the object moves to the proper location.

For the Transport Unit Order, the model was adding a Move Task when the order was submitted to the game. The result was that the convoy had a task list that had a LOAD.UNIT task, a MOVE task, and an OFFLOAD.UNIT task. If for any reason, the LOAD.UNIT task was canceled, the convoy would immediately go to its next task on its task list. This is the MOVE task. When the MOVE task is complete, the convoy tries to execute its OFFLOAD.UNIT task. The convoy realizes that it cannot accomplish this task because the unit is not onboard, because the LOAD UNIT task had been canceled. The complaint was that the convoy should not have to move to the offload location to realize that the task cannot be executed.

Because of this change, the convoy's task list after the order is received now contains only the LOAD UNIT task and the OFFLOAD UNIT task. If for any reason the LOAD UNIT task is canceled, the convoy executes its next task, which is the OFFLOAD UNIT task. The convoy realizes the task cannot be executed because the unit is not onboard.

For complete understanding, now assume that the convoy properly completes the LOAD UNIT task. The convoy then goes to execute its OFFLOAD UNIT task. The convoy says it can execute the task because the unit is onboard. The convoy then asks if it is at the offload location. The answer is No, and the model automatically adds the MOVE task to the convoy's list. The convoy moves to the offload location. The convoy then executes the OFFLOAD UNIT task again. The convoy determines the unit is onboard and that it is at the proper location and the OFFLOAD UNIT task can begin.

Finally, if the user specified a transit route between the load location and the offload location, no changes to the logic were made. Specifically, if the user entered a Transport Unit Order with a two point transit route, the convoy's task list after receiving the order will contain a LOAD UNIT task, a MOVE task, the second MOVE task, and the OFFLOAD UNIT task. If for some reason, the LOAD

UNIT task is canceled, the convoy will execute the first MOVE task and the second MOVE task. When the second MOVE task is complete, the model will realize that the unit is not onboard and cancel the OFFLOAD UNIT task. It is up to the Interface Controller to manually cancel the two MOVE tasks if desired.

### 3.33 JTLS-2017-13182 Crash Damaging Convoy Transporting Unit

**If a transported unit owns a combat system that is not drawn from a supply category, the model crashes when damage to the convoy and the unit being transported is computed.**

The model was attempting to decide if the combat system was moving under its own power or was loaded on the convoy. To do this, the model accesses the SC SHIPMENT TYPE for the Combat Systems Resupply Category. There was no Resupply Category and the model crashed.

If there is no resupply category, the model now assumes that the combat system is loaded on the convoy assets.

### 3.34 JTLS-2017-13183 ATOT Not Properly Processing VIPLF Mission

**The ATOT was making an ATO VIPLF mission type a Transfer mission. It should have been a mobility mission.**

The change was made.

### 3.35 JTLS-2017-13184 Convoy With No Trucks Crash

**The CEP crashed when a truck convoy was moving. This convoy had no trucks.**

The model crashed while determining whether the convoy was important to a patrolling HRU. It could not assess the object importance due to the absence of assigned trucks. This problem originated at the time when trucks were resourced for the convoy. It has nothing to do with the HRU or convoy tasks that were executing when the crash occurred. The convoy resourcing code was modified to prevent a convoy from being created with no assets.

During the analysis of this crash, it was also found that the model was searching an erroneously large radius around the HRU. The wrong search area was used because of an error when selecting the proper radius based on the Rules of Engagement. Code changes were made to use the correct parameters.

### 3.36 JTLS-2017-13185 HRU Began Patrolling OPAREA Crash

**The CEP crashed when an HRU began patrolling an Operations Area (OPAREA). The crash indicated that no area had been specified.**

This crash occurred because in processing the HRU task to patrol an OPAREA, the model never saved information about the name of the area in the object task. When the model started

executing the patrol, the program was unable to define a route for the HRU because the patrol area was unknown. This problem was resolved with a simple change which stored the name of the OPAREA on the task.

### 3.37 JTLS-2017-13186 ATOT Module Fixes

Several minor ATOT Module issues were identified during testing. These issues were:

- On the Mission Summary panel of the ATOT module, the "Save" column was inoperable, and users were unable to view context-sensitive squadron information and ATO Messages of missions.
- On the Mission Types panel, when changing from an air mission type of TRA, the module would fail.
- The module would resize itself after completing a translation, which was not desired.
- The ATO Message popups were not presented in a monospace font, which made reading the MTF formatted message more difficult.

The Mission Summary "Save" column now correctly preserves user-edited saves for orders. A right-click popup was added on the Mission Summary table to allow users to view Squadron information and ATO Messages for a mission. Also changed the background color of the "Save" column to match the striping of the rest of the table. The Mission Summary double-click popup has been reformatted to display each attribute on a new line. A third right-click option was added to directly open the order associated with this mission.

On the Mission Types panel, changing from a TRA mission is now correctly handled.

The module no longer resizes itself after completing a translation. A popup dialog was added to inform the user when the module has finished loading in the new linking, summary, and error information.

ATO Messages are now presented in a monospace font for easier reading.

### 3.38 JTLS-2017-13187 Intercept Mission Faction Change Sides Crash

A DCA air mission was manual paired to a foreign (enemy) mission. While intercepting the foreign mission, a Controller Faction Create order was sent to the mission's squadron. The squadron was designated as the faction leader and remained on the same force side. Next, a controller Faction Side Change order was sent, directing the new faction to join a different (enemy) force side. As expected, the mission icon changed color and broke off the intercept. At that point, the model crashed.

When the mission's squadron changed sides, the mission's current intercept task was canceled immediately. Subsequent processing checked for the existence of the currently executing task,



and since there was none, the model did not set a flag that indicated the mission had been moving. The logic then attempted to cancel the current task again (which did not exist) and all the remaining tasks, as well. Because the flag was not set, the model did not replace the canceled tasks with new Move and Mission Complete tasks. When the model then attempted to estimate the return time for the mission, there was no first task to access and make the calculation. The model crashed on the null pointer.

To correct this error, the code that initially canceled the currently executing intercept task was removed. That change now allows subsequent processing to set the IS MOVING flag, cancel the current intercept task with all the other tasks, and create the new Move and Mission Complete tasks.

### 3.39 JTLS-2017-13188 Manage Air Mission Order Crash

**A Manage Air Mission Tasks order was submitted to a mission that was heading home after being canceled. The order selected the Add Route to Fly option, with an Execution Time option of Now. The new route directed the mission to fly to an FOL airbase that was different from its home airbase. The model immediately crashed when the order was submitted.**

In the routine that processes the Manage Air Mission Tasks order, the add route case creates a temporary air mission entity before creating the path to the FOL airbase. This temporary mission has only the initialized attributes that are required by the create path routines. One of the called routines, which checks the validity of the FOL base, accesses the mission's home squadron attribute to get the aircraft type to determine if the runway length is adequate.

However, the AM HOME SQUADRON attribute was not initialized in the temporary mission and the model crashed. Also, the AM NAME was not initialized and appeared blank in the player message if the FOL airbase was rejected. All the called routines were inspected to ensure no other uninitialized mission attributes were accessed.

To correct the error, the AM HOME SQUADRON and the AM NAME in the temporary mission were initialized from the actual air mission attributes before calling CREATE A PATH.

### 3.40 JTLS-2017-13189 Damage To Embarked Unit When Ship Damaged

**The CEP crashed while the model applied damage to an unit that was embarked on a formation.**

**A ship in a formation was damaged from weapon fire and eventually sunk. An embarked unit was also damaged in this process. During the processing of damage to the embarked unit, the model attempted to determine what fraction of the combat systems were recoverable versus destroyed.**

A mathematical error resulted in the crash. The applicable formula did not allow a negative number. In this case, the number of combat systems in maintenance was a negative value. This incorrect value for maintenance systems was due to a counting error when the systems were damaged. The affected combat systems were erroneously counted more than once. This meant

that there were too many affected systems in embarked units. The code was corrected and the crash was resolved.

#### 3.41 JTLS-2017-13190 LOGFAS English Name Field Not Filled

**On initialization, the LOGFAS field called English\_Name was not being filled.**

It is now filled with the long name of the unit being initialized

#### 3.42 JTLS-2017-13191 Crash Executing Bridge Operations After Restart

**A checkpoint was taken while a bridge pickup task was executing. When the model was restarted from this checkpoint, the model crashed while attempting to execute the completion of the bridge pickup task.**

When the task started, the model did not properly set the name of the bridge that was being emplaced. Because the name was not properly set, the restart procedure could not assign the bridge to the task. When the complete task event was executed, the model failed because it had lost track of which bridge was being emplaced. The problem was solved by properly assigning the name of the bridge to the task when the task started to execute.

#### 3.43 JTLS-2017-13192 Cancel Transport Unit Order Continues

**The Transport Unit order automatically added the dropoff location to the convoy's transport route. If the user cancels the transport task, the convoy still goes on to the dropoff location.**

The order no longer adds the dropoff location to the convoy's route, solving the problem. When it is time to execute the dropoff task, the model adds the needed move task. In other words, the task is only added to the convoy's task list when it is needed, not prior to when it is needed.

#### 3.44 JTLS-2017-13194 LC2IS Posture Issues

**A unit that has a JTLS posture of Incapable was not being accepted by LC2IS. In addition, a naval unit echelon was not being accepted by LC2IS.**

Each of these problems were due to errors in the Static Vocabulary file which links the JTLS information to acceptable information in LC2IS. An incapable unit is now sent to LC2IS with a posture of REGROUP, and a Naval Unit echelon is now listed as NAVTU, which stands for a Naval Task Unit.

#### 3.45 JTLS-2017-13195 Prevent JODA Updates For Objects With Zero ID

**When the JODA receives an update for an object, it checks if the object already exists. If the object does not exist, an error is printed to the error log. These errors can be grouped into two categories: those that have a zero ID for the object being updated and those that do not. Those**

updates with an object ID of zero indicate that the object has never been initialized with the JODA.

It is not unusual within the CEP code to call general purpose routines with an object whose ID is zero, but the routine causes a JODA update. This has traditionally been handled by checking within the Simscript code for a zero ID before sending the update. It would be more efficient from a code organization standpoint to perform this checking within the CEP C code that constructs and sends the update.

This change has no affect on the functionality of the model. It merely re-organizes the code structure so that the C code is responsible for checking for a valid object ID instead of the Simscript code. All the C code functions were modified to perform this check.

#### 3.46 JTLS-2017-13202 Merging Formation Ignores Retain Tasks Option

A naval formation was given a Move Formation order with three specified route points. The formation's Task IMT showed the three corresponding Move tasks with the first task currently executing. Shortly thereafter, a Merge Formation order was sent to the moving formation, with the Retain Existing Tasks option set to No.

As expected, the currently executing Move task was deleted, the Merge Formation task appeared, and the individual ships began Stationing moves toward the accepting formation. However, the merging formation's tasks remained in the IMT when they should have been deleted.

The routines that process the Merge Formation order failed to consider the Retain Existing Tasks flag at all. Furthermore, the pointer to the merging formation was temporarily stored on the flag's memory location, which overwrote the Yes/No value. The error was corrected by storing the merging formation pointer on an unused order attribute. In addition, the flag's value was placed on the Merge Formation pending execution task. In the Merge Formation execution routine, code was added to delete the merging formation's tasks if the flag was set to NO.

#### 3.47 JTLS-2017-13203 Crash Putting TGF Unit In Defend

The model crashed when the user submitted an order to tell a Tactical Ground Formation (TGF) unit to go into DEFEND. The unit properly left the TGF, but the model crashed when the model attempted to tell the user the order was successfully executed.

The unit was removed from the TGF and the model needed that information to create the message information. The problem was solved by sending the message and then removing the unit from the TGF.

### 3.48 JTLS-2017-13206 WHIP Exception Window Opening Order Panel

**There was an occasional error in which an order could not be sent due to a missing mandatory field. All mandatory fields were filled. The order would never work until the WHIP was stopped and restarted.**

The error occurred because the order field cache mechanism would fail and return the incorrect order field for a specific order field type when constructing the order panel. To correct the issue when the fault is detected, the cached values are now reestablished to prevent the order panel from being affected during its construction. This is not considered a fix, rather it has been labeled as a patch. The reason for the fault that causes the problem has not been identified.

### 3.49 JTLS-2017-13207 Incorrect Airlift Task Cancellation Message

**An air mission was told to pick up two Aggregate Resolution Units (ARU) simultaneously. This is not allowed. When it attempts to load the second unit, the task is canceled. The reason given for the cancellation is that no suitable landing place was found. This was not correct.**

There are three reasons that a Load Unit Task is not accepted and the task is canceled. The three reasons are:

- a. The mission is already carrying an ARU
- b. The mission is already carrying supplies to be delivered
- c. No suitable landing place was found

All three reasons were not properly listed in the player message when the Load Unit Task is canceled. This problem was corrected.

### 3.50 JTLS-2017-13208 Breakoff Reason Not Displayed When Ordered

**A DCA mission was manual paired to intercept a foreign mission. During the intercept, a Break Off order was sent to the mission. The Air Mission IMT did not display ORDERED as the Last Break-Off Reason. The field was blank.**

The logic that processes the Break Off order canceled the current mission Intercept task. After canceling the Intercept task, the logic assigned .BREAKOFF.ORDERED to the mission's Breakoff Reason attribute. However, the JDS updated the Last Break-Off Reason when the Intercept task was canceled. Therefore, the IMT displayed a blank as the Last Break-Off Reason.

To correct the problem, the .BREAKOFF.ORDERED assignment statement was moved BEFORE the current Intercept task is canceled. This problem was a simple out-of-sequence error.

### 3.51 JTLS-2017-13209 ATOT Port Number Overflow

**The ATO Translator is prevented from connecting and communicating details of the DSA slide files whenever the Service Port of the Synapse is configured to be larger than 32,767.**

During the ATO translate process, the ATOT writes various files to the filesystem. Several of the files produced by the ATOT are DSA slides used by the WHIP. In order to make the WHIP aware of the DSA slide files, the ATOT connects to the Synapse via the Service Port TCP connection. The JDSP library function that implements this connection was converting the port number held in a 32 bit integer to a number held in a 16 bit short integer. When the port number value exceeded 32,767, the variable would overflow the short integer and yield an invalid number for the port.

### 3.52 JTLS-2017-13210 Convoy Continued Offload To Enemy Unit

**A Directed Resupply order was submitted to dispatch a convoy to deliver supplies. When the convoy arrived at the receiving unit, it began offloading supplies. While offloading, a Change Side Relationship order was sent to change the convoy's Force Side view of the receiving unit's Side to Enemy. The convoy continued to offload all supplies to the enemy unit. Upon completion, the convoy departed and returned to its support unit.**

The logic that stopped the convoy from offloading when the side relationship becomes unfavorable was incomplete. A routine was called that did nothing, which allowed the convoy to finish the offload task before moving home. To fix the problem, the routine was replaced with a call to an existing routine that cancels the currently executing convoy task. The old routine was not called anywhere else in the CEP, so it was removed from the library.

### 3.53 JTLS-2017-13211 ELS Halted While Creating New HRU

**The ELS halted and entered into a debug state when new HRUs were created. The ELS encountered an error when trying to find the required combat system entities which formed the new HRU. No available entities were available.**

When HRUs were created from an aggregate unit, the ELS attempted to assign combat systems in the HRU from existing entities in the parent unit. This debug condition occurred because some of the combat systems in the HRU were not present or available from the aggregate unit. For example, the HRU expected to have 4 combat systems of a specific type, but the parent unit had only 2 such systems available.

This problem occurred because each time an HRU was created, the required entities were taken from the parent unit. If the HRU later rejoined its parent unit, then the entities were not returned to the parent; instead, they were destroyed. This incorrect behavior resulted in aggregate units which contained fewer entities than was reported in the aggregate model.

The ELS was modified to properly return entities when HRUs rejoined their parent units. These code changes now result in consistent combat system counts between the CEP and the ELS. No additional halts or crashes of the ELS were seen in subsequent testing.

### 3.54 JTLS-2017-13212 ELS Crash For Destroyed Entity With No Parent

**The ELS crashed while recovering from a checkpoint. The crash details indicated there was a problem with publishing a combat system entity on the EODA.**

The entity causing this problem had a parent object that was destroyed. Its parent object had been deleted from the ELS. In this case, the entity was part of an HRU. For destroyed entities, the ELS was supposed to leave them on the ground as wreckage. However, the ELS destroyed the command object, which was the parent of the entity, when the HRU was removed from the game.

During the evaluation of this problem, it was also found that the code in the JTLS-Javamenu was not correctly cleaning up files associated with unit hierarchy changes, such as from creating or rejoining HRUs and attachments or detachments of ARUs.

The clean-up code was easily fixed in the Javamenu code. This clean-up ensures that hierarchy changes and their associated custom templates are moved into the proper checkpoints or simply removed when the game is restarted.

To solve the problem associated with destroyed entities, a new class of parent object was added to the ELS. This new type, called Immobilized Object, served as the parent for entities which have been destroyed. It allows the entity to exist as an independent object which can never move from its location on the ground. The entities associated with Immobilized Objects will be visible on the EODA, but the Immobilized Objects themselves were not published on the EODA.

Having the new Immobilized Objects means that the ELS can display the destroyed entities on the ground. They may be burning, or not, depending on when the entity was destroyed and the current duration of the events which control the flames.

### 3.55 JTLS-2017-13213 Illegal UOM\_AMOUNT Function In Message

**Message Type 1602 is generated when the user changes a CCP database value or asks to see the current setting of a CCP database parameter. The WHIP throws an exception if the CCP.RADIUS.OF.HRU.RESPONSE parameter is included in Message 1602.**

The Message Definition File (MDF) for Message Type 1602 included a function UOM\_AMOUNT. There is no such MDF function. The correct function name is UOM\_AMT. The problem was solved by referencing the correct function name in the MDF file.

In addition, the script which checks the validity of an MDF was improved to catch similar problems in the future.

### 3.56 JTLS-2017-13214 DDS/TRIPP Report Classification Markings

**The DDS and TRIPP reports did not contain classification markings as required.**

The current scenario classification was added as a header and footer on the reports.

### 3.57 JTLS-2017-13216 ATO Parser Mission Tasking End Times

**When the ATO Parser writes an XML file for the parsed ATO message, it filled the end time incorrectly whenever the ATO message contained just a day and time for an end of task. In other words, if a mission had an off-task time of 150707Z in the ATO message, the Parser wrote the wrong month to go with this time into the ATO XML. Later, from the ATO XML, the ATO Translator detected an excessive end time from this value in the mission and reported an error.**

The ATO Parser was using the current system time of the server in order to "guess" an appropriate month for the mission's off-task time. This has been changed to base the off-task time on the associated on-task time. If a month and year are included in an on-task time, the Parser uses this to compute an appropriate month and year for the off-task time. This was a problem when parsing ATOs for a scenario that is not synchronized to real time.

### 3.58 JTLS-2017-13217 Order Group Editor Error Pop-up Window

**Using the Order Group Editor, a check is done on one of the order groups and a window displaying bad orders opens. When an order is highlighted and the "Fix" button selected, there is a pop-up window that opens to report that the order has errors. The pop-up window cannot be clicked to be dismissed, and there is a 4-5 second delay to close it. If a check on the same order from the Order Group Editor is done, the pop-up window comes up, but can be clicked on to immediately dismiss.**

At the time of clicking on the "Fix" button to correct any bad orders, it is already known to the user those orders have errors, and it was redundant to relay the message again in a pop-up. Therefore suppressing the message pop-up dialog as the bad order panel is brought up, will save the user of having to wait the time the order takes to come up and pop-up message to show and time out. After the order comes up, it continues to highlight in red the bad order fields, and the order panel is immediately available to work on with no delay.

### 3.59 JTLS-2017-13218 Crash Following Manage Pass Intelligence Order

**A Manage Pass Intelligence order providing all target information to a side crashed the CEP. The code attempted to pass the target location time with perceived information from a specific side.**

The code did not correctly recognize that the Controller provides instant ground truth information for the target location time in the Manage Pass Intelligence - Targets Order. Other target attribute assignments in the routine were verified and found to make this distinction correctly.

### 3.60 JTLS-2017-13219 Tech Tool Documentation

**Changes made to the Tech Tool (Order Group Copy and the addition of the Map Slide Copy) had caused the documentation to become out of date.**

Documentation sources were revised to reflect the various interface changes to the Order Group Copy and the addition of the Map Slide Copy features in the Tech Tool.

### 3.61 JTLS-2017-13220 ATO-T Does Not Generate DSA Slides By Use

**The ATO Translator (ATO-T) can produce DSA slides by name for the WHIP whenever the Name button is clicked for Slide Generation Type. However, when the Use button is clicked for Slide Generation Type, the Translator should produce slide groups of the DSAs. This is not happening.**

A routine in the ATO-T was missing that enables the creation of a slide group into which each slide geometry is written. This routine was added.

### 3.62 JTLS-2017-13221 OTHGold/Link16 Move Feed Status

**Users were unable to view the status of the feed at all times.**

The feed status indicator has been moved next to the status of the service connection. Controls for the feed have been moved to the Service menu, along with the Connect function. In addition, when the module connects to the service, the title of the module is updated to contain the name of the connected service.

### 3.63 JTLS-2017-13222 ICP Classification And Display Menu Bar Color

**The classification color was only able to be selected from a dropdown list. The ICP did not display the same menu bar color as the Web Services Manager and WHIP.**

Users are now allowed to choose the classification color using a popup color picker, and to set the color of the ICP menu bar to the menu bar color shared by the Web Services Manager and WHIP.

### 3.64 JTLS-2017-13223 TRIPP/AAR Object Attack Report

**While demonstrating the TRIPP/AAR Report capabilities, an Assess Weapon Damage was performed against a unit using a Controller WHIP, followed by sending an Object Attack Report request from the TRIPP. The resultant report did not list any damage against the unit, even though Controller Damage Reports had been generated listing damage, and an examination of the AAR database verified that there were damage records.**

The eventual problem was tracked down to the report code, which expected a side from all objects that might have inflicted damage. The damaging object in this case was an order, which did not have an associated side in the AAR database.



The JDS Protocol was modified to assign a side to the AAR\_ORDER object, and the CEP code was modified to provide the order's sending side. Other code changes were implemented on the AAR Glassfish server and the AAR database to use a more inclusive view, including AAR\_ORDER records, when retrieving objects that have inflicted damage. It was also noted that the Object Attack Report and Target Damage History report windows did not allow a selection of the Controller side as a damaging side. This was also fixed.

### 3.65 JTLS-2017-13224 Write Configuration Files For Active JOI Services

**Configuration files for all JOI services were being created, which resulted in inactive JOI services appearing in the "Connect" menu of the WHIP OTHGold and Link16 modules.**

Configuration files are now only written for active JOI services.

### 3.66 JTLS-2017-13225 ICP Reporting Interval Not Used

**The Reporting Interval column for JOI services was only used by the Tactical Electronic Intelligence (TACELINT) service, but the column was still editable for OTHGold and Link16 services.**

The Reporting Interval column in the JOI area of the ICP has been disabled for OTHGold and Link16 services.

### 3.67 JTLS-2017-13226 WHIP Menu File Documentation Update

**The comments and documentation in WHIP menu files was outdated or incorrect in some places.**

The WHIP menu file comments and documentation have been updated to reflect additions and changes, such as the introduction of the Module menu.

### 3.68 JTLS-2017-13227 DDSC Move Road Network Node SVP Error

**After a user edited the location of a road network node using the DDS Map's Road Network Edit Mode, an SVP Error (#651) could result.**

When the location of the node was changed, the connecting arc's distance was not updated. Now, for each arc connecting to the node, if the resulting great circle distance is greater than the arc's distance, the arc's distance is updated to the great circle distance between the two nodes.

### 3.69 JTLS-2017-13228 Spreadsheet ATO Refuel And Targeting

**Problems were found with refueling chits and targeting of the correct type objects in the Spreadsheet ATO Parser.**

Refuel records were being written in the refuel mission xml task, when they should have been written on the specific mission xml task.

OAS missions were launching but were not attacking the correct targets. This was a problem with the logic used in the Parser. There was insufficient data available to the Parser to make the determination of the target type and therefore the target xml record was being written incorrectly.

Both problems were corrected. The spreadsheet format had to be modified to separate units and targets into different columns.

### 3.70 JTLS-2017-13229 SSH Tunneling Among JTLS Services

**Communications between Apache and the services and among the services need to be encrypted.**

Encryption was implemented using SSH tunneling of the connections when not on the same machine. This capability is only used when selected as an Interface Control Program (ICP) option.

### 3.71 JTLS-2017-13230 SDC Comm Issues With New Filter File

**When a modification is made to the SDC filter file the SDC reads the new file, disconnects from the JODA, sets up new JODA object requests based on the new filters, and reconnects to the JODA. However, on the JODA reconnect attempt the socket being used was mistaken for the console accept socket. The conflict between the SDC thinking the socket was an accept socket but the socket being marked as the JODA socket was causing an endless loop with error messages being continuously generated.**

**The description of the filter file was also not documented.**

The underlying issue was discovered to be that the SDC was closing all of its sockets instead of just the JODA socket using a low level function. At the higher level the sockets were still marked for other uses. Regardless of the conflict this was the wrong way to do it, and the code was modified to use a higher level close function and close only the one socket.

A section has also been added to the *JTLS-GO Software Maintenance Manual* to define the format of the SDC filter file.

### 3.72 JTLS-2017-13232 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 5.0.5.0).**

The JTLS-GO documentation suite has been updated.

### 3.73 JTLS-2017-13233 ATO-T Does Not Remove Temporary Slides

**The ATO-T generates slides for all of the ACM airspaces that defined in the ACO message. The slides are produced properly but a copy of each slide file is left in the webroot directory. These useless file become clutter as they accumulate in this directory.**

The ATO-T was modified to remove the useless slide file copies after they are sent to the Synapse service.

## 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.

### 4.5 WSM - Many Messages Cause Lockup

If a service produces a large number of log or error messages in a short period of time, it can cause the WSM to lockup.

### 4.6 Strategic Airlift Does Not Work

Users should not submit Strategic Airlift Orders

### 4.7 Tactical Ground Formation Attacks Do Not Work

Users should not submit Tactical Ground Formation Attack orders. Tactical Ground Formation moves work fine.

#### 4.8 Materiel Handling Equipment (MHE) Does Not Work

The use of Materiel Handling Equipment (MHE) has been temporarily disabled in the model.

#### 4.9 Port Amphibious Operations Do Not Work

Users should not submit an order to do an amphibious assault or an amphibious pickup with the Port Option. The user should simply indicate that “Beach” operations are desired or Magic Move the unit off of the formation at an appropriate time.

#### 4.10 Multiple Point Ground Group Move Results Not Consistent

A Move order was submitted to a ground unit with a specified route consisting of three points. Four other ground units were specified as part of the group move (not a TGF move). After the lead unit completed its third Move task and the other units finished their movement, the position of the other units varied significantly from their starting locations relative to the lead unit before the first move began. The reason this happened is that when the group leader starts its move, it makes note of the relative position to each of the units in the group. Not all units were complete with their first move; therefore, the relative positions did not match the starting relative positions. To solve this problem, insure that all units have completed a previous group move before giving a second group move order.

## 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

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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
EI	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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ICPLLogin	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

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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
TACELINT	Tactical Electronic Intelligence
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

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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 5.0.6.0 STANDARD DATABASE CHANGES**

No new changes were made to the Standard Database (SDB) for this maintenance release.



## **APPENDIX C. Version 5.0.6.0 DATABASE CHANGES**

No changes were made to the JTLS-GO 5.0.6.0 database.