

# JTLS-GO

## Version Description Document

January 2017



DEPARTMENT OF DEFENSE  
JOINT STAFF J7  
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JOINT THEATER LEVEL SIMULATION - GLOBAL OPERATIONS  
(JTLS-GO 5.0.1.0)

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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 5.0.1.0 delivery of the configuration-managed JTLS-GO software suite.

JTLS-GO 5.0.1.0 is a Maintenance release of the JTLS-GO 5.0 series that includes an updated SBDKOR50 Standard Database, as well as major 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 5.0.1.0 of the configuration managed Joint Theater Level Simulation - Global Operations (JTLS-GO<sup>®</sup>) software suite. JTLS-GO 5.0.1.0 is a Major delivery for the JTLS-GO 5.0 series of releases.

JTLS-GO 5.0.1.0 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 Engineering Change Proposals (ECPs) implemented for this release are provided in [Chapter 2.0](#).

JTLS-GO 5.0.1.0 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 5.0.1.0 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 Director Guide* (JTLS-GO Document 07, Version 5.0.1.0)
- *JTLS-GO Executive Overview* (JTLS-GO Document 08, Version 5.0.1.0)
- *JTLS-GO Entity Level Server User Guide* (JTLS-GO Document 19, Version 5.0.1.0)
- *JTLS-GO Federation User Guide* (JTLS-GO Document 20, Version 5.0.1.0)
- *JTLS-GO C4I Interface Manual* (JTLS-GO Document 21, Version 5.0.1.0)

#### 1.2.2 Updated Documents

- *JTLS-GO Analyst Guide* (JTLS-GO Document 01, Version 5.0.1.0)
- *JTLS-GO Air Services User Guide* (JTLS-GO Document 03, Version 5.0.1.0)

- *JTLS-GO Controller Guide* (JTLS-GO Document 04, Version 5.0.1.0)
- *JTLS-GO Data Requirements Manual* (JTLS-GO Document 05, Version 5.0.1.0)
- *JTLS-GO DDS User Guide* (JTLS-GO Document 06, Version 5.0.1.0)
- *JTLS-GO Installation Manual* (JTLS-GO Document 09, Version 5.0.1.0)
- *JTLS-GO WHIP Training Manual* (JTLS-GO Document 10, Version 5.0.1.0)
- *JTLS-GO Player Guide* (JTLS-GO Document 12, Version 5.0.1.0)
- *JTLS-GO Standard Database Description* (JTLS-GO Document 14, Version 5.0.1.0)
- *JTLS-GO Software Maintenance Manual* (JTLS-GO Document 15, Version 5.0.1.0)
- *JTLS-GO Technical Coordinator Guide* (JTLS-GO Document 16, Version 5.0.1.0)
- *JTLS-GO Version Description Document* (JTLS-GO Document 17, Version 5.0.1.0)

### 1.2.3 Delivered Software Components

JTLS-GO 5.0.1.0 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)
  - 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 (JOBED)
- Database Configuration Program (DCP)

- DDS User Interface (DDS)
- JTLS Terrain Building Program

Instructions for installing JTLS-GO 5.0.1.0 are provided in the *JTLS-GO Installation Manual*. Installing a previous version of JTLS prior to installing JTLS-GO 5.0.1.0 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 5.0.1.0 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 6.8 (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.

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 5.0.1.0 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 121 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 121, which expires on 18 April 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> OHLA 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 5.0.1.0 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 5.0.1.0 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 5.0.1.0 and JTLS-GO 5.0.0.0.

Significant database structure differences exist between JTLS-GO 5.0.1.0 and any previous 4.1 series database. For this reason, after installing JTLS-GO 5.0.1.0, you **must** unload and reload any JTLS 4.1 series scenarios that you may have.

Prior to unloading any newly upgraded JTLS 5.0 series scenarios you may have, you **must** execute the JSYMS program to update the symbol set used in the scenario, whether you wish to retain the legacy Default Symbol Set or upgrade to the new Default Symbol Set. Instructions for updating the symbol set are listed below - perform one of these procedures **before unloading** your newly upgraded JTLS 5.0 series scenario.

### 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 using the procedure listed below, which will reorganize the structure of the .gs and .scf symbols-related files.

Use this procedure to start the JSYMS program before unloading your newly JTLS-GO 5.0.0.0 formatted scenario.

1. Enter the command "jsyms" from a command prompt window. Do not use the JTLS-GO Menu > Database Menu for this purpose.
2. Select your scenario name from the available list and select OK.
3. Select "File" from the menu bar, and select "Save" to update your scenario symbol set.
4. Select "File" from the menu bar and select "Exit.".
5. Unload and reload your scenario.

### 1.4.2 JTLS-GO Using New Default Symbol Set

The JTLS-GO Default Symbol Set delivered with this release has been modified to use the US 2525C symbology standard and well as the NATO Joint Military Symbology [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, use the procedure that follows. 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..

Use this procedure to update your JTLS-GO 5.0.0.0 formatted scenario to use the new JTLS-GO Default Symbol Set.

1. Enter the command "jsyms --upgrade" from a command prompt window. Do not use the JTLS-GO Menu > Database Menu for this purpose.
2. The JSYMS program will open. Select "File" from the menu bar, and select "Save As" to update your scenario symbol set.
3. Select your scenario name from the available list.
4. Follow the instructions in the following popup windows.
5. Select "File" from the menu bar and select "Exit."

### 1.4.3 Standard Database Changes

Additional Standard Database changes that are applicable to JTLS-GO 5.0.1.0 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).

### 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 `sqlldr`, `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.

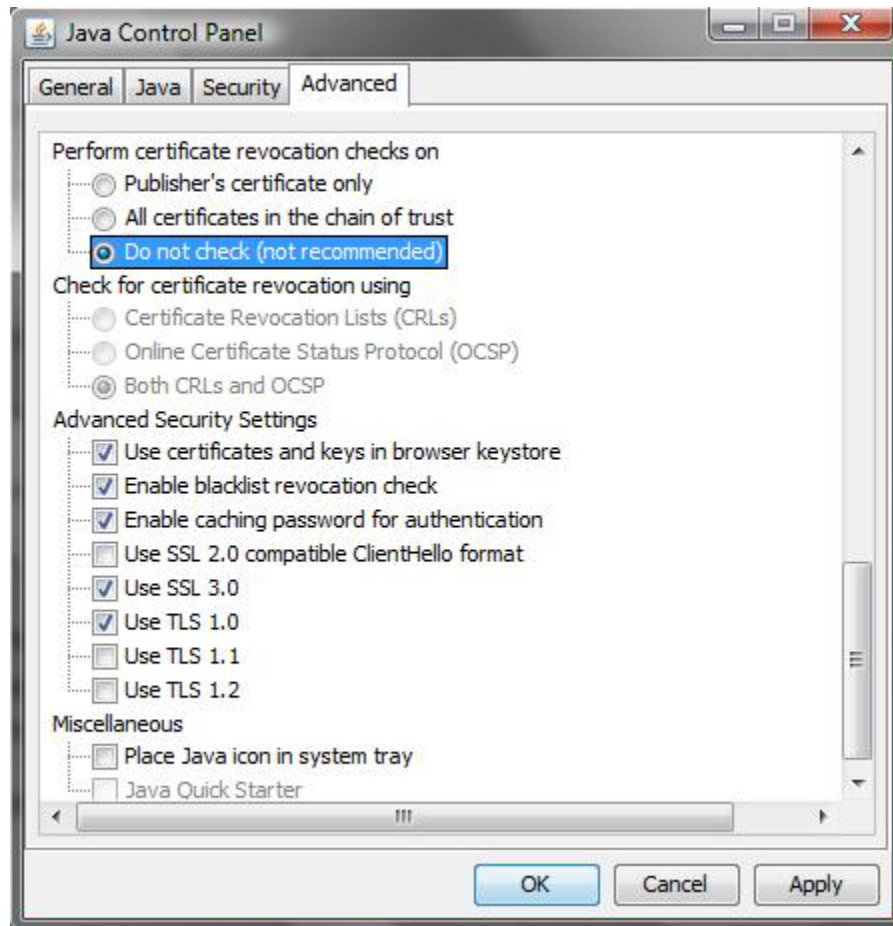
### 1.5.3 Disabling Certificate Authority

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, intranets 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 5.0.1.0, 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 5.0.1.0 as a result of implementing authorized Engineering Change Proposals (ECPs).

### 2.1 JTLS-2016-12701 Improved Automatic Generation Of Unit UIC

#### Summary of Model Change Request

The automatic generation of the North Atlantic Treaty Organization (NATO) style Unit Identification Codes (UIC) needed to be improved for more robust entry of UIC country codes. This capability was part of the User Code in the Alter Database portion of the JTLS Menu.

#### Design Summary

The code to automatically generate UIC data was moved from the User Code section into the main Alter Database menu in the Scenario Initialization Program (SIP). Modifications were made to allow the user to specify a two-character country code or to utilize the database-specified country code for all of the units on a side. The program loops through every force side in the game and automatically generates NATO-style UIC for all units on the side. This improved capability is now documented in the *JTLS-GO Technical Coordinator Guide*.

### 2.2 JTLS-2016-12714 ICC Three Base Status Codes

#### Summary of Model Change Request

NATO uses the Integrated Command and Control (ICC) system to track their air assets, view opposing force intelligence information, and develop a daily Air Tasking Order (ATO). One table within this C4I and Decision Support system is the status of their own-side airbases. This table includes not only airbases, but Forward Arm and Refuel Points (FARPs), and naval units capable of flight operations. Each base has three status codes used to describe the current capability of the base. These three status codes are:

- Operational Status
- Reason Code For Degraded Status
- Limiting Factor Code

JTLS currently only fills the Operational Status of the base. The desire for this Engineering Change Proposal (ECP) is to have JTLS fill the remaining two status codes.

## Design Summary

All three parameters re now being filled by the JTOI for both ICC 2.8.2 and ICC 3.0.2. Details on how the various status values are filled are included in the *JTLS-GO C4I Interface Manual*.

### 2.3 JTLS-2016-12720 Expand DSA Spreadsheet Generation Capability

#### Summary of Model Change Request

The current spreadsheet capability only creates circular DSAs with a fixed radius. A International User has requested the spreadsheet DSA generation capability be expanded.

#### Design Summary

The new DSA spreadsheet capability provides the user with the same option for DSA creation that are available on the DSA order panel in the WHIP. The user is able to create the five basic DSA types: Circular, Swath, Area, Target and BE Facility DSA. For each DSA, the user is able to specify the following options: Name, Owing Faction, DSA Use (Tactical or National), Priority, Collection Frequency (one time or multiple collections), and Collection Cancellation Time.

A sample spreadsheet call Sample\_dsa\_spreadsheet\_v5\_0.xls is in the \$JGAME/data directory. It is based on the demsdbkor50 database and contains examples for most types of DSAs the user may wish to create. It also contains some records that will generate errors or warnings. The spreadsheet has two purposes. One to provide examples of how to fill in the spreadsheet and secondly to act as a test file so the user may run through the generation process for testing.

### 2.4 JTLS-2016-12760 Manage ATO Change Messages

#### Summary of Model Change Request

An initial Air Tasking Order (ATO) message is used to introduce a set of air missions that are planned for an ATO period. Due to the dynamic nature of the theater air operations, an air plan can change prior to the end of the period and the Air Staff may issue one or more change messages for the period. These changes are drafted just like the initial ATO message, which follows the initial ATO message and has a change sequence number.

As the ATO change messages are received they must be processed by the ATO Parser and ATO Translator in order to account for any canceled or added air mission. Modifications to existing missions for the period are not processed.

#### Design Summary

In order to properly manage air mission additions and cancellations to any previous ATO within an ATO period the Translator needs to maintain a current missions file and a sequence of current missions files, one for each of the already received ATO changes for the current ATO period. Using the current missions file, the Translator is able to compare the missions defined in any ATO

change message and produce the proper air mission orders for the newly added or canceled missions.

## 2.5 JTLS-2016-12763 Improve DDS Unit Move Capability

### Summary of Model Change Request

Two improvements to the map component of the JTLS Database Development System (DDS) have been implemented. These two improvements are:

- Allow for placement of units from the Command Hierarchy component onto the map component.
- When an Airbase, FARP, or Naval Unit is moved, have the system move that unit and all squadrons located at or on that unit to move at the same time.

### Design Summary

Placing a unit or units from the Command Hierarchy component works as follows:

- The user selects one or more units from the command hierarchy. The shift key and control key work as it does on all lists. The user can select one or several units simultaneously.
- Once selected, the user drags the highlighted units from the command hierarchy to the map.
- When the mouse is released on the map, all of the units are placed at the current map location. No offset locations are computed. All units are moved to the selected location, the user can then refine these locations as desired.

The following details should be noted:

- The map does not need to be in "Unit Edit" mode. The independently implemented Command Hierarchy move capability does not affect the current "Unit Edit" capability.
- If a unit has subordinates and the subordinate leaf is not opened, clicking on the unit does not select the subordinates. The user must open the full leaf and highlight the units.

The desire to have squadrons automatically move when their home base is moved has been accomplished using a "database trigger". This means that no matter what method is used to move an airbase, FARP, or air capable naval unit, the results are that the home based squadrons move to where the base has been moved.

Given that the location attributes of home-based squadrons are now tied to a database trigger, there are some important additional concepts to understand. These are:



- Generally, database builders are told not to place two or more units at exactly the same location. This causes unrealistic damage results when a weapon is dropped. For this reason, the model automatically moves a unit slightly if it is found at exactly the same location as another unit that is already in the theater. This means that the database builder does not need to worry about squadrons being placed at exactly the same location as its home base. The model will generate a unique location within the base's radius when the squadron arrives in the theater.
- If the database builder wants to specifically place the squadron within the base's radius, this needs to be done after the final placement of the base has been accomplished. For example, assume that a squadron is located in a specific hanger and the desire is to co-locate the squadron and its assigned hanger at its real-world location. The model's uniquely generated random location would upset this desired. The database builder should move the base to the desired location. This will result in the home-based squadron being placed at exactly the same location. Once this is done, the user can move the squadron to its specifically desired location. When the squadron arrives in the theater, the model realizes it is not co-located with the base and will not assign a unique location.
- It is not unusual to accomplish a full database load. When this happens, the desire is to insure that any user altered squadron locations do not get changed as part of this upload procedure. During the load procedure, the database triggers do not exist. This means that the location for all units loaded into the database, will not be changed. Once the load is complete, the database trigger is created and activated.

## 2.6 JTLS-2016-12766 Script To Move Orders Between Scenarios

### Summary of Model Change Request

When a user creates an order, the order is saved by the Synapse in the scenario's game directory structure. It is not unusual for a user to create a group of orders for a large operation on a test game during an exercise. When the operation successfully works as desired, the user wants the orders moved to the real game and submitted there. Technical Control can accomplish this task, but it takes training to understand the directory structure and the procedure to move orders between scenarios. The purpose of this ECP is to create a script to easily move orders between scenarios.

### Design Summary

A new tab has been added to the already existing TechTool which is used to move order files from one scenario to another. The *JTLS-GO Technical Coordinator Guide* fully documents how to use this new capability.

## 2.7 JTLS-2016-12769 ATOT Auto Create DSAs

### Summary of Model Change Request

If a full intelligence staff is not part of the training audience, it is possible that the exercise audience does not have time to provide a detailed intelligence collection plan. In this case, a simply but effective way to create a collection plan may be to create JTLS Directed Search Areas (DSAs) based on the locations the air staff has placed their intelligence collection assets. For this reason, a tool to translate the daily Air Control Order (ACO) into DSAs was created to quickly input a plausible collection plan and generate reasonable intelligence reports throughout the day.

### Design Summary

A new capability has been added to the JTLS Air Tasking Order Translator. If the user selects the option to create DSAs from the ACO, the translator will create automatically create DSA order group and fill the group with the DSAs created from the translated ACO. The *JTLS-GO Air Services Manual* describes details of the logic used to create the DSAs.

## 2.8 JTLS-2016-12770 Represent UAV Following Ground Units

### Summary of Model Change Request

It is not unusual for a UAV to follow an enemy or suspect force and relay the information about the force and its operations. When JTLS is linked to a UAV simulator, the UAV operator can accomplish this task manually, but this option is not always available. Currently any orbit type mission in JTLS, including reconnaissance missions, can guide or shadow a naval unit or a naval formation. The desire of this ECP is to expand the guide capability to include ground units.

### Design Summary

This design modifies the capabilities of air missions such that they will now guide off of ground units. Previously, this guiding capability was only allowed for naval units. Guiding off of the two types of units involves largely the same process in the model. No major changes were required to implement this design. The code changes involves some additional checks and re-direction of the code to facilitate the new ground unit type.

## 2.9 JTLS-2017-12779 GIS Tool Automatically Generates Tool Properties

### Summary of Model Change Request

The file `tool_properties.xml` is an XML document read by the GIS Tool during initialization. It specifies the OpenMap Layers the tool should use to display the terrain. It also specifies the elevation model to be used by the tool.

To create `tool_properties.xml` for a new master database, the user must copy an existing `tool_properties.xml` from another database and then manually edit the file. To reduce the burden

on the user to become intimately acquainted with the file's structure, and remove errors that manually editing will inevitably induce, it would be preferable if the file can be created automatically.

### Design Summary

The file tool\_properties.xml is now automatically created when the user selects "Preprocess a World Database" from the Manage GIS World Database Menu. In addition, when the GIS Tool initializes, it will check if tool\_properties.xml is missing and automatically generate the file if that is the case.

## 2.10 JTLS-2017-12796 JTOI ICC - Deletion Of MISREPs

### Summary of Model Change Request

The ability to quickly remove all MISREPS from the missions held in ICC was requested by a user. Allowing the JTOI to delete several messages at once would facilitate testing and perhaps the correction of problems during operational use of the JTOI.

### Design Summary

A new menu item was added to the ICC JTOI. When selected, this item provides a popup menu that lists a series of air missions from "operational" ATOs. The user can select one or more missions from this list to have its MISREP information cleared from ICC.

## 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; however, because of the model enhancements included with JTLS-GO 5.0.1.0, no previously-identified STRs are considered valid. Errors identified for JTLS-GO 5.0.1.0 and corrected for future Maintenance releases in the JTLS-GO 5.0 series will be documented in this chapter.

### 3.1 JTLS-2016-12665 RSP Standard Text Duration Format Error

*A spreadsheet was created to set the Ground Tactical Intel Duration for a number of Tactical Unit Prototypes (TUPS) to 1 hour. The common text duration input of 1H was used in the spreadsheet. The Reformat Spreadsheet Program (RSP) was then run to convert the spreadsheets into JTLS-GO orders. The JTLS-GO orders expect duration in decimal days. Instead the RSP left the duration as the text 1H instead of the decimal 0.0416667.*

No code existed in the RSP to check for text durations vs. decimal durations. Since the format of the text duration is used extensively on the WHIP and Message Browser, the RSP needed to recognize it and convert it. This capability has been added with the generation of an error if the text version does not adhere to the simple duration format used on the WHIP.

### 3.2 JTLS-2016-12668 Controller Action/DDS Requirements Discrepancy

*At the end of an exercise, the final checkpoint was taken and loaded into the database. Due to some Controller-set variables, some records were in violation of database constraints and failed to load.*

*Specifically, the Controller was permitted to:*

- Set an Aircraft Class range to a value greater than that allowed by the database

To fix this issue, the Set Aircraft Class order was modified so that the maximum value that could be input for a range matches the maximum allowed by the DDS.

- A Controller-created faction failed to load because the value for the WIA Evacuation Time was 0.0;

It was discovered that when a faction is created from another faction, the WIA Evacuation Time was not being set. Now the new faction inherits this value from its parent faction.

- Some Sensor Types failed to load because the Controller had adjusted their range to less than their Recognition and/or Identification distances.

To fix this issue, the order to set Sensor Types was modified so that if the Controller sets a range that is less than either the Identification Distance or Recognition Distance that these two distances will also be adjusted to the lesser value. It was decided to auto-adjust the distances versus refuse the change because the ability of the Controller to quickly make changes is often important for MEL/MIL activity.

### 3.3 JTLS-2016-12669 i8n Compliance In Correct Object Tasking Order

*The Controller order Correct Object Tasking can display all Events and Pending Execution Tasks associated with a specified object (i.e. unit, mission, formation, convoy, or HRU). Some of the Events have multiple purposes (e.g. Object Take Action). For the convenience of the Controller, a Note column displays the purpose of the Event where applicable. The Notes were implemented as text strings within the model, instead of within the message template that is i8n compliant.*

The Note text strings were moved from the model to the message template. The code was changed to use integer specified sub-messages to generate the appropriate text within the message template XML.

### 3.4 JTLS-2016-12670 Obsolete SIP Subroutines

*With the release of JTLS-GO 5.0.0.0, the underlying terrain model changed from a uniform hexagonal representation to a layered variable grid representation. As a result, several subroutines within the SIP/SVP programs necessary for hex-specific processing became obsolete or superseded by new subroutines.*

The obsolete/superseded subroutines no longer called were removed from the SIP/SVP programs. At the same time, several global variables no longer used were removed from the Preamble.

### 3.5 JTLS-2016-12671 New Runway POT Incorrect Length

*The Controller order Manage Prototype Targets was used to create a new runway Prototype Owned Target (POT) for an airbase TUP. The Player acknowledgment message showed a runway length different from the length specified in the order.*

The newly created runway target had the correct length within the model. However, the subroutine that generated the Player acknowledgment message used a format field that was too small to accommodate the runway length. The code error was corrected.

### 3.6 JTLS-2016-12672 Superfluous Lat/Lon To Hex Conversion

*A call to a routine that converts latitude/longitude coordinates to a hex location was found in code that returns a destroyed unit embarked on a formation. The called routine was entirely unnecessary.*

The called conversion routine was removed.

### 3.7 JTLS-2016-12673 JOBE: Right Click On IMT Does Not Work Properly

*Right-clicking on a single row in the IMT did not display a popup menu. Attempting to right-click on a selection of multiple rows threw an exception.*

The JOBE IMT error was fixed. The IMT now works as expected.

### 3.8 JTLS-2016-12674 DDS User Defined UOM Preferences Not Loaded

*When the DDS client is launched, if a user-defined preferences data file exists in the DDS client's domain, the preferences should be loaded and the settings should be applied to the DDS displays. However, those user-defined preferences were ignored, and as soon as the client was launched, the user-defined preferences data were overwritten by the defaults.*

The code is fixed so that user-defined preferences data are properly loaded.

### 3.9 JTLS-2016-12675 Order Verification Tool Window Too Small

*When the Order Verification Tool was started, the window was too small, giving the appearance that the program failed to start. The cause was a missing banner image file.*

Corrected the program to look for the correct banner file.

### 3.10 JTLS-2016-12676 Single Mission Airlift Does Not Work

*If airlifting a very small unit that can be lifted with an air mission in one load, an issue was found with picking up the unit.*

The special circumstance of a single trip airlift was corrected.

### 3.11 JTLS-2016-12677 Mission Travels Through Unoccupied Area Crash

*An air mission was about to travel through a completely unoccupied area on a remote trip when the model crashed determining if it would cross a national boundary.*

This situation was never encountered during testing. A check was added to the logic. If the area is completely empty, then there is no need to check for national boundaries.

### 3.12 JTLS-2016-12678 Unit Assault Not Always Completed

*After an amphibious assault, a unit could not be moved. The model rejected the order, indicating the unit was in the middle of an amphibious assault.*

A unit has an attribute that indicates whether the unit is currently in a split. This variable is set to "Yes" throughout the operation. It was not being reset to "No" under all circumstances when the assault was complete. This causes the move order to be rejected.

The logic error was corrected and the attribute is now properly reset to “No”.

### 3.13 JTLS-2016-12679 Change Station Task Completion Task

*When a naval unit completes the task of changing its formation station, it checks to see if its parent formation is waiting for it to arrive to conduct its next task. The model crashed making this check.*

In this specific case, the formation was at a standstill and not doing anything when the user told a formation ship to change station. When the change station was complete, the ship attempted to access the formation’s next task to see if it was waiting for the station to complete. The formation did not have a next task and therefore the model crashed.

The logic was changed to check for this situation.

### 3.14 JTLS-2016-12680 Max Railcar Weight Check Not Fully Implemented

*In the process that finds the best rail network for a rail convoy to use, the logic compares the maximum rail car weight (based on the supplies loaded on the convoy) to the carry capacity of each rail arc in the network. If the rail arc cannot support the rail car weight, the arc is excluded from consideration and a different route is sought. Unfortunately, the calculation of the maximum rail car weight was omitted in the code, resulting in a maximum rail car weight of zero and thereby making all arcs acceptable.*

A new subroutine call was added to calculate the maximum rail car weight, based on the loaded supplies (if any) and the number of cars in the train, before determining feasible rail networks. The subroutine was borrowed from the previous JTLS 4.1 version and brought up-to-date to use the new JTLS-GO 5.0 data constructs.

### 3.15 JTLS-2016-12681 Max Beach Distance Not Used

*Before an amphibious assault or pick-up can occur, the logic makes sure the naval formation is within a reasonable distance of the operation location. The code was incorrectly using the global MAX OFFSET DISTANCE instead of the MAX BEACH DISTANCE. Depending on the specific database, the two distances are not the same.*

The code was corrected to use MAX BEACH DISTANCE when determining if the formation is close enough to perform the amphibious assault/pickup operation.

While correcting this problem, it was discovered that when the formation distance is greater than the MAX BEACH DISTANCE, the distance the formation must move to get within MAX BEACH DISTANCE was computed incorrectly. Instead of subtracting the MAX BEACH DISTANCE from the formation's distance, the MAX BEACH DISTANCE was treated as the remaining distance to move. The code was corrected to compute the difference to ensure the formation eventually arrives at a location that is within the MAX BEACH DISTANCE.

A similar error was discovered for a naval sealift load/offload operation. The code was corrected to subtract the Unit's radius (at the load/offload location) from the formation distance to determine how far the formation needs to move.

### 3.16 JTLS-2016-12682 AAR Reports Directory Requires Apache File

*The script/aar report commands mine data from the AAR database and generate reports in the \$JGAME/<scenario>/webroot/reports directory. As part of this process an index.html file is written that lists the generated reports. Users viewing the Web Login Page will have a link to this directory if the AAR Client is being run. In the absence of an index.html file following this link will return with an access denied message. Only once a report is generated does the user have access to the directory. In the absence of any reports the user should be informed that there are no reports versus being refused access to the directory.*

The CEP start procedure was modified to remove any old reports and generate an index.html file that contains a standard header and a message that there are no generated reports to view. The standard header was also added to the AAR scripts when they generate a report and re-write the index.html file.

### 3.17 JTLS-2016-12683 Obsolete CEP Subroutine

*Convoy attrition inflicted by air strike, artillery strike, HRU ambush, or by ground unit, is assessed when the attack occurs. Loss of convoy assets (trucks, rail cars, or barges and carried supplies) are calculated and applied to the convoy and reported to the periodic statistics immediately. In the previous version of JTLS, the convoy modeling necessitated calculating losses each time the convoy arrived at a destination. With the advent of the new movement task paradigm in JTLS-GO 5.0.0.0, the prior subroutine that determined losses at each destination became unneeded.*

The obsolete subroutine has been removed.

In JTLS versions prior to 5.0.0.0, the routine ADJUST.TRANSPORTATION.ASSETS was called at each convoy stop and when the receiving unit is about to be lifted, magic moved, TPFDD out of the game, and so on. ADJUST.TRANSPORTATION.ASSETS did 3 things: it subtracted the current convoy count from the starting convoy count to get losses, set the starting convoy count to the current convoy count, and updated the periodic loss statistics.

In 5.0.0.0, these functions are done as they occur in ASSESS.SUPPLY.RUN.ADJ.KILLS (ground unit attrition) and DIRECT.DAMAGE.SUPPLY.RUN (air/artillery strike & HRU ambush). There is no need to adjust and report convoy losses at any other time in the model. Furthermore, the starting count is never altered in 5.0.0.0, except when a convoy is split.



### 3.18 JTLS-2016-12684 Amphibious Location Calculation Error

*In an amphibious assault or pickup order, the task location where the formation is to move to execute the operation is specified in the order. In addition, the operation location ashore where each unit is to be assaulted or picked up is specified in the utility list.*

*Once the formation arrives at the specified task location, the model calculates the distance and bearing to the operation location. If the distance exceeds the global Maximum Beach Distance, a new task location is calculated that is within the Maximum Beach Distance. The formation then moves to the new task location and begins the amphibious assault or pickup. Internal testing revealed that the new task location was not calculated correctly.*

In the routine that determines if the formation is close enough (i.e. within the Max Beach Distance) to execute the amphibious operation and if not, calculates the new task location, two subroutine calls were made with incorrect arguments.

The first call calculated the bearing from the operation location to the formation location. The second call calculated the new task location based on the bearing and the distance between the Max Beach Distance location and the formation. The result was a new task location that was not always within the Max Beach Distance.

The problem was corrected by reversing the arguments in the first called routine to calculate the bearing from the formation to the operation location and by changing the argument in the second called routine to calculate the new task location using the bearing from the formation to the operation location and the distance the formation must move to arrive at the Max Beach Distance.

### 3.19 JTLS-2016-12687 Only Permit Owing Side To Query Or Delete DSA

*When creating a new DSA, the OMA verifies that the specified owning Faction is on the side of the submitting WHIP. However, when describing or deleting a DSA there is no verification by the OMA that the DSA is owned by the WHIP side.*

The checking of the DSA ownership is actually handled by the CEP. However, the goal is to catch issues as early in the process as possible so the data file that defines the Manage DSA order was modified to permit only DSAs owned by the WHIP to appear in a Query or Delete order. When implementing it was discovered that the Force Side was not being assigned to the DSA in the JODA. The CEP was modified to correct this oversight.

### 3.20 JTLS-2016-12688 Crash During Movement Network Arc Creation

*The CEP crashed during execution of the order `MANAGE.MOVEMENT.NETWORK` when a network arc was added and a bridge was associated with it.*

The source code accessed a network arc name rather than the target CCF number from a target pointer. This caused a crash due to wrong entity class request for a target pointer. The problem was fixed.

### 3.21 JTLS-2016-12690 Sinking Ship Reporting Sonar Contacts

*A ship was damaged and sinking but was still generating sonar detections. The operator feels that when a ship is sinking that the reporting of detections would be an unlikely situation.*

The code already existed to switch off jammers and jammable sensors when the ship started sinking. However, sonar is generally a non-jammable sensor so it was not being switched off. The code was modified to switch off all jammers, sensors, and air defense with the assumption that all required personnel would be helping with damage control or would be evacuating. It could be argued that some systems would never be switched off, but there is not enough information in the database to distinguish between those requiring personnel and those that would be automatic. A change was also made to prevent the WHIP operator turning the systems back on as long as the ship was sinking. A final change automatically turns on air defense and non-jammable sensors if a Hull hit is repaired and the ship is no longer in danger of sinking.

### 3.22 JTLS-2016-12691 JSYMS Long Name Does Not Save Correctly

*When saving the Organization Type long name in the symbol.scf file, if same short names exist corresponding to the different long name, correct long name does not save in the file.*

Removed the hash map from the code that consists of short-name and long-name because the key that is used by short-name is not unique. Used organization-longname that is set when the user selected it.

### 3.23 JTLS-2016-12693 Add SQL Statement Log and Restructure Codes

*When the JINN uploads to the database, an SQL statement is generated in the code, but there is no log to store SQL statements. It is difficult to trace when an upload from the JINN failed.*

A log file was created to store generated SQL statements. Child classes for Units, HRUs, and Targets were created to process JINN uploads to the database.

### 3.24 JTLS-2016-12694 OVT Allowing Queue Entry Utilities

*The Order Verification Tool (OVT) was not checking whether there were entry attributes in the queue element, which caused an exception in the WHIP when the utility was opened. Additionally, the OVT allowed two data fields (DATA\_V and STATIC\_V) to hold a default value that was neither "NE" nor an integer, causing WHIP exceptions when the utility was opened.*

Checks were added to the OVT code to make sure that the queue element does not contain an "entry" attribute, and to make sure that the default attribute of the DATA\_V and STATIC\_V fields' "class" element is either "NE" or an integer.

### 3.25 JTLS-2016-12695 Estimating Amphibious Completion Time Crash

*The model can predict the completion time for an amphibious operation. These estimates are routinely made when one of the events has completed for the operation or when the player submits the order to request the Amphibious Status for a formation of unit embarked on a formation. When this order was sent, the model immediately crashed.*

Changes were made to ensure that the proper methods were used to compute the completion time for amphibious operations. These changes included modifications which utilized the task structure built into JTLS-GO 5.0.0.0.

### 3.26 JTLS-2016-12696 "BY\_SUPPLY" UOM Field Utilities Not Recalled

*When a utility with "BY\_SUPPLY" uom fields was recalled, an incorrect UOM conversion was done causing the wrong values to appear in the utility panel.*

When recalling a utility, the supply category that controls the "BY\_SUPPLY" fields needed to be set to the correct value so that the UOM conversion of the "BY\_SUPPLY" fields was done correctly.

### 3.27 JTLS-2016-12698 Scenario Name With Underscore Passed

*Testing was being performed with a scenario which included an underscore within its name. The scenario name appears in the header/footer file for the MTF message format, and therefore in the NATO OwnSitrep and NATO EnSitrep messages. When using the Message Delivery Program to forward these messages to the NATO C4I system called Land Command Control Information System (LC2IS) the presence of the underscore was causing a parsing failure.*

Instead of just fixing the issue in the MTF header footer file it was decided that all tokens coming from the model, or translated from model data, should not contain underscores nor hyphens. Two modifier instructions were added to the MTF common.mdf file, which is applied to all MTF Message Definition Files (MDFS), instructing the replacement of hyphens and underscores with blank characters. The same modifiers were applied to the TACCIS language format.

The Message File Parser, which is involved in translating an MDF file to a stylesheet, was not properly implementing the REPLACE function or .REPLACE modifier in all cases. This code issue was also fixed.

### 3.28 JTLS-2016-12699 JINN: Upload Copy Data Failed

*When the JINN received copied and altered data from the JOBE, such as a deep copy of a unit which has more than 2 subordinates, and renamed the copied object, that data would fail to be copied to the database from the JINN. If the altered data was sent to the database before being copied, the data would not be copied because the original object name no longer exists in the database.*

These failures occur because of the order of SQL statements sent to the database. The code was changed to check for objects which were copied and renamed in the pre-upload objects list and updates them last.

### 3.29 JTLS-2016-12700 MFP: Create Message Script Crash

*When the script create\_message runs for the mdf file that uses the REPLACE function, it crashes or throws a Number Argument Exception. The Message File Parser did not process the REPLACE function correctly.*

Code to handle the REPLACE function in the Message File Parser and Message File Format Checker classes was corrected.

### 3.30 JTLS-2016-12710 Magic Moved Ship Inport Status Not Updated

*A ship was magic moved into and out of valid sea port units. The ship inport status was not updated on the JODA or in the CEP.*

Code for the Magic Move order was modified as follows:

- Ship inport magic moved away: status of "inport" changed to "none"
- Ship magic moved and arrives near a candidate port unit: status changes automatically to "inport" only under following conditions:

Ship arrives inside unit radius of a same side designated port unit.

Ship arrives inside unit radius of a same side support unit near water terrain.

- Magic Move message reflects any departure from port, arrival at port, or both as appropriate for a naval ship.

### 3.31 JTLS-2016-12711 Potential Integer Overflow Condition

*An internal variable used for storing the length of a vector could be exceeded through integer overflow. This could happen when two large value unsigned integers are added and stored in this unsigned integer length variable. In this case the result would not represent the true sum and therefore incorrectly hold the length of the vector.*

A checking routine was added in the C code to detect integer overflow and report to the log when this has occurred.

### 3.32 JTLS-2016-12712 WHIP DSA Filter Sub-Panels Made Resizable

*The DSA filter sub-panels were of a fixed size, making it difficult to see all of the DSAs on the top panel when there were a large number.*

DSA sub-panels were modified to be resizable.

### 3.33 JTLS-2016-12713 Replay JXSR Crash On Start With TRIPP

*The Replay JXSR crashed while responding to a request from the TRIPP after the CEP had been started. This happened when the CEP was started following a previous run but the Replay JXSR was not restarted, so the Replay JXSR failed to properly re-load the new list of runs. The CEP writes the runs whenever a checkpoint is taken or a start is accomplished. The JXSR's runs list was cleared but not reloaded before accepting a request from the TRIPP. The lack of runs caused a memory violation and a Replay JXSR crash.*

The library code used by the JXSR, the JODA and the XMS was modified to call a routine to (refresh) load the runs, if not already loaded. This will occur before any access to the active run in the runs list.

### 3.34 JTLS-2016-12715 JOVT Missing Checks

*The JOVT was missing checks for maximum line length and missing "#" in the final order in the file. The JOVT would fail to check orders if there was any characters past the "#".*

Added the maximum line length and missing "#" checks. Added trimming of whitespace from each line before it is processed.

### 3.35 JTLS-2016-12716 JOBE: Inconsistency Of Display

*When a Squadron unit was selected in the Command Hierarchy, the Sitrep window displayed the Fixed Wing Flag value correctly. However, right-clicking the same unit to select "Edit..." from the context-sensitive menu brought up the Edit component that displayed the Fixed Wing Flag as "false" only.*

Previously, aircraft class had never be set and it was always null when the DDS entered edit mode. In the code, this returned a "false" value when the aircraft class was null. The code was changed to set the aircraft class for the object when the DDS entered edit mode, and once the aircraft class was instantiated, the DDS returned a correct Fixed Wing Flag value.

### 3.36 JTLS-2016-12717 Lower Case Characters In Search Fields

*The WHIP and DDS allow pasting lower case characters into search fields. Although they were converted to upper for the search, it was confusing to the users. Additionally, the WHIP would allow typing lower case characters into the Command Hierarchy search field.*

The WHIP and DDS search fields were modified to always convert input to upper case characters, whether they were typed or pasted.

### 3.37 JTLS-2016-12719 Message Delivery Format Changed

*During normal execution, the model generates a very large number of messages. Specifically, the large quantity of Broadcast Messages cause congestion in the Message Browser. Because of this congestion, many critical messages are not seen by the player.*

An effort to reduce the number of Broadcast messages was taken. There was no need for many of the messages to be sent as Broadcast messages. The delivery format for these messages was changed to Directed messages. The Controller's Guide has a list of all generated JTLS messages and summarizes their delivery method.

### 3.38 JTLS-2016-12723 Amphibious Pickup Issues

*An amphibious pick-up order was submitted that requested Vehicles (i.e. small boats/amphib vehicles), Helicopters, and Beach (i.e. LOTS) assets be used in the operation. The LOTS operation proceeded as expected; however small boats and aircraft waves failed to carry any portion of the lifted ground unit. Eventually the pick-up successfully completed using only LOTS.*

The problem was found in the routine that processes the arrival of the aircraft and boat waves at the shore. The logic branched around the check for attrition because the waves were currently not loaded. Therefore, the remaining aircraft and small boat count in each wave was not set. As a result, each wave had a count of zero aircraft or small boats, which meant nothing could be loaded at the shore. The code was changed to always check for attrition, even if the waves are not carrying anything, thereby ensuring the remaining asset count is initialized.

After this fix was implemented, testing revealed that a ground unit that was too far from the pickup point would not accept an order to move closer because it was in a split status (i.e. a child unit had already been created in anticipation of the pickup). To fix this problem, the code that creates the child unit was moved to occur AFTER the unit is confirmed to be close enough to the pickup location.

Further testing revealed that duplicate ground wait tasks were assigned to the formation while waiting for the ground unit to move closer to the pickup location. The second ground wait task was removed from the code.

### 3.39 JTLS-2016-12724 Rail/Road Arc Colors Not Based On Arc Type

*The GIS tool renders rail and road arcs using colors based on the arc type (BERM, DITCH, BRIDGE, TUNNEL). This needs to be changed so that the arc type determines the Stroke used to draw the arc (solid line, dashed line, etc.) This will match the way the WHIP draws these arcs. There are also inconsistencies between the WHIP and DDS.*

Colors for rail and road arcs are read from the \$JGAME/data/map.colors file based on the colors assigned to, respectively, the rail\_network and road\_network key names. The Stroke used for BERM, DITCH, BRIDGE and TUNNEL is obtained from the class com.rolands.commonui.Strokes.

All three now use arc type to determine the line style. The WHIP and DDS highlight the arc if it has an associated bridge or tunnel.

### 3.40 JTLS-2016-12725 Create Naval Minefield Crash

*The controller Create Minefield order for a water minefield would crash the CEP due to a division-by-zero error.*

The division-by-zero error arose when the individual mines were being added to the new naval minefield target. Specifically, when the lane and depth position of the first individual mine was being calculated, the current count of mines had a value of zero. This value was used to determine the area covered by the minefield, which resulted in a division by zero. The problem was fixed by adding new code to handle the special case of the first mine by automatically placing it in a lane.

### 3.41 JTLS-2016-12726 Route Filter Reload Issue

*When filters were loaded, the aggregate entries (e.g., "All", "Carriers") were not being updated. This would give the appearance that the ship type filters were not restored if the tree was not expanded.*

Logic was added to correctly set the "All" checkboxes in the filter panels. The issue with the ship type tree was a race condition. Processing of the change event that sets the aggregate nodes was moved to the event dispatch thread (AWT-Thread).

### 3.42 JTLS-2016-12729 Repair Target Task Never Completed

*Internal testing revealed that the task to Repair a Target never completed. The target was repaired, and returned to 100% capable, but the engineering unit continued to show a Repair Target task as its current task.*

When the model begins a task which will take time to finish, it always schedules an event to complete the task. At this stage, the model was computing a duration for repairing the target based on the current strength of the target and on the total time required to repair targets of the specified target class. An error in the code caused the model to always compute a duration of zero, which prevented the model from scheduling a completion event. As a result, the repair task appeared to exist forever. This error in the computation was corrected and the repair of targets completed at the expected time.

### 3.43 JTLS-2016-12730 Detached Unit Will Not Move

*Player created a new unit using the Detach Specific Combat Systems. After the detachment, the new unit could not perform a ground move because it had no fuel.*

The detach command incorrectly computed the new units wet carry capacity. When the unit tried to move it dumped/distributed all it's GROUND.FUEL and didn't save any to move itself.

The computation of the wet carry capacity was corrected and retested.

#### 3.44 JTLS-2016-12731 CEP Crash Moving Detached Unit by Rail

*The Combat Events Program crashed when the user tried to move a detached unit using rail assets.*

When preparing to move unit by rail the process starts by determining if there are enough rail assets that can carry the unit. In doing so, it tried to access a supply category that the unit was authorized but had none of causing a crash.

The code was correct to account for this odd situation.

#### 3.45 JTLS-2016-12732 Java Exception Checking Single Field Order

*The order verification program threw a Java Exception when checking an order with a single field in a restriction.*

The order verification made the assumption that the fields attribute of a restrict was a comma separated list of 2 fields. A check was added to the program.

#### 3.46 JTLS-2016-12733 Selection Changes When Collapsing Node

*The selection could change when collapsing a node in the ship type filter.*

The code was modified so that if a node is collapsed in the ship type filter tree, the filter tree will ignore the "mouse clicked" event that normally toggles the selection.

#### 3.47 JTLS-2016-12734 Require Command Authority To Change Tasks

*While doing testing it was observed that any player on the owning side may change the tasks of an air mission. Since command authority over the owning squadron is required to launch the air mission it was decided that the same should be true in order to modify the air mission.*

The same issue exists for supply runs, HRUS, and supply runs. The problem was solved by adding a check for command authority over the object's owning unit to the XML order files. This change introduced the concept of a JEDI redirection to the object selection logic within a field. While this sort of redirection is extensively used in the constraint section of orders this was the first use within a field selection section. The OMA and JXSR had no problem interpreting and executing the logic, but the Order Verification Program (OVP) was flagging the new construct as an error. This required a minor change to the OVP to interpret and check the new construct.



### 3.48 JTLS-2016-12735 Mine Exploration Ship Jumped To Equator

*A Sweep Naval Mines order was submitted with the Operation Type: Exploration selected. The naval vessel was already located within the geographic polygon specified in the order to explore. The ship immediately relocated to the 0 lat, 0 lon coordinates (off the west coast of Africa).*

The logic that determines where the ship should move at the beginning of the Exploration task failed to set the next location attributes when the ship was already positioned within the search polygon. As a result, the next latitude and next longitude attributes contained zeroes, which caused the ship to jump to the equator when it executed its first move event. The problem was fixed by adding the missing assignment statements for the next location to the routine.

Subsequent to this test, the ship was ordered to Clear mines. A foreign side intercepted the order and the model attempted to create an intelligence report that contained an XML conversion error. The format string in the routine that generates the intel report had a typographical error which was corrected.

### 3.49 JTLS-2016-12736 JOBE Saved Child 'ALTERED' Objects To Database Log

*When a unit that has child objects changed its name, the JOBE did not save child objects as 'ALTERED' in the JOBE database log. Thus, in the JINN, when a pre-upload database component is open, it did not show all uploaded objects.*

The code was changed so that all child objects were saved in the pre-upload database log after the parent unit's name was changed.

### 3.50 JTLS-2016-12739 SITREP Clear Minefield Estimate

*The Situation Report (SITREP) was missing an estimated End Time for a ship or ground unit conducting a mine clearing task. This information was present in the previous JTLS version SITREP and should be in v5.0.*

A new routine was written to calculate the expected completion time for a ship or land unit currently executing a mine clearing task. The estimated end time was added to the SITREP for the current task.

Other engineering tasks' End Times are displayed on the new Tasking Orders IMT in 5.0.0.0 and do not need to be included in the SITREP message.

Note that land units performing a clearing operation use the actual number of mines present in the minefield target to estimate the end time; whereas naval units use their side's perception of the number of mines in the minefield target to estimate the end time. Because ships continue to detect additional mines while clearing, the estimated end time in the SITREP will tend to be significantly earlier than the actual end time.

Also, unused/obsolete sub-messages were removed from the SITREP message template.

### 3.51 JTLS-2016-12740 Direct Support Order Crash

*A Direct Support order was submitted for an artillery unit that was not in a Tactical Ground Formation. The CEP immediately crashed.*

When a Direct Support order is received, the model checks various criteria before allowing the task to execute. One of the criteria involves handling a unit that is part of a TGF. The logic incorrectly determined the unit was in a TGF when it clearly was not. The logic then attempted to access the non-existent TGF and crashed. In this case, the logic should have bypassed the TGF processing logic since it was unnecessary. The problem was fixed by changing the code to bypass the TGF logic when the unit is not in a TGF.

To improve efficiency, all relevant player orders were changed so that the check for TGF membership occurs at the beginning of the TGF routine, instead of before the calling statement in every player order routine.

### 3.52 JTLS-2016-12741 Network Height Data Passed From WHIP As KM

*A number of orders and utilities exist within JTLS 5.0 to adjust the characteristics of movement networks including arc and node heights. Traditionally the values for heights are passed to the model from the WHIP in feet. However, a number of instances were found with the values being passed in Kilometers even though the CEP was expecting them in feet. This resulted in the wrong value being assigned when nodes or arcs were created or modified.*

The actual problem existed within the order XML files which specified a UOM category for the values to be passed and a UOM to be displayed. The UOM to be displayed on the WHIP was properly set to feet, but the UOM category was the one for kilometers and not feet, resulting in the passed value being converted to Km when the CEP was expecting feet. The only solution required was to change the UOM category within the order XML fields.

### 3.53 JTLS-2016-12742 Minefield Active/Display On Map Not Passed

*The routine that updated the minefield count to the JODA had code to inform the JODA that the minefield was inactive and should not be displayed on the map if the mine count dropped to zero. However, the actual information was never being passed to the JODA due an improper argument in the calls.*

The routine was slightly modified to start a JODA update, collect all the changes, and then send all the updates. Previously some of the updates could be collected but never sent. In addition a change was made so that if the owning side was being informed of the change the information was also made available to the Controller.

### 3.54 JTLS-2016-12743 Emplace Bridge/Move Across New River Crash

*The Controller created a river network with a series of arcs. An engineering unit was then instructed to emplace a bridge across the arc. Once emplaced, the engineering unit was*

*instructed to move across the bridge, and thus the river. This resulted in a crash because when the river was created it had not been assigned a proper barrier type to the arc. The model attempted to access this barrier type and crashed.*

When the river arcs are created the code now calls a routine that checks all possible river barrier types and assigns the river barrier type that most closely matches the characteristics assigned when the Controller created the river.

### 3.55 JTLS-2016-12744 Crash When HRU Stops Coalition Support

*An HRU was given an immediate Move order while it was providing Coalition Support to another Unit. The model crashed as a result of this "Now" order.*

When the HRU was given the immediate Move order, the model took a number of steps to postpone the current task of Coalition Support and proceed with the move. The HRU must be unlinked from the unit it was supporting, and it must stop what it was doing and take on a new mission and posture. The code to unlink the HRU from the Unit was flawed such that a single routine was called twice within the same process. This confusion in the calling sequence caused the model to crash. Changes were made to the routines which perform this processing and the crash was resolved.

### 3.56 JTLS-2016-12745 SIP Crash When Default UOM Not In Database

*If one of the default UOMs was not in the database, the SIP crashed while creating the error report.*

The SIP already contains Error 134 to check for a missing default UOM. However if a missing UOM correctly triggered the error code, the SIP crashed during creation of the error. The SIP required an attribute of the UOM that did not exist.

The STR description in the VDD should include the following:

Every default UOM below must be included in the database:

- AIRDISTANCE FT
- DISTANCE FT
- DISTANCE KM
- DISTANCE M
- SPEED KM\_DY
- SPEED KM\_HR

- NAVAL\_SPEED KM\_DY
- NAVAL\_SPEED KNTS
- AIR\_SPEED KM\_DY
- AIR\_SPEED KM\_HR
- AIR\_SPEED KNTS
- WET\_WEIGHT GAL
- DRY\_WEIGHT TON
- AREA SQ\_KM
- AREA SQ\_M
- NAVAL\_SPEED KM\_HR

### 3.57 JTLS-2016-12746 SIP crash when reading specific POT targets

*If the database contains a POT SAM/AAA, SENSOR.SITE, COMM.SITE, JAMMER, or SSM target, the SIP Verification crashed.*

The SIP code incorrectly checked whether a target belonged to a SUP or TUP. This was corrected.

### 3.58 JTLS-2016-12747 SIP Crash When Aircraft Load Has No pK

*If the Load Assignment Array contains an aircraft load for a type of aircraft that is used in the game and for a Target Category Group that is used in the game and the load has a zero probability of kill, the SIP crashed.*

The SIP code attempted to collect missing data while processing Error 308 for zero probability of kill assigned to an aircraft load.

### 3.59 JTLS-2016-12748 OVP: Validation Using JDSP Enumeration

*Order Validation Program used to use constant lists which hold vocabularies. However, when JDSP added new vocabulary, the OVP program did not update the vocabulary list automatically.*

Modified code to use JDSP Enumeration to validate COMMAND\_AUTHORITY\_TYPE, MISSION\_POSTURE, MISSION\_TYPE and TARGET\_CATEGORY. Also changed fill/with/not-equals/@a value to cmd\_parent\_id.command\_authority and prototype\_id.caliber to validate @b.

### 3.60 JTLS-2016-12749 Unit Does Not Enter DEFEND Following ATTACK

*Once an ATTACK has completed, a unit should go into DEFEND while awaiting further orders. This was not happening.*

CEP code base was updated to consider going into DEFEND, if no other tasks are pending, following an ATTACK completion by a unit.

### 3.61 JTLS-2016-12750 Patrolling Stops When Barrier/NB Encountered

*Patrolling objects randomly move within the bounds of a user specified patrol region. The patrol region may include a barrier or national boundary that should not be crossed. The object stops and waits when this problem is encountered.*

When patrolling objects encounter a barrier or boundary, they will choose a new point to move to in the patrol area. This allows the objects to continue the patrol and avoid the barrier/boundary problem in the patrol area.

### 3.62 JTLS-2016-12751 DDS Bad Initial Support Unit Column Heading

*DDS Column Heading for Initial Support Unit displays "INT SUP Unit". This is confusing and uses nonstandard acronyms.*

DDS Column Heading for Initial Support Unit now displays "Initial Support Unit".

### 3.63 JTLS-2016-12752 Airlift Unit/Amphib Ops Checkpoint Crash

*A CEP crash occurs upon game restart when a checkpoint is taken in the midst of Airlift Unit and Amphibious Operations.*

The Pending Execution Task ASCII checkpoint file now saves the PET's Equipment Owner. This will fix the crashes in Airlift Unit and Amphibious Operations if a stop checkpoint is taken in the middle of these operations.

### 3.64 JTLS-2016-12753 Emplacing Bridge Does Not Create Road Arc

*Using a Controller WHIP to place a bridge did not logically create a road arc over the nearest river.*

The source code logic was improved to properly determine the best place to put the road arc.

### 3.65 JTLS-2016-12754 New River Arcs Not Assigned Barrier

*If the Controller creates a new river arc during the game, the code does not assign the River a barrier type. This caused a crash when an object attempted to determine whether it could cross the river.*

New river arcs created during a game are automatically assigned a river barrier type.

### 3.66 JTLS-2016-12755 Valid Air Mobility Order Rejected

*A valid air mobility order with three supply pickup points and no dropoff points was rejected. This is perfectly legal.*

The code was updated to allow an air mobility order with three supply pickup points and no dropoff points.

### 3.67 JTLS-2016-12756 Postponing HRU Coalition Support Task Crash

*The model did not properly realize that a postponement was desired and attempted to not only postpone the task but also cancel the task.*

The error in the logic of the stated problem was corrected.

### 3.68 JTLS-2016-12757 Problem With Scenario Verification Autocorrect

*When used as a component of the Database Development System (DDS), the Scenario Verification Program (SVP) has a capability to automatically correct errors in the data. Each error and warning may have one or more possible auto-corrections which can be applied to the data. In the case of Error 425, four auto-corrections were provided to the user, but none were appropriate for this error.*

Error 425 is generated when a unit prototype (SUP or TUP) has no fuel to support its combat systems. The SVP was modified to provide just two possible corrections. One correction brings up the Prototype Supply data table to allow the database builder to add a supply entry for the required fuel. A second correction allows the user to change the combat system (CSP-CS) No Fuel Efficiency to be precisely one. When this value is one, then the CSP-CS is always efficient, even when its unit is out of fuel. As a result, Error 425 is never generated for a CSP-CS when the No Fuel Efficiency attribute is equal to one.

### 3.69 JTLS-2016-12758 Layer Grid Parameters Cannot Be Calculated

*When the user selects Calculate Grid Parameters in the GIS Tool, the grid parameters are calculated for every terrain layer. This means that if the user simply adds a new layer and then selects Calculate Grid Parameters, the grid parameters are not only calculated for the new layer, but they are calculated again for the previously existing layers. These calculations are time consuming, therefore it would be economical time-wise for the grid parameters to be calculated only for the new layers. Also, in case a road network is updated, the grid parameters should be re-calculated only for the affected layers.*

A dialog (SelectLodDialog) appears that lists the existing terrain layers. The user selects one or more layers from this list and clicks the Start button. The grid parameters are only calculated for the selected the layers.

### 3.70 JTLS-2016-12759 Default File Permission Changes

*The default file permissions set by the umask command in the .cshrc allowed all users to read JTLS configuration files in violation of the application STIG.*

Changed the umask to 007, which gives no permissions to users outside the jtls group.

### 3.71 JTLS-2016-12761 Large Road Network Checkpoint Restart Crash

*The CEP crashed at checkpoint restart during testing of an proposed wide scale road network database. The proposed road network contains over 200K nodes and arcs. A set of network objects only allowed a count of 64K items.*

The network arc and network node set sizes normally default to a short integer value. These values were explicitly declared instead as full integers to allow larger capacity.

### 3.72 JTLS-2016-12762 Gray Out Disabled Command Tree Menu Item

*GRAM 16 reported that Command Hierarchy copy option does not show if there is no one under the unit. He requested that if the option showed but was grayed out instead of not showing.*

The code modified to display all options and the Copy hierarchy option can be grayed out when the selected unit did not have any subordinate children objects under it.

### 3.73 JTLS-2016-12767 Air Mission Package Cancellation

*During testing of messages for packages, all the packages kept returning with no other reason except 'mission canceled'.*

The mission were canceling because there were not enough support missions available as required in the initial package creation. The user will now receive a message warning them of this situation when the missions arrive on station and the Mission completion report has been modified to include the reason for cancellation.

### 3.74 JTLS-2016-12768 Package Modification Reporting

*The user has requested more information be reported in the message browser when changes are made to mission packages.*

New messages have been added to all the mission package changes as requested by the user. Significant time was spent testing the changes. Due to the large number of possible changes, all users should keep their eyes open for any erroneous or incorrect message data.

### 3.75 JTLS-2016-12771 IMT Unit Name Java Exception

*If the user clicked on a String field in the IMT that was not the unit short name, a Java NullPointerException would occur. An attempt was made to find the map object corresponding to the String. When it was not the unit short name, no map object was found, causing a null to be inserted into a list that would lead to the exception when the list was processed.*

A check was added to avoid inserting the null in the list.

### 3.76 JTLS-2016-12772 Incorrect Number Of Squadrons At Airbase

*The Airbase and Naval Unit tables were reporting the number of subordinate Squadrons instead of Squadrons homebased at the Airbase.*

FARP, Airbase, and Naval Unit objects were modified to explicitly track the number of assigned Squadrons.

### 3.77 JTLS-2016-12773 Mismatch Between Scenario Name/Server

*The DDS could be started with a mismatch between the scenario based on the server and port specified and the scenario specified.*

A check was added to the DDS code to make sure they match.

### 3.78 JTLS-2017-12774 Missing Intel Messages for Managing Air Tasks

*The user is not receiving unsolicited Intelligence reports for many of the Manage Air Mission Tasks.*

There is always a possibility that another side could received unsolicited intelligence reports, informing them about the orders being circulated on another side. There was an error in the code that only orders given directly to ARU and HRUs were processed. While fixing this problem other several other problems in the messages themselves were uncovered and corrected.

### 3.79 JTLS-2017-12775 Airlift Unit Estimate Missing

*The overall duration estimate for an airlift unit operation was not available in JTLS-GO 5.0.0.0. This report was present in the previous JTLS version and should be in 5.0.1.0.*

A new Airlift Estimation order panel was created and added to the Mobility and Air Reports sub-menus under the Air orders menu. The order accepts:

- Name of the Unit to Lift
- Pickup Location (optional)



- Destination Location
- Offload Option (Land or Airdrop)
- Squadron List (w/number of aircraft participating from each)

A new underlying routine was written to calculate the estimated total duration for each participating squadron. The new logic estimates the flight times, load times, and unload times for each squadron, including any round trips necessary to complete the lift operation. The results are written in a player message which shows the total participation time for each squadron, with the maximum duration being the overall duration estimate for the entire operation.

### 3.80 JTLS-2017-12776 Airlift Unit Pickup And Destination Too Close

*A airlift unit task with nearly identical pickup and destination locations was requested in a Mobility Mission order. By design, the model did not add the task to the mission because the specified locations made the mission nonsensical. Again, by design, the mission was canceled before creation because the primary task could not be assigned to the mission. However, the model did not inform the player why the airlift task couldn't be assigned to the mission.*

The subroutine that determines whether the pickup and destination are too close, before adding the airlift load & unload tasks to the mission, was modified to generate a message to the player. Note that this situation could arise in two situations: from a Mobility Mission order (for a new mission) or a Manage Air Mission Tasks order (for an existing mission). Consequently, the fix required two messages: one for the Mobility order (the mission is canceled), and one for the Manage Air Mission Tasks order (the existing mission is not canceled, but the tasks are not added).

### 3.81 JTLS-2017-12777 Missing Mobility Intel Messages

*The model was not producing any unsolicited intelligence messages for Mobility orders.*

The mobility air orders were one of the last mission types to be completed. The task to code the missing messages was set aside pending finalization of those orders. Messages have now been created and tested for each of the Mobility mission subtypes.

### 3.82 JTLS-2017-12778 Mission Will Not Pick Up HRU

*Missions are not picking up assigned HRUs, even when the HRU is within the radius of the airbase the mission has landed at. The mission waits the maximum time allowed and then heads home without the HRU.*

The HRU and Mission were close enough for the HRU to be picked up. The mission landed and scheduled the execution of the code to actually pick up the HRU. Inside the actual pickup code, a error was found that did not use the same computations in determining if the HRU was close

enough to load. The code was updated with the correct formula for determining if the HRU was close enough and tested.

### 3.83 JTLS-2017-12780 Cache Supplies Crashes

*Two crashes were encountered related to the Cache Supplies order:*

*A Cache Supplies order was submitted with only Casualties (i.e. WIA) specified to fill the cache. The model properly rejected the order, but crashed attempting to write a message to the player.*

*A second Cache Supplies order was submitted with various supply categories that successfully created a new cache supply target. However, the model immediately crashed after doing so.*

The support unit that was ordered to create the cache was not specified before the logic attempted to write the player message. A code sequence error caused the pointer to be "null". To fix the error, the statement that assigns the pointer was moved before the message logic.

Follow-up testing revealed that an attempt to offload supplies at a cache location was canceled because the model incorrectly determined that a receiving unit was not present. The model also generated a message to the player indicating the receiving unit named NONE was no longer at the perceived location. The logic was corrected to properly determine if the donating unit is close enough to the cache location when a receiving unit is not involved.

The second crash occurred because the Offload Supplies task attribute that holds the supply list (as specified in the Cache Supplies order) was not set to NONE when the attribute pointer was destroyed, after the cache supply target was created. The pointer contained garbage as a result and could not be referenced during the final clean-up logic which attempts to destroy the task attribute again, thereby causing the model to crash. To correct the problem, the missing statement was added to set the supply list pointer to NONE.

### 3.84 JTLS-2017-12781 Submarine Did Not Surface During Replenish

*A Replenish Unit order was submitted to a ship to resupply a submarine. The specified supplies were successfully transferred to the submarine. However, the submarine remained submerged while the supplies were being transferred from the ship.*

The model was missing a subroutine call that automatically forces a submarine to the surface during a replenish operation. To fix the problem, the missing subroutine call was added. This same subroutine was already used for implicit resupply operations and required some adaptations for use in replenishment operations as well. Also, if the replenish order specified a submarine to provide the supplies, new code was added to force that submarine to the surface as well. Note that during an implicit resupply, the submarine did rise to the surface and submerge afterwards as expected.

At the same time, various corrections were made to prevent the submarine from submerging during a replenish operation and to force the submarine to submerge when the replenish was completed.

A new player message was added to inform the player when none of the requested supplies to transfer are available. A second new player message was added to inform the player when a ground unit attempts to create a cache holding only casualties which is not permitted.

While testing, an automatic supply requisition from a naval vessel was rejected by the vessel's designated support unit. The vessel was beyond the implicit resupply distance from the support unit. A message was generated to inform the player that no feasible transportation mode existed to assemble a supply run. However, the message displayed the supply run type as a blank. Because the convoy had no feasible modes, it did not have an assigned type (e.g. rail, barge, or truck). The message was corrected to omit the supply run type.

While testing, a low battery message event was scheduled for a nuclear powered submarine. This message did not apply and the code was corrected to not generate the message for nuclear powered submarines.

### 3.85 JTLS-2017-12782 Supply Requisition Not Added To Receiver

*The On-Hand amount of a supply category was reduced (by Controller order) below the Reorder Level for a unit. After the next Adjust Supplies time, the Due In amount remained zero. The amount required to bring the category back up to the Stockage Objective was never received by the unit.*

The Adjust Supplies event automatically generated and sent the requisition to the support unit as expected. However, the list of supplies needed contained zeros. Therefore, nothing was added to the receiving unit after delivery. (In this case, the unit was within the implicit convoy distance, but the same would be true for an explicit convoy.)

The problem was in the routine that filled the supplies needed list before sending the automatic requisition. The required amount was correctly calculated, but the wrong variable was added to the supplies needed list. The code was corrected to add the required amount to the supplies needed list.

While testing this fix, the Due In column showed double the required amount to be delivered when the implicit convoy was dispatched. The Due In amount was incremented in two places: in the routine that sends the requisition from the unit and in the routine that dispatches the implicit convoy. The redundancy was corrected by removing the addition from the routine that dispatches the implicit convoy.

### 3.86 JTLS-2017-12783 Message Definition Replace Modifier

*Users were unable to use the Message Definition File (MDF) .REPLACE modifier to replace a hyphen with a blank character. The .REPLACE modifier is an MDF instruction to replace a string within all tokens with another string. It was separately noted that the documentation for the MDF specifies the ability to use number streams within messages. This allows sequential numbers to be assigned within the body of a message. When attempting to use this capability, the MDP crashes.*

Further examination of the .REPLACE modifier showed that any time either of the strings was composed of only whitespace, the stylesheet parsers would condense them to empty strings. This was happening in both the libxslt parser used by the MDP and the Xalan parser used by the WHIP's Message Browser. The stylesheet generation script was modified to place these strings within a specific text tag which preserved their original format.

The code for defining and accessing the number stream capability was cleaned up and a number of issues were identified. Besides the crash and the failure to define a default stream the stylesheet to get a number did not provide default arguments. All these issues were resolved for both the MDP and the WHIP.

### 3.87 JTLS-2017-12784 Assign Pipeline Unit Crash

*A Manage Pipeline Support order was submitted to assign a unit to start operating a pipeline. The model crashed immediately.*

The routine that processes the order incorrectly assumed that every node in the pipeline had an associated target (a pumping station or a supply storage tank). When the logic tried to reference a target at a node that wasn't present, the model crashed. The code error was fixed by checking for existence of the target before assigning the pipeline operator as the target's associated unit.

Also, the logic was modified so that pumping station's associated unit, force side, and faction are changed when a new unit is assigned to operate the pipeline. The Supply storage target's associated unit, side, and faction are not changed when the operating unit changes.

In the Controller Create Supply Storage order the following changes were made:

- A constraint was added to require an effective time of ASAP when a node is specified to avoid potential issues with future target creations and checkpoints. In addition, the OVT library was modified to accept the term ASAP in the constraint field.
- A constraint was added to require a node entry when a pipeline is specified.
- The Location of the target was made mandatory. The underlying subroutine was modified to ensure the specified location is within the supply storage target's radius. If not, the logic selects a random location within the target radius.

- If a supply list was not specified in the order, the default database initial supply level for the target subcategory is used to fill the target's supply inventory.

When a source node for an existing pipeline is changed to a different node and the pipeline is currently being operated, new code was added to stop the pipeline operation and restart the operation at the new source node, thereby causing the operating unit to move near the new source node.

When a pipeline node is moved using the controller Manage Pipeline Network order, the logic rejected the order if the location was a water terrain grid. Placement of a pipeline node in ocean terrain should be allowed. The restriction was removed from the underlying routine. Also, the logic that set the node and target attributes in certain situations was missing. The missing code was added.

When a pumping station or supply storage is added to a pipeline node, the logic that set the node and target attributes in certain situations was incomplete. This remaining code was added to finish out the process.

Other places in the code were cleaned-up related to ensuring the existence of the target's inventory pointer and supplies.

### 3.88 JTLS-2017-12785 WHIP: Share Menu Item Not Shown

*The Map Window Manage menu has "Location", "Filters", and "Views" menu options, which allow multiple selections. Though "Delete" and "Share" in the right-click menu are allowed, "Share" menu item had not shown in the popup menu.*

The "Share" menu option now appears in the popup menu, if multiple lists are selected.

### 3.89 JTLS-2017-12786 Situation Report With No Current Task

*The new Situation Report message includes a section for the current task the unit or HRU is executing. When there was no task this was a zero, which did not have a translation into task name within the vocabulary file. For the WHIP Message Browser this resulted in a blank entry, but for the MDP it caused an error to be generated.*

*In addition, if an HRU was entered, instead of a unit, there was no current task output. This resulted in the arguments aligning incorrectly and for the number of aircraft, which defaults to "N/A" for HRUs, to appear as the current task and an empty string appeared in the number of aircraft column.*

The first problem was solved by adding a NONE vocabulary entry to the list of Pending Execution Tasks. Now, when the task number is 0 the MDP and WHIP Message Browser properly translate it into the text NONE and display it in the report. The second issue was solved by adding the HRU's current task to the output of the message.

### 3.90 JTLS-2017-12787 Magic Move Cancels Adjust Supply Event

*A unit was magic moved. As a result, its next Adjust Supply event was canceled. From that point onward, no new Adjust Supply event was scheduled. Consequently, no supplies consumed below the re-order level were requisitioned.*

When a unit is magic moved, some of its scheduled events and/or tasks are automatically canceled. The next scheduled Adjust Supply event should not be canceled, as this prevents the unit from ever generating a supply requisition or scheduling the next Adjust Supply event.

The problem was in the calling statement to the routine that cancels the future events/tasks. The wrong argument was passed to indicate a magic move had occurred and thereby prevent the Adjust Supply event from being canceled. The argument was corrected from .YES to .ID.MAGIC.MOVE.

A review of other routines found the same problem for a formation magic move and squadrons assigned to a ship being magic moved. Both were corrected.

### 3.91 JTLS-2017-12788 Combat Arms Type Radius Incorrect In OPM

*The Combat Arms Type (CAT) target radius is printed with a value of 1000x larger than the correct database entry.*

A scaling factor was removed from the code that generates the CAT Radius for the OPM.

### 3.92 JTLS-2017-12789 UT Basic Type Not Validated

*During code review, it was discovered that the UT BASIC TYPE used for C4I systems was not validated when changed in the order SET.UNIT.PARAMETERS. An Aircraft Carrier could be described as a submarine in the UT BASIC TYPE, for example. The UT BASIC TYPE is only used for naval units.*

The UT BASIC TYPE was checked to ensure that only appropriate values would be allowed:

- Carrier - carrier
- Submarine - subsurface
- Any other surface ship - any other surface ship

### 3.93 JTLS-2017-12790 ACP WC TAKEOFF CAPABLE Column Heading

*The column heading for ACP WC TAKEOFF CAPABLE did not clearly state that the purpose of selecting the flag was to confirm or deny takeoff capability for a given ACP and WC. This label should conform with similar language in the SIP/CEP and WHIP Order Panels.*

The column heading in DDS ACP WC table was changed to "ACP WC Takeoff Capable". No database change was required. The help field for this DDS column was also changed.

### 3.94 JTLS-2017-12791 Invalid Aircraft Numbers

*The squadron IMT was incorrectly showing aircraft as flying when they are in pre-launch status.*

Aircraft in pre-launch should be reported in the reserved column. The responsible routine was corrected and tested.

### 3.95 JTLS-2017-12792 Duplicate Ingress Route

*The ingress route for an air mission was being flown twice.*

The report of the ingress route being flown twice was confirmed both visually on the WHIP and on the mission reports. A review of the code for ingress and egress routes identified several inconsistencies including duplicate code for the ingress route. The sections of the code for these route were standardized among all programs used by the MANAGE.ATTACK.PACKAGE ORDER. Changes were also made to the help text for the order to provide the user with better guidance for using the ingress and egress options

### 3.96 JTLS-2017-12793 Naval Formation Will Not Patrol

*A naval formation was ordered to patrol a polygon. The formation moved to the polygon, and then to a location within it. The formation then stopped.*

Once the patrolling formation reached the first location inside the polygon, it did not compute a new location to move to and the formation patrol task was deleted. The CEP code that allowed a formation to continue patrolling was modified.

### 3.97 JTLS-2017-12794 Controller Move Target Crash

*A new pumping station target was created and then a Controller Move Target order was submitted to place the target near a pipeline node. The model crashed.*

The problem was the logic assumed that the new pumping station had an owning or associated unit. The pumping station had neither because it had not yet been associated with a pipeline node. When the logic tried to send a player message about the completed move, it crashed attempting to access the non-existent unit. The code was changed to use the global CURRENT.ORDER's interface program to determine which player should receive the message.

### JTLS-2017-12795 DDS: Add "arc type" To Rail And Road On Edit Panel

*The context-sensitive menu options "Edit Railroad Arc" and "Edit Road Segment" data panels do not have a Type field.*

A "Type" field was added to the Road Segment Data editor panel and an "Arc Type" field was added to the Railroad Arc Data editor panels.

### 3.98 JTLS-2017-12797 Unneeded Logic Error For ELS Messages

*The CEP generated a logic error when the model attempted to send an informational message to the ELS. This logic error was only generated when the ELS was not running and thus not able to receive messages.*

This logic error was not needed because the model already handled the situation properly. In such cases, the model simply exited from the routine which generated the messages for the ELS. This was the correct way to proceed, the logic error produced extra output files but had no added benefit during execution.

### 3.99 JTLS-2017-12799 5.0.0.0 Documentation Updated

*JTLS 5.0.0.0 documentation needed to be updated to reflect changes in system function and requirements.*

The JTLS 5.0.0.0 documentation suite was updated to reflect changes and code corrections.

### 3.100 JTLS-2017-12800 Errors Associated With Weather Fronts

*Three prominent errors were found in how the model processed weather fronts: the JODA reported errors when updates were received, weather fronts from the scenario database were improperly initialized in the game, and when weather fronts were removed from the game at the end of their specified duration, then all of the associated memory was not fully cleared.*

The three errors were unrelated, except for the fact that they pertained to weather fronts.

There was a coding error such that updates were not always sent for the correct weather front object. If there was more than one weather front, then each one uses a unique integer for identification and updating. The code error meant that the unique integer was not always correct.

There was also a coding error in how the weather fronts were initialized at the beginning of the game. The weather fronts which were created during run-time were fine, but the ones in the scenario database were not created in the JDS.

Weather fronts are meant to be removed from the game when their duration has elapsed. The weather fronts were properly removed, but some associated objects were not being deleted. These extra objects were internally used by the model to process the movement of the weather fronts, and some of these internal objects were left behind. Changes to the code were made to properly remove these object data.



### 3.101 JTLS-2017-12801 Deleted HRU Causes JXSR Crash

*The JXSR crashed while attempting to access the attributes of a deleted task. The task was assigned to an HRU that had been deleted prior to the task being deleted.*

In this unique situation, both the HRU and the associated task may be deleted by the CEP. However, the order in which they are deleted should follow from the owned object to the owner, as in convoys that have tasks. This was not the case for HRUs.

The routines used by the CEP to delete HRUs was modified to follow the proper order of deletion.

### 3.102 JTLS-2017-12802 Override Button Unusable In JSAT

*The graphical interface for the JTLS Satellite Service (JSAT) used checksum values to determine if the satellite orbital properties (TLE data) were valid. If these orbital data were not valid, the user could still proceed by opting to override these checks. This is accomplished by clicking the "Checksum Override" button on the graphical interface (GUI).*

*Such overrides can not be selected when the orbital data are all good. In this case, some of the orbital data were bad, but the GUI did not permit the override button to be selected.*

The JSAT GUI used internal arrays to flag whether or not the checksums on the orbital data were good or bad. The override button was not functioning properly because this array of flags was not being reset properly. When the GUI was started, the flags were properly initialized, but if the user changed to a different set of orbital data, then the flags were not being reset.

New code was added to properly initialize the checksum verification flags each time a new set of TLE data were accessed. This reset code has eliminated the issues associated with using the override button.

### 3.103 JTLS-2017-12803 Incorrect Table Update In DDS

*If multiple database updates occurred nearly simultaneously, in some cases a DDS table displayed the results after the first update instead of the last.*

The table query servlet was modified to process only the last update if multiple updates occurred in the same refresh period.

### 3.104 JTLS-2017-12804 Ships In BE Port Not Detected

*Naval vessels are able to enter a "port status" in proximity to an eligible port unit. If the port unit happens to be a Basic Encyclopedia (BE) object that belongs to a BE Facility (BEF), other nearby objects that are considered related in some way to the BE object are subject to detection. Naval vessels who are in port were not considered related to the port unit, although they should be. Those vessels should be subject to detection by assets tasked to gather information in a Directed Search Area (DSA) covering the BEF.*

A new subroutine was created to make naval vessels in port subject to detection as part of the logic that processes objects related to a BE object. If the naval vessel happens to be in a closed shelter of some type, the vessel is immune from detection. This subroutine applies specifically when air missions or overhead assets are tasked to examine a BEF DSA.

Note that any naval vessels in the area of the port are already subject to detection under other circumstances. This change enables docked ships, if detected, to be included in the IIR with other related objects, because they are now considered related to the BE port unit.

### 3.105 JTLS-2017-12805 Pickup Supplies While Airborne

*The Mission Instructions for transporting supplies using the Mobility order allows the user to schedule supply pickup while the mission is airborne.*

A transport mission should not be able to pick up supplies while it is airborne. There was a mistake in the constraint applied to the mission instructions that caused this. The order was updated with the proper code and also improved to make it easier to read.

### 3.106 JTLS-2017-12806 BE Facility Player Manual Data

*BE Facility data is shown in the Online Player Manual for sides other than the Force Side that created the facility data. The objects that are part of a BE Facility do not have links to the object data.*

Only the owning side and Controller should be able to see BE Facility data. Also, a BE Facility may have one or more objects associated with it. The detail page for the BE Facility should list all of the objects and the Object Name should have a hyperlink to the detail data for the object, whether it be a unit or a target. Both of these items have been corrected to work properly.

### 3.107 JTLS-2017-12807 Cancel Air Mission Crash

*An active (flying) air mission was canceled by Player order with ATO\_PROBLEMS selected as the reason. The model immediately crashed.*

The crash occurred when the model attempted to remove the active mission from the game without first removing all arrays and sets related to the mission. In fact, active missions that are canceled should not be removed from the game, so that they may return home. The removal logic was intended only for missions that had not yet started that were canceled for ATO\_PROBLEMS. The problem was fixed by moving the removal code so that the removal logic would not execute if the mission has already launched.

### 3.108 JTLS-2017-12808 Memory Leaks Cleanup

*Several places in the CEP did not properly reclaim memory that was no longer used by the model. Usually, an entity was destroyed without first eliminating data arrays related to the entity.*

The CEP code were searched for instances where memory leaks were occurring and corrected.

### 3.109 JTLS-2017-12809 Apache Allowed Obsolete Protocol

*The Apache configuration allowed the use of Transport Layer Security (TLS) 1.1 protocol, which is now obsolete.*

The Apache configuration was modified to only allow TLS 1.2.

### 3.110 JTLS-2017-12810 GIS Tool Scrollbar Missing

*The Calculate Grid Parameters dialog provides a list of terrain layers. If there are more layers than can fit on the visible portion of the list, a vertical scrollbar should appear to allow the user to see all of the layers; however, the scrollbar does not appear under these circumstances.*

The original code to set up and display the scrollbar was not working. It has been fixed.

### 3.111 JTLS-2017-12811 Order Panel Help Field Errors

*Several WHIP order panels had confusing or grammatically incorrect help fields.*

The confusing or incorrect help fields were corrected.

## 4.0 REMAINING ERRORS

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

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

### 4.1 DDSC - TMU Line Mode Changes Multiple Grids

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

### 4.2 DDSC - Multiple Types In DDS History Table

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

### 4.3 WHIP - Pipeline Not Shown On IMT

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

### 4.4 DDSC/WHIP/JOBE - CADRG Map Zoom

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

### 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.



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



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ICPLgin	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
TADIL	Tactical Digital Interface Link
TCP/IP	Transmission Control Protocol/Internet Protocol
TEL	Transporter Erector Launcher
TG	Target entity attribute prefix
TGS	Terrain Generation Service (formerly TPS:Terrain Preparation System)
TGT	Target
TMU	Terrain Modification Utility
TOE	Table of Organization and Equipment
TOT	Time Over Target
TOW	Tube-launched Optically-tracked Wire-guided missile
TPFDD	Time-Phased Force Deployment Data
TTG	Target Type Group
TTL	Target Types List
TUP	Tactical Unit Prototype
TW	Targetable Weapon
UBL	Unit Basic Load
UIM/X	GUI builder tool
UNIX	POSIX-compliant operating system
UNK	Unknown
UOM	Unit Of Measure

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

## APPENDIX B. Version 5.0.1.0 STANDARD DATABASE CHANGES

### B.1 Tactical Unit Prototypes (TUPs)

The following Tactical Unit Prototypes were added to the database:

- SOF.BN\_KP

The following Tactical Unit Prototypes were removed from the database:

- FROG5.SSM.BN\_KP
- FROG5.SSMBTY\_KP
- FROG5.SSMBNHQ\_KP

### B.2 Ground Units

The following Ground Units were added to the database:

- 1SPF.BN\_KP
- 2SPF.BN\_KP

### B.3 High Resolution Units (HRUs)

The following High Resolution Units were added to the database:

- 1SPF.TM1
- 1SPF.TM2
- 1SPF.TM3
- 2SPF.TM4
- 2SPF.TM5
- 2SPF.TM6

### B.4 Ship Unit Prototypes (SUPs)

The following Ship Unit Prototypes were added to the database:

- ORION\_SE
- SPIGGEN\_SE

- BELOS.ASR\_SE
- DSRV\_SE
- ASD2810.TUG\_SE
- ASD3010.TUG\_SE
- ODEN\_SE
- URHO\_SE
- ALE\_SE
- BALTICA\_SE
- TYPE.A17\_SE
- STYRSO\_SE
- CHEON.W.BONG\_KR
- LEGEND\_US
- LSF-II\_KR
- MK.IV.LCU\_IN
- NAMPO.MM\_KR
- SOYANG\_KR
- TONGYEONG\_KR
- TSAPLYA\_KR
- VISAKHAPATNA\_IN

B.5 The following Sensors were added to the database:

- KRTP91.AEE
- TRS-22XX\_LAA
- MESA\_AGR
- SPS-100K\_SGN

- SPS-540K\_SGN
- SPS-540K\_SAA
- SPS-550K\_SGN
- SPS-550K\_SAA

## B.6 Aircraft Loads

The following aircraft loads were added to the database:

- Default Load MC12/LIBERTY
- Default Load HERMES.450.DEF
- Default Load HERMES.900.DEF
- Default Load SAAB2000.ISTAR.DEF
- Default Load YAK130.DEF
- Default Load KA50.ALLIGATOR.DEF
- 2AR1
- 2AR1X2FT5
- 2BA7X2FT5
- 4AR1
- 4AR1X4FT5
- 6AR1
- CH3A.UAV.DEF
- CH4B.UAV.DEF
- CH5.UAV.DEF
- E7AWEDGETAIL.DEF

## B.7 Aircraft Class

The following aircraft classes were added to the database:



- MC12W.LIBERTY
- C5M.GALAXY
- C146A.WOLFHOUND
- UH60M.BLACKHAWK
- HH60M.BLACKHAWK
- HERMES.450.UAV
- HERMES.900.UAV
- SAAB2000.ISTAR
- SAAB2000
- AN72.COALER
- KA226.HOODLUM
- YAK130.MITTEN
- KA50.ALLIGATOR
- CH3A.UAV
- CH4B.UAV
- CH5.UAV
- E7A.WEDGETAIL

#### B.8 Targetable Weapons

The following Targetable Weapons were added to the database:

- AR1.CH.UAV.AT
- BLUE.ARROW7
- FEI.TENG-5.SGB
- HJ10
- TG100.LGB

### B.9 Aircraft Kill Lethalities (AKL)

The following AKLs were added to the database:

- AR1\_AKL
- BLUE.ARROW7\_AKL
- FT5.100KG.BF\_AKL
- HJ10\_AKL
- TG100.LGB\_AKL

### B.10 Surface Kill Lethalities (AKL)

The following SKLs were added to the database:

- AR1\_SKL
- BLUE.ARROW7\_SKL
- FT5.100KG.BF\_SKL
- HJ10\_SKL
- TG100.LGB\_SKL

### B.11 Probability of Hit (pH)

The following pHs were added to the database:

- AR1\_PH
- BLUE.ARROW7\_PH
- FT-5.100KG\_PH
- HJ10\_PH
- TG100.LGB\_PH

### B.12 Probability of Kill (pK)

The following pKs were added to the database:

- AR1\_PK

- BLUE.ARROW7\_PK
- FT-5.100KG\_PK
- HJ10\_PK
- TG100.LGB\_PK

### B.13 Supply Categories

The following Supply Categories were removed from the database:

- CL.V.AS-LG2000P
- CL.V.AS-LG-OTH
- CL.V.AS-SAL-LR
- CL.V.AS-SR
- CL.V.AS-WIRE

### B.14 Aircraft Class Probability of Detection

The following Aircraft Class Probabilities of Detection were modified in the database:

- F22.RAPTOR was changed to .0001
- B2A.SPIRIT was changed to .02
- F35A.JSF\_USAF was changed to .001
- F35B.JSF\_USAF was changed to .001
- F35C.JSF\_USAF was changed to .001

### B.15 Airbases

The following airbases were added to the database:

- FIERY.CROSS.REEF\_CN
- ITU.ABA.ISLAND.AF\_US
- MISCHIEF.REEF.AF\_CN
- PRATAS.ISLAND.AF\_US

- SPRATLY.ISLAND.AF\_US
- SWALLOW.REEF.AF\_US
- THITU.ISLAND.AF\_US
- WOODY.ISLAND\_CN

#### B.16 Runways

The following runways were added to the database:

- FIERY.CROSS.RWY05-23
- ITU.ABA.IS.RWY07-25
- MISCHIEF.RWY03-21
- PRATAS.IS.RWY10-28
- SPRATLY.IS.RWY04-22
- SWALLOW.R.RWY06-24
- THITU.IS.RWY14-32
- WOODY.IS.RWY05-23

#### B.17 Miscellaneous Changes

- Changed BEST.CAPAB\_SLP Distance to 5 km and REPLENISHMENT TIME to 3H
- Changed CSP\_CS MLRS-LR-VEH - COMBAT SYSTEM EFFECTIVE Range from 0 to 10 km
- Changed JDPIs Runway Targets Damage percents
- Changed LEAST.CAPAB\_SLP Distance to 1.5km and REPLENISHMENT TIME to 5H
- Changed LESS.CAPAB\_SLP Distance to 3km and REPLENISHMENT TIME to 4H
- Changed TW GBU58.MK81 Supply Category to CL.V.AS-GBU58
- Checked all JDPIs Collateral Damage Boxes which were blank as required
- Updated all JDPIs Item Numbers by assigning a value which were blank
- Updated all Equipment Shelter Combat System Priority Number

- Updated BE Target ONCHON.AFB\_KP by removing all Owned Targets

## **APPENDIX C. Version 5.0.1.0 DATABASE CHANGES**

No changes were made to the JTLS-GO 5.0.1.0 database.