

# JTLS-GO

## Version Description Document

July 2018



DEPARTMENT OF DEFENSE  
JOINT STAFF J7  
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JOINT THEATER LEVEL SIMULATION - GLOBAL OPERATIONS  
(JTLS-GO 5.0.12.0)

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

JTLS-GO 5.0.12.0 is a Maintenance release of the JTLS-GO 5.0 series that includes an updated SBDKOR50 Standard Database, as well as minor model functionality changes implemented as Engineering Change Proposals (ECPs), which are summarized in Chapter 2. Code modifications that represent corrections to known Software Trouble Reports (STRs) are described in Chapter 3. Remaining and outstanding STRs are described in Chapter 4.

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

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## 1.0 INTRODUCTION

### 1.1 SCOPE

This *JTLS-GO Version Description Document* (VDD) describes Version 5.0.12.0 of the configuration managed Joint Theater Level Simulation - Global Operations (JTLS-GO<sup>®</sup>) software suite. JTLS-GO 5.0.12.0 is a Maintenance delivery for the JTLS-GO 5.0 series of releases.

JTLS-GO 5.0.12.0 includes the entire JTLS-GO suite of software and the SDBKOR50 Standard Database that supports a realistic scenario based on the current Korean Peninsula theater of operations. Database modifications that were accomplished to upgrade the previous JTLS-GO Standard Database to this current version are summarized in this chapter, as well as [APPENDIX B](#). Detailed descriptions of minor Engineering Change Proposals (ECPs) implemented for this release are provided in [Chapter 2.0](#).

JTLS-GO 5.0.12.0 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 5.0.12.0 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 Controller Guide* (JTLS-GO Document 04, Version 5.0.12.0)
- *JTLS-GO Director Guide* (JTLS-GO Document 07, Version 5.0.12.0)
- *JTLS-GO Executive Overview* (JTLS-GO Document 08, Version 5.0.12.0)
- *JTLS-GO Standard Database Description* (JTLS-GO Document 14, Version 5.0.12.0)
- *JTLS-GO Software Maintenance Manual* (JTLS-GO Document 15, Version 5.0.12.0)
- *JTLS-GO Entity Level Server User Guide* (JTLS-GO Document 19, Version 5.0.12.0)
- *JTLS-GO Federation User Guide* (JTLS-GO Document 20, Version 5.0.12.0)

### 1.2.2 Updated Documents

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

- *JTLS-GO Analyst Guide* (JTLS-GO Document 01, Version 5.0.12.0)
- *JTLS-GO Air Services User Guide* (JTLS-GO Document 03, Version 5.0.12.0)
- *JTLS-GO Data Requirements Manual* (JTLS-GO Document 05, Version 5.0.12.0)
- *JTLS-GO DDS User Guide* (JTLS-GO Document 06, Version 5.0.12.0)
- *JTLS-GO Installation Manual* (JTLS-GO Document 09, Version 5.0.12.0)
- *JTLS-GO WHIP Training Manual* (JTLS-GO Document 10, Version 5.0.12.0)
- *JTLS-GO Player Guide* (JTLS-GO Document 12, Version 5.0.12.0)
- *JTLS-GO Technical Coordinator Guide* (JTLS-GO Document 16, Version 5.0.12.0)
- *JTLS-GO Version Description Document* (JTLS-GO Document 17, Version 5.0.12.0)
- *JTLS-GO C4I Interface Manual* (JTLS-GO Document 21, Version 5.0.12.0)

### 1.2.3 Delivered Software Components

JTLS-GO 5.0.12.0 may be delivered either on a CD or as a set of compressed TAR files to be downloaded. Either method includes the complete suite of software executable code and command procedures. The following software components are included with this release:

- Combat Events Program (CEP)
- Scenario Initialization Program (SIP)
- Interface Configuration Program (ICP)
- Reformat Spreadsheet Program (RSP)
- Database Development System (DDS)
- JTLS Symbols Application (JSYMS)
- ATO Translator Service (ATOT)
- ATO Generator Service (ATOG)
- ATO Retrieval Program (ATORET)

- JTLS Convert Location Program (JCONVERT)
- Count Critical Order Program (CCO)
- JTLS HLA Interface Program (JHIP)
- After Action Review Client (AARC)
- Scenario Data Client (SDC)
- Order Entry Client (OEC)
- Order Verification Tool (OVT)
- JTLS Object Distribution Authority (JODA)
- Web Services Manager (WSM)
- Web Services
  - Apache Server (APACHE), version 2.4.27
  - JTLS XML Serial Repository (JXSR)
  - Order Management Authority (OMA)
  - Synchronized Authentication and Preferences Service (SYNAPSE)
  - XML Message Service (XMS)
- Web-Hosted Interface Program (WHIP)
- Total Recall Interactive Playback Program (TRIPP)
- Entity Level Server (ELS)
- JTLS Operational Interface (JOI) OTH-Gold, Link-16, and TACELINT
- KML Operational Interface (KOI)
- JTLS Transaction Interface Program (JTOI) supporting
  - ICC 2.8.2 and 3.0.2
  - NEC-CCIS
  - TBMCS
- JTLS Interface Network Navigator (JINN)

- JTLS Order of Battle Editor (JOBE)
- Database Configuration Program (DCP)
- DDS User Interface (DDS)
- JTLS Terrain Building Program

Instructions for installing JTLS-GO 5.0.12.0 are provided in the *JTLS-GO Installation Manual*. Installing a previous version of JTLS prior to installing JTLS-GO 5.0.12.0 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 5.0.12.0 requires the following versions of support software, including operating systems, compilers, scripting utilities, database tools, transfer protocols, and display managers.

- Operating system for the model: Red Hat Linux Enterprise Edition Version 6.9 (ES), 64-bit architecture.

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

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

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

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

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 5.0.12.0 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.

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

- Java 8 Update 181 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 software executing on DoD systems 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 stop working, whether you are connected to an open network or not. Over the past few months, this restriction has been loosened because it caused numerous operational issues, but all versions of Java are issued an expiration date.

JTLS-GO software releases are linked to the Java 8 security updates. This version of JTLS-GO is released using Java 8 Update 181. The next Java security update is due to be released on 16 October 2018. A new version of JTLS-GO will be distributed on or about 19 October 2018 which will use the newest Java security update. Until that time, an organization should plan on using Java 8 Update 181 for the reasons of optimal performance and security integrity.

- JTLS-GO database tools require use of a certified Oracle database server and the full Oracle Client installation for runtime requirements. Refer to [Section 1.5.2](#) of this chapter for additional installation details.
- Windows software, X11R5 server, Motif 1.2 Library, Motif Window Manager: These items are included as part of the supported versions of Red Hat Linux ES.
- TCP/IP is required for inter-process communication between the JODA data server and all user interface programs. The version of TCP/IP included with the supported versions of Red Hat Linux ES is sufficient.
- The Perl script language is used by the JTLS-GO system and game setup scripts. The version of Perl included with the supported versions of Red Hat Linux ES is sufficient. The Perl program is typically located in the `/usr/bin` directory. If Perl is installed in a another location, a link should be created from the `/usr/bin` directory to this program.

- SIMSCRIPT II.5 (SIMSCRIPT to C) translator/compiler: SIMSCRIPT is required for recompiling JTLS-GO code. It is not necessary to have a SIMSCRIPT compiler to execute JTLS-GO, because all JTLS-GO software executables are statically linked with the SIMSCRIPT libraries. The compiler is needed only if you are a U.S. Government organization that can obtain source code and plan to re-compile JTLS-GO SIMSCRIPT code. To obtain a SIMSCRIPT compiler, contact CACI Inc.
- ANSI C Compiler: It is not necessary to use a C compiler to execute JTLS-GO. This compiler is used only by U.S. Government organizations that can obtain source code and intend to re-compile any of the JTLS-GO component programs. The C Compiler version delivered with the supported versions of Red Hat Linux ES is sufficient.
- C++ Compiler: It is not necessary to use a C++ compiler to execute JTLS-GO. This compiler is used only by U.S. Government organizations that can obtain source code and intend to re-compile any of the JTLS-GO HLA component programs. The C++ Compiler version delivered with the supported versions of Red Hat Linux ES is sufficient.
- The JTLS-GO DDS (Database Development System) application uses these open source libraries:

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

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

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

- KML Operational Interface (KOI)

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

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

- JTLS-GO 5.0 implements SSH Tunneling between Apache and the services and among the services. Rigorous testing should be done prior to use in any exercise, and particular attention should be paid to network performance under load.

### 1.3.2 JTLS-GO High Level Architecture Compliance

The JTLS-GO 5.0.12.0 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 5.0.12.0 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 5.0.12.0 and previous versions of JTLS-GO 5.0.0.0.

Significant database structure differences exist between the various versions of JTLS-GO 5.0.0.0 and any previous 4.1 series database.

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

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

Prior to unloading your newly upgraded JTLS-GO 5.0.0.0 formatted data from your Oracle database server into a JTLS-GO 5.0.0.0 scenario ASCII file, you must execute the JSYMS program,



which will reorganize the structure of the .gs and .scf symbols-related files. See the *JTLS-GO DDS User Guide*, Appendix B.11 for instructions.

#### 1.4.2 Upgrading JTLS-GO Default Symbol Set

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

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

#### 1.4.3 Standard Database Changes

Additional Standard Database changes that are applicable to JTLS-GO 5.0.12.0 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).

JTLS-GO databases should be unloaded and loaded after installation of JTLS-GO 5.0.12.0 due to a change in one of the stored procedures used by the DDS.

#### 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.

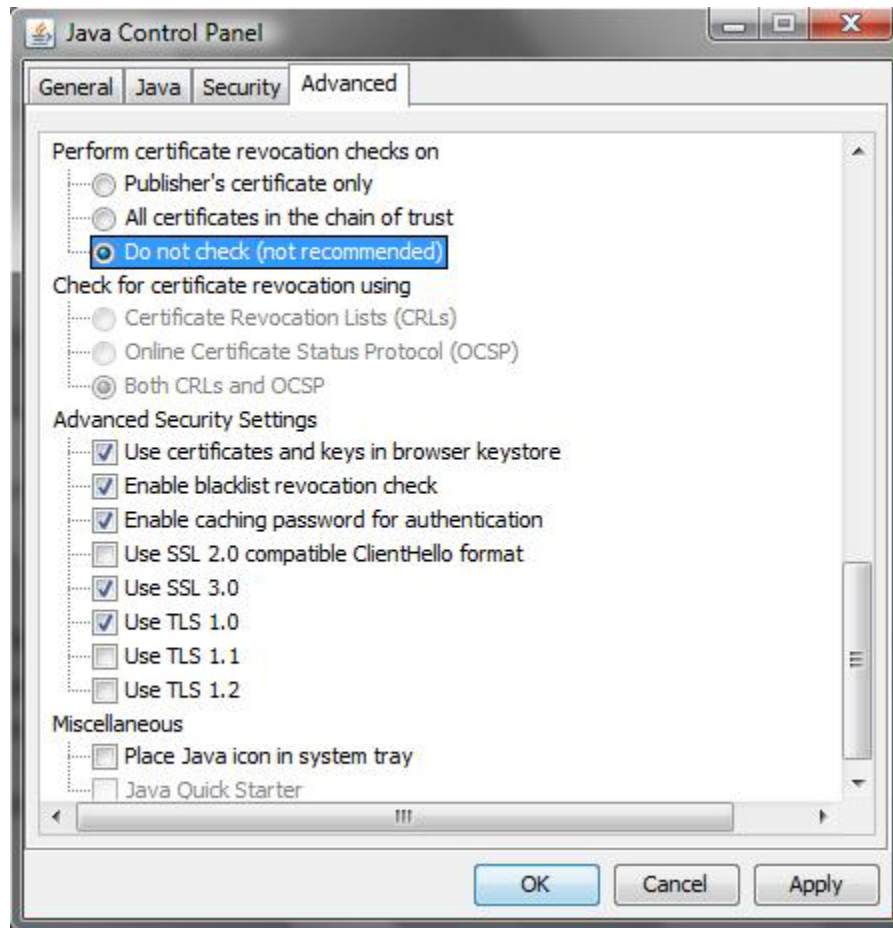
### 1.5.3 Disabling Certificate Authority

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, intra-nets and standalone systems that have no outside connection to the Internet must configure their installation to disable certificate revocation checks. If this step is not taken under a closed environment, the JTLS-GO web-enabled applications will experience a significant delay in start up while the PKI attempts to validate the certification on COMODO's servers via the Internet.

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

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

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



**Figure 1.1 Control Panel**

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

#### 1.5.4 Map Vector File Format Update

The format of the files used to display outline maps on the WHIP and DDSC was changed between JTLS 4.1 and JTLS-GO 5.0. Files in the new format are delivered with JTLS-GO 5.0. 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, 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 5.0.12.0 as a result of implementing minor Engineering Change Proposals (ECPs).

### 2.1 JTLS-0055 Range Specifications As Polygons

#### Summary of Model Change Request

It is possible that an Air Defense Artillery (ADA) Site is required to protect a specific polygonal area against incoming Theater Ballistic Missiles (TBM). This could not be represented in JTLS-GO.

#### Design Summary

Using the Rules of Engagement Order (ROE) it is possible to give a specific ADA Site target a polygonal area to protect. When the ADA Site target has an assigned polygonal area, it will only fire on missiles that have a computed impact point within the polygonal area. The site will ignore and not fire on any TBM with an expected impact point outside of the polygonal area.

Note that the ADA Site does not need to cover the polygonal area. It can be located at any location and fire on a TBM that is within range capability of the site, as long as the TBM has an expected impact point within the polygonal area.

The polygonal area has no effect on the ADA Site's ability to fire on aircraft, but note that due to ECP [JTLS-2009-10414 Create Aircraft Target Class ROE For SAM Sites](#) it is possible to tell an ADA Site not to fire on aircraft and to operate in "TBM Only" mode.

There is no way to visualize the polygonal area assigned to an ADA Site, but the user-requested ADA Report does provide the ADA Site's current polygonal assignment information.

### 2.2 JTLS-2009-10414 Create Aircraft Target Class ROE For SAM Sites

#### Summary of Model Change Request

Air Defense Artillery (ADA) Sites will fire and waste weapons on aircraft of minimal importance, and some ADA sites, capable of firing on both TBMs and Aircraft, must be "placed" in the proper mode. They cannot simply alternate between firing on TBMs and Aircraft instantaneously.

Neither of these situations could be properly represented in JTLS-GO.

#### Design Summary

When the model is initialized, every ADA Site is allowed to fire on every Aircraft Target Class (ATC). The user can submit the ROE Order for a specific ADA Site target, and assign the set of

illegal or restricted ATCs for a specific ADA Site. Likewise, the ROE Order can be used to remove an ATC restriction.

When either an enemy Air Mission or TBM is detected, the model gathers a list of viable ADA Site Targets that can fire on the object. A check was added to make sure the detected enemy object was on the list of ADA Site's allowable ATCs.

- If the object was on the allowable ATC list, then all other checks, such as range and Fire Allowed ROE need to be fulfilled before the ADA Site is placed on the viable firing list.
- If the object is not on the allowable ATC list, then all other checks for the ADA Site are skipped, and the site is not placed on the viable firing list.

The ADA Report can be used by the Player to view the current status of the ATC restricted firing list.

### 2.3 JTLS-2013-11683 Multiple Line Delete In DDS

#### Summary of Model Change Request

Adding the ability to delete multiple records from a table in the DDS at the same time, by highlighting the desired records and the clicking on the Delete icon, would improve user efficiency.

#### Design Summary

The ability to delete multiple records from any DDS table has been implemented and delivered with JTLS-GO 5.0.12.0.

The entire design for this ECP includes not only the requested capability, but also the ability to accomplish the following tasks:

- Highlight numerous SVP errors of a given type and apply the same correction to the highlighted Errors or Warnings.
- Highlight numerous rows in a table and alter a single row attribute in the same manner.

These additional capabilities are not being delivered with JTLS-GO 5.0.12.0; therefore, this ECP is not being closed. It will be formally closed with the delivery of JTLS-GO 5.1 later this year.

### 2.4 JTLS-2013-11722 Non-Circular Sensor And Air Defense Ranges

#### Summary of Model Change Request

Currently in JTLS-GO, all sensors and air defense sites are assumed to have a full 360-degree circle of coverage. This is not always true. The database builder should be able to specify that a given sensor or air defense target has fewer than 360 degrees of coverage.

## Design Summary

This design requires the addition of new data, which cannot be done within the JTLS-GO 5.0 definition, because the database format cannot be changed under the current Configuration Management (CM) rule. The following data are required:

- ST COVERAGE SECTOR - the number of degrees that a sensor of this type can cover.
- AD COVERAGE SECTOR - the number of degrees that an air defense site of this type can cover.

By default, all Sensor Types (ST) and all Air Defense (AD) types have a 360-degree coverage sector. This means that no changes to operational capability of previous versions or an existing database will be realized by installing and using this version of JTLS-GO. Everything will continue to work as it has in previous releases of JTLS-GO 5.0.

Since the database format cannot be changed under the current CM rules, JTLS-GO 5.0.12.0 has implemented a Non-Configuration-Managed data file. This file needs to be created by hand and the database developer must fill the file with the required limiting coverage sector data. The file should be called <scenario\_name>.ncm and placed in the data/scenario/<scenario\_name> directory. As part of the setup and file movement procedure, the <scenario\_name>.ncm will be placed in the game/<scenario\_name>/checkpoint/0000 directory.

To assign a coverage sector to a specific Sensor Type, the ".ncm" file should contain a line that reads as follows:

```
NEW_ST_SECTOR_DATA <SensorTypeName> <IntegerSectorSize>
```

For example, to assign a value of 180-degree sector size for a sensor called LIMITED.SENSOR, the following line of data needs to be placed in the ".ncm" file:

```
NEW_ST_SECTOR_DATA LIMITED.SENSOR 180
```

Similarly if a limited sector size is desired for a type of Air Defense Class, the ".ncm" file should contain the a line that reads as follows:

```
NEW_AD_SECTOR_DATA <AirDefenseTypeName> <IntegerSectorSize>
```

Again for example, to assign a value of 120-degree sector size for an air defense class called LIMITED.SAM, the following line of data needs to be placed in the ".ncm" file:

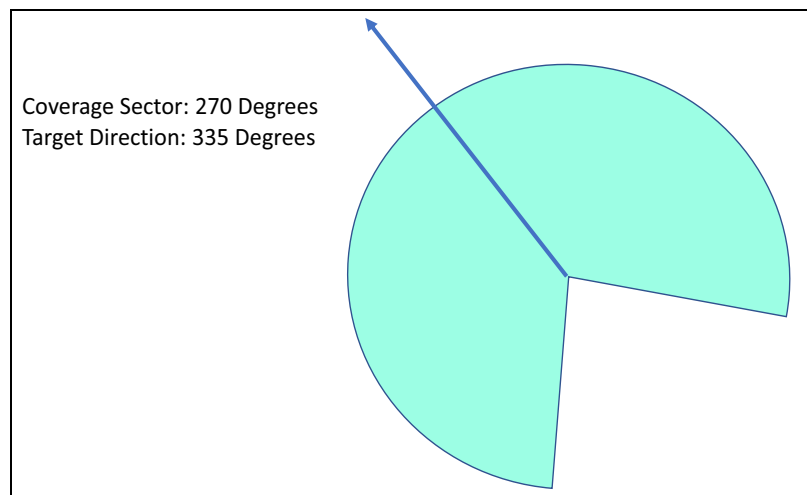
```
NEW_AD_SECTOR_DATA LIMITED.SAM 120
```

No specific order is required of placing this data in the data file. As many lines may be added to the file as needed in any order desired.

Alternatively, the ".ncm" file does not need to be created, but the Controller can change the default 360 degree sector size using the SET SENSOR PARAMETER Order and the SET ADA PARAMETER Order. Once this is done, the model will automatically create the ".ncm" file when a checkpoint is taken.

Once the coverage sector data exists, the model needs to know what direction a target is facing so the proper sector can be placed in the game board and operate only within the coverage area. There are three rules concerning the direction of Sensor Targets and Air Defense Targets:

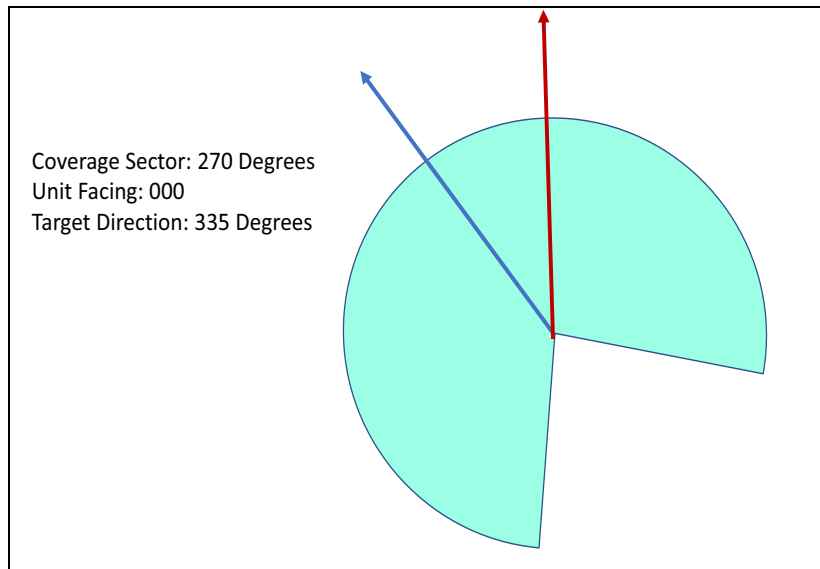
- An associated target is automatically facing North when it enters the game. This can be changed either by the Player (using the EMISSION CONTROL Order) or by the Controller (using the SET TARGET ATTRIBUTE Order). The entered direction can be viewed as an absolute direction because it is on the game surface in a non-owned status. If the user indicates that the direction of the target is 090, the target will have its coverage sector centered on 090 ([Figure 2.1](#)).



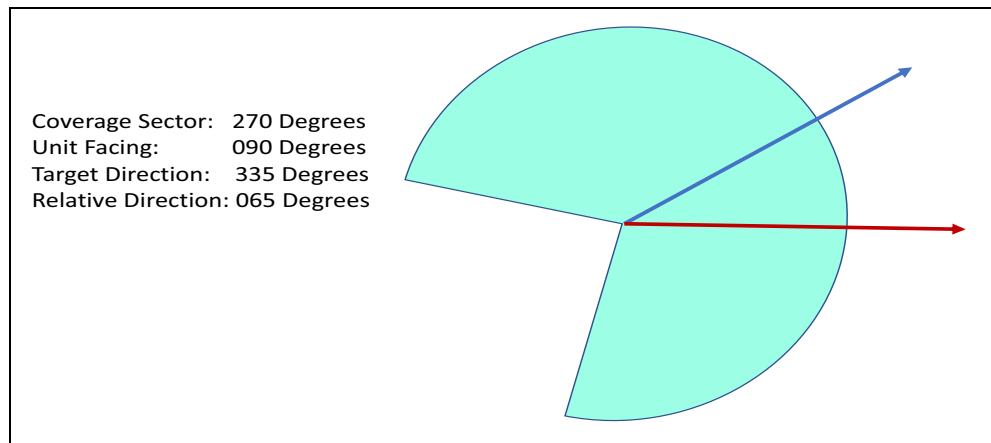
**Figure 2.1 Non-Owned Target With Limited Sector Coverage**

- A stationary owned target is automatically facing the direction of its owned unit. This too can be changed by the Player (using the EMISSION CONTROL Order) or by the Controller (using the SET TARGET ATTRIBUTE Order). The entered direction can be viewed as an absolute direction because it will never move, even if the owning unit moves.
- An owned non-stationary target is automatically facing the direction of its owning unit when it enters the game. As with the other rules, this can be changed by the Player (using the EMISSION CONTROL Order) or by the Controller (using the SET TARGET ATTRIBUTE Order). The entered direction is treated as a direction the target should face relative to the facing direction of the owning unit. As the unit moves, the target will move ([Figure 2.2](#) and [Figure 2.3](#)).





**Figure 2.2 Target Coverage Relative To Unit Facing North**



**Figure 2.3 Target Coverage Relative To Unit Facing 090**

Once the sensor or air defense site coverage area has been identified, the model works as expected. The sensor can only detect objects within its coverage area and air defense sites can only interdict objects within its coverage area.

This ECP will not be closed until JTLS-GO 5.1 is released with the required database changes, but until then, its capability can be used in JTLS-GO 5.0.12.0 and all later versions in the JTLS-GO 5.0 series.

## 2.5 JTLS-2018-13611 Represent Individual Sensor Frequencies

### Summary of Model Change Request

The collection of Electronic Intelligence (ELINT) is accomplished in two ways during JTLS-GO exercises:

- Current Sensor Targets and Jammer Targets that are electronic emitters can be detected by Electronic Intelligence (ELINT) collection assets within JTLS-GO. Any such emissions detected by an ELINT collection asset generate Emitter Objects in the JTLS Object Data Authority (JODA). The Tactical ELINT Message Service (tems) generates a formal TACELINT message for every Emitter Object help by the JODA and passes the TACELINT messages to any system established by the exercise design.
- For JTLS-GO exercises in which the National Wargaming System (NWARS) is used to report the collection of information by national level sources, there is an alternative method for generating national-level TACELINT messages. NWARS receives information from the JODA concerning the targets that are emitting.

All sensors of a given type and all jammers of a given type were publishing the same frequency in JTLS-GO. In the real world, there are small differences in sensor and jammer frequencies, and these differences are of interest to an intelligence analyst. JTLS-GO should represent these small differences in individual target frequencies.

### Design Summary

As with [JTLS-2013-11722 Non-Circular Sensor And Air Defense Ranges](#), new data are required to implement the ECP, and those new data elements could not be added to the JTLS-GO database structure until the release of JTLS-GO 5.1. The following new data are needed:

- ST ELINT START FREQ
- ST ELINT END FREQ
- JT ELINT START FREQ
- JT ELINT END FREQ

These four parameters are automatically filled based on the data currently held in the database parameters ST ELINT FREQUENCY and JT ELINT.FREQUENCY, which are held as text variables that include the unit of measure for the frequency. The following rules are established for this automatic assignment:

- If the text string GHZ is in the database parameter ST ELINT FREQUENCY, then the numeric text string before the GHZ is converted to an integer and then multiplied by 1,000,000,000. The resulting value is placed in ST ELINT START FREQ and in ST ELINT END FREQ.

- If the text string MHZ is in the database parameter ST ELINT FREQUENCY, then the numeric text string before the MHZ is converted to an integer and then multiplied by 1,000,000. The resulting value is placed in ST ELINT START FREQ and in ST ELINT END FREQ.
- If the text string KHZ is in the database parameter ST ELINT FREQUENCY, then the numeric text string before the KHZ is converted to an integer and then multiplied by 1,000. The resulting value is placed in ST ELINT START FREQ and in ST ELINT END FREQ.
- Finally under all other circumstances, the numeric portion of the text string is converted to an integer and placed in ST ELINT START FREQ and in ST ELINT END FREQ.

The exact same rules are used to convert the text database parameter JT ELINT FREQUENCY into the initial values for JT ELINT START FREQ and JT ELINT END FREQ.

If a range of frequency values are desired for the internally-generated JTLS-GO TACELINT messages or the NWARS-generated TACELINT messages, the user has two methods available to change the frequency ranges:

- The data can be placed in the Non-Configuration Managed (.ncm) data file. To specify this data as part of the (.ncm) file, place the following line in the .ncm file for every Sensor Type and Jammer Type that should be changed.

```
NEW_ST_FREQ_DATA <SensorTypeName> <StartingFreq> <EndingFreq>
```

For example, assume that Sensor Type named SURFACE.EMITTER should have a starting frequency of 12.151MHz and an ending frequency of 12.152MHz. The following line would be added to the \*.ncm" file since the starting frequency and ending frequency are specified in Hertz.

```
NEW_ST_FREQ_DATA SURFACE.EMITTER 12151000 12152000
```

To specify the frequencies for a Jammer Type, the following line should be placed in the ".ncm" file.

```
NEW_JT_FREQ_DATA <JammerTypeName> <StartingFreq> <EndingFreq>
```

- The Controller can change the values using the SET SENSOR DATA order or the SET JAMMER DATA order.

Once the model starts, a uniformly distributed random frequency is generated between the appropriate starting frequency and the ending frequency for every sensor and jammer target that is in the database. This frequency is saved as part of the checkpointing process and will never change for a given target throughout the exercise. If new targets are created after game start, the new targets will also be given a randomly generated frequency.

Each individual sensor and jammer target publish their randomly-generated frequency on the JODA, which makes it available to both the tems and NWARS for TACELINT message generation.

Note that if the range of allowable frequencies is too small, it is possible that two or more targets may have the same randomly-generated frequency. This is considered perfectly legal and within the design requirements.

## 2.6 JTLS-2018-13710 New Database Queries To Retrieve Aircraft Losses

### Summary of Model Change Request

A count of aircraft losses by various sides is available in the Own Side Aircraft Losses periodic report, but a cumulative number from game start is unavailable and was desired.

### Design Summary

Queries were written to determine aircraft losses by SAM, by ground damage, by Air-Air combat, and by Controller action, to retrieve missile losses by SAM, and to determine losses inflicted by air missions.

At the same time it was decided that the stylesheets used to mine AAR data would be easier to maintain if they used the existing utility stylesheets available for the AAR and DDS reports instead of having its own customized version of the capabilities.

## 2.7 JTLS-2018-13744 Create Script Defining Breakpoints For Simscript

### Summary of Model Change Request

Several scripts and other tools exist for developer debugging and investigation, including the findall script, which checks for a phrase within a source code hierarchy. The result is the files and line numbers that contain the phrase. For Simscript programs, the developer often then gets the routine/event name of each file and creates a Simscript breakpoint for that routine/event at the specified line number. This process should be automated so that the breakpoints can be generated easier and faster.

### Design Summary

A new script called breakpoints was created that will take the output from findall and generate Simscript breakpoints for the proper routine/event. The script uses standard input for the input, so the output from findall can be piped directly to the script. The resultant breakpoints can either be output into a file and loaded with a Simscript debugger READCMD5 command, or can be cut and pasted into the Simscript debugger.

## 2.8 JTLS-2018-13794 JODA Debug Flag Command Expansion

### Summary of Model Change Request

Turning debug flags on and off for the JODA from the console only toggled a specific few. Developers and those looking to debug the JODA would have to login to a WHIP to adjust the exact debug flags they wanted enabled.

### Design Summary

The 'df' and 'dfoff' JODA console commands now accept the names of specific flags to be toggled. When passing the flag name to the command, only a portion of it needs to be typed. For example, typing "df aar" will toggle the AAR\_COLLECTION\_FLAG to on.

## 2.9 JTLS-2018-13810 DDSC Multiple Row Deletion From Tables

### Summary of Model Change Request

Users could only delete a single row from a DDS table at a time, if deletion was allowed.

### Design Summary

Users may now delete multiple rows in a DDS table simultaneously.



### 3.0 SOFTWARE TROUBLE REPORTS

Software Trouble Reports (STRs) describe software code errors that have been discovered by JTLS-GO Users or developers and have been corrected. [Chapter 4.0](#) describes STRs that remain outstanding from previous versions.

#### 3.1 JTLS-2018-13703 Air Mission Landing On Sinking Ship Crash

**The CEP crashed when a fixed-wing air mission attempted to land on a sinking aircraft carrier, because no alternate landing location was available.**

As the mission approached the sinking ship, the model realized that there was no place to land and no alternatives. The model logic decided to allow the aircraft to "crash land" on the carrier. Normally, crash landing at an airbase results in a new runway cut being created on the runway where a failed landing occurs. Carriers do not have runways, and when the model attempted to create the runway cut, the model crashed attempted to access the non-existent runway.

An additional code check was added to stop the creation of new runway cuts when there is a failed landing at a location that does not have a runway.

#### 3.2 JTLS-2018-13705 Unit Not Properly Placed In Grid Next To Higher HQ

**If a unit is being airlifted and is in transit entirely on the aircraft, and the mission is canceled, the model places the unit at the location of its higher headquarters. This is done, instead of taking the unit to the mission's home base or attempting to fly the unit back to its original location, because the Player's intent in canceling the mission is not known. The model places the unit with the higher headquarters, and then the Player/Controller can take the proper corrective action.**

**A syntax error caused the airlifted unit to not be placed in the proper higher headquarters grid location, even though the airlifted unit was given the latitude and longitude of the higher headquarters unit.**

The improper Simscript syntax was replaced with the proper syntax.

#### 3.3 JTLS-2018-13706 SVP Move Update Of Unit TPFDD Location

**Error 709 in the Scenario Verification Program (SVP), which informs the user that a squadron was not located within an acceptable distance of its home base, had no automatic corrective action to move the squadron to the home base location.**

A corrective action was added to Error 709 to update the TPFDD location of the squadron to the location of the home base.

While implementing this change, we noted that two other SVP Errors had corrective actions that attempted to clear the arrival location of a unit. Both Error 710 and 711 are checking for TPFDD

arrival consistency. In each case, the checked unit is told to process through a port, but its arrival location is not at the port location. The proper corrective action in both cases was to move the arrival location of the unit to the port unit's location. The corrective actions were modified to accomplish this task.

#### 3.4 JTLS-2018-13707 AAR Viewer Unknown Reference Parameter Crash

With the introduction of AAR filtering, it is possible to have references to unknown AAR objects within the event data for air missions, units, etc. When displaying such event tables, the AAR Viewer attempts to resolve the reference into an object name and create a hyperlink. If the object cannot be resolved, the thread crashes and the table is not rendered.

If an object reference, which is a JEDI, cannot be resolved, the AAR Viewer will now display the JEDI as simple text instead of as an object reference. The same protection code was added if the status of an order cannot be resolved.

#### 3.5 JTLS-2018-13708 Shore Crossing Time Not Included In Estimate

When estimating the time to complete an amphibious assault, the model did not include the time needed by small boats to cross the shoreline.

The shoreline crossing time is now included in the estimate.

#### 3.6 JTLS-2018-13709 Permitted Terrain Layer Size Converting Terrain

The JTLS-GO 5.0 Terrain Conversion Utility (TCU) will automatically convert a pre-5.0 hex map into JTLS-GO 5.0 terrain layer and grid format. The maximum size of a terrain layer in JTLS-GO 5.0 is 2047 grids by 2047 grids. In JTLS 5.1 this will become 1023 grids by 1023 grids. In order to prevent the creation of grid terrain that will then need to be modified in JTLS-GO 5.1, the grid size in the JTLS-GO 5.0 TCU will be reduced to adhere to this future change.

The TCU was changed to limit the maximum terrain layer size to 1023 grids in both the latitude and longitude directions.

#### 3.7 JTLS-2018-13711 Non-Mandatory End Location

The Patrol Order, Electronic Combat Order and SEAD Order each have an optional Orbit End Location field for path orbits. If the user does not enter an End Location, the mission would travel to the orbit's start location and then to head toward 0,0, assuming that this was the user-desired orbit end location.

This field was set to Mandatory in these orders.



### 3.8 JTLS-2018-13712 Periodic Order of Battle Intelligence Message

**The Message Text Format (MTF) version of the Periodic Report for Order of Battle Intelligence does not follow MTF formatting requirements.**

The report format was corrected. No content changes were made.

### 3.9 JTLS-2018-13713 IIR English Message Need Real Mission Name

**The MTF version of the Intelligence Information Report (IIR) message creates a Mission Identifier by taking the first four characters of the mission name and concatenating the date. This algorithm works for US missions, but the NATO mission naming convention results in the user not being able to properly identify which mission collected the intelligence information.**

The MTF version of the IIR could not be changed, but placing the full mission name and the desired MTF mission name in the English version of the IIR solved the problem for NATO users. This solution meets both NATO and US needs.

### 3.10 JTLS-2018-13714 Postponing Single Path Orbit Mission Route Points

**If the user postponed a single path orbit task, the route had twice as many points the next time the mission started the task. If it happens often enough, the model could crash when the number of route points exceeds the maximum number in a given route.**

The model was changed to save only the user-ordered points when moving the current path back to the path held on the postponed task.

### 3.11 JTLS-2018-13715 Losing Aircraft Removes All Assigned JU Numbers

**An air mission with two aircraft was provided with two JU numbers. When the mission lost an aircraft, the model removed both assigned JU Numbers.**

A mismatch in variables caused the problem. Now the proper number of JU numbers is removed from the mission and returned to the squadron when an aircraft is lost.

### 3.12 JTLS-2018-13716 Logic Error When Mission Needs To Take Off

**The model was unnecessarily generating a logic error when it automatically added a Take Off task to a mission so it could fly to the next order task location.**

The logic error situation was normal and therefore the logic error was not needed and was removed.

### 3.13 JTLS-2018-13717 Error Generating Intercepted Message

The model was generating an unnecessary logic error when the user submitted a cancel fire order for a non-existent pending fire mission and the order was intercepted by a foreign side's Communication Intelligence (COMINT) capability.

It is easy for a user to accidentally submit an order to cancel a fire mission number that does not exist. If the order is intercepted by COMINT, the logic error should not be generated. The order is now simply not intercepted.

### 3.14 JTLS-2018-13718 Multiple Convoys Transporting Same Unit

A user submitted four orders to transport a unit. This created four convoys that each arrived almost simultaneously at the unit that was to be transported. When the second convoy attempted to load the unit, the model started the process. This eventually caused a crash.

Only one convoy can transport a unit at a given time. The model was not considering all possible situations to determine if the specified unit was already being transported. The model simply asked if the unit was on the play surface. If it is not on the play surface, it cannot be transported.

The problem was that the unit was being loaded onto the first arriving convoy. During the load procedure the unit is on the play surface. The logic was changed to also check whether the unit picked up was currently loading or offloading. If that situation exists, the second convoy is not allowed to start the load procedure.

### 3.15 JTLS-2018-13719 Closest Road Node If Interdiction Point Destroyed

An interdiction point was linked to a Road Node that a unit wanted to use as the location at which it should enter the road network. It selected the node and a path, only to discover moments later that the node was closed because the interdiction point had been destroyed.

The logic was improved to make sure the unit does not consider a closed node as the location to enter the road network. The model properly stopped the unit from selecting a path that included perceived closed nodes, but it did not properly consider the possibility that the starting node was closed.

### 3.16 JTLS-2018-13720 Report Detected Information On Initial IIR

When reporting on a Directed Search Area (DSA) for the first time, the only information that is reported is that this is an initial observation. It only reported damage, never what was alive and in the area.

The report now states that this is an initial observation of the DSA, but then it goes on to report what it has seen. This added information can be deleted prior to sending to the exercise audience if desired, but the JTLS-GO design team believes this will never be the case.

### 3.17 JTLS-2018-13721 Comment Reasons For Logic Errors

During an exercise, several logic errors were generated by the model, and upon investigating the situation, the design team discovered that there really was not a logic error, but there was in fact a reasonable explanation for what the code was doing.

In each of these cases, the logic error was removed and comments explaining why the situation occurred were added to the routine. No model code was changed as a result of these investigations:

- Send Player Damage Report - no fire mission was specified and therefore no unit was available to receive the report. This situation occurred when the Controller entered an ASSESS WEAPON DAMAGE Order. The logic error was removed and replaced with an explanation.
- Complete System Initialization - the model detected an active mission with zero aircraft. The logic error was kept in the model, but the reason it was triggered by a crash when a mission was killed and its downed pilot was being created. The cause for the crash has not been determined because the situation could not be recreated. This explanation was added to the routine.

The comments in various other routines were updated to help explain what the code was doing.

In addition, a keyword was added to the logic error printout, so that the Tech Controllers can identify and sort by the types of logic errors.

### 3.18 JTLS-2018-13722 DCA Protection Circle Not Properly Set

The Defensive Counter Air (DCA) order panel allowed the user to submit an improperly-formatted DCA mission. This occurred if the user specified a protection radius and did not indicate that the protection radius algorithm should be used. The result was that the mission is not properly intercepting missions within the specified protection circle.

The order panel was fixed. In addition, since the type of protection area is optional, the model was changed to set the DCA's default protection type to circular with an infinite radius when the user does not set it as part of the order.

This order change required an alteration to the ATO Translator (ATOT) service to properly meet the new order format. Additionally, the ATOT GUI was modified to allow values that include the limits allowed by the DCA order, and the empty value, which indicates that the protection radius field is defaulted.

### 3.19 JTLS-2018-13723 SUP Capacity Change Shows Zero

The Ship Unit Prototype (SUP) wet and dry capacity were changed to large numbers, but the confirmation message indicates that they were set to zero.

If the capacity was a large number, the confirmation message incorrectly reported zero. It now reports large numbers as UNLIMITED.

### 3.20 JTLS-2018-13725 Refuel Mission Guiding Off Formation Crash

**The model crashes when a user submitted an order for a refuel mission to guide off of a formation.**

The definition of the formation options was incorrectly coded in the order panel XML file. The error was corrected.

### 3.21 JTLS-2018-13726 Cannot Shadow Enemy Mission

**The user wanted to shadow an enemy mission and could not enter the mission track number into the Shadow Task order panel.**

The order panel was changed to allow the user to input any type of non-own side track.

### 3.22 JTLS-2018-13727 Missiles Need To Move Grid By Grid

**Missiles are currently not moving grid by grid and are passing over air defense sites without any possibility of interdiction.**

Missiles did not follow the normal object movement algorithm. They now move each time they enter a new grid or, if in a large grid, when the maximum movement time is exceeded.

### 3.23 JTLS-2018-13728 TPFDD Build Sends Duplicate Messages

**The Controller receives duplicate TPFDD Build messages for a given unit.**

The Controller should receive the TPFDD Build message, and the ground function of the unit whose TPFDD is being altered should also get a copy of the message. Both messages were being sent to the Controller. One message is now sent to the Controller and one message is sent to the ground function of the unit that is the subject of the TPFDD Build.

### 3.24 JTLS-2018-13729 Crash When No Capacity For Amphib Pickup

**The model crashed when an amphib pickup task was canceled, because there was not enough room on the formation for the unit that was being emplaced on the formation.**

The sent Task Cancellation message did not properly consider this option. The error was corrected.

### 3.25 JTLS-2018-13730 Tech Tool Copying To Remote Host Would Fail

Using the Tech Tool's Order Group Copy or Map Slide Copy to perform a copy to a remote host failed due to an illegal character in the secure copy command. Copying from the remote host was not affected by this.

The illegal character was removed in the command, allowing the secure copy to a remote host to execute successfully.

### 3.26 JTLS-2018-13731 ACO Message Invalid Time Period

When the ICC system generates an ACO message, it sometimes uses a code "UNK" as the stop time given in the PERIOD portion of the message. This is not one of the codes that is allowed for this field of the PERIOD record, so the Parser just makes a report of the invalid time value and stops running. The Parser should not stop. It should continue to produce an ACO XML document for the Translator, even though it may contain an invalid ACO stop time for the period.

The Parser was terminating when either the start or stop time was invalid. The Parser was modified to report the bad value for the time and continue. However, if a bad time exists, the Parser will enter the invalid time as the corresponding start or stop time for the generated ACO XML used by the Translator. The Translator currently makes no use of the ACO period times.

### 3.27 JTLS-2018-13732 ICP Misspelled Word When Glassfish Domain Fails

If the Glassfish domain fails to properly create when saving the ICP data after setting up the AAR Glassfish, a popup dialog appears that says: "You are adviced to manually remove the domain directory." This is a minor misspelling of adviced instead of advised. In addition, the title on the popup dialog says "DCP Glassfish Configuration" instead of "AAR Glassfish Configuration".

The misspelled word and the dialog title were corrected.

### 3.28 JTLS-2018-13733 ATOT Reports Missing Task Location

Whenever an Attack mission, such as Offensive Air Support (OAS), is included in a mission package but it only has AMSNLOC records describing its tasking within the ATO, the Translator reports Error 433, "Mission has no target tasks".

The error report was being generated because the mission did not have any GTGTLOC records. In the absence of targeted object locations, the Translator has been modified to default to tasking locations found in the AMSNLOC records, if any. If either GTGTLOC or AMSNLOC are properly included with attack missions in a package, Error 433 will not be generated.

### 3.29 JTLS-2018-13734 ATO Parser Mission Altitude Band Too Large

For ATO messages generated by ICC, the ALTBAND field of the AMSNLOC record can contain a very large thickness of more than 10,000 feet. The Parser computes a midpoint for this band

and assigns it to the mission. This is sometimes very different from what the operators of the response cell expect.

The Parser was modified to report Warning 116, "Altitude band specified on line <#> exceeds a thickness 10,000 feet". Once the warning is generated, operators of the ATOT can take any corrective action needed.

### 3.30 JTLS-2018-13735 AAR Reports Not Being Created

After reworking the AAR portion of the JDS protocol to support enhanced AAR Filtering, some reports stopped working. The renaming of an attribute within the JDSP to match other uses of the same data within the JDSP was the primary of the error. The attribute renaming led to a code generation problem that produced a stylesheet that did not provide spacing between attributes and could not be deciphered.

Two minor, but critical, issues were found in the generated code and control scripts. Within the generated code, the creation of a stylesheet to consistently assign indices to events, objects, and order status codes was not inserting proper spaces between attributes. The scripts that create views for easier data accessibility had not updated the air mission type\_mission column to its new definition of mission\_type.

### 3.31 JTLS-2018-13736 Expanded Help For Ship Movement Plan

The Ship Movement Plan order was introduced in JTLS-GO to support an interface with JDLM. The order allows a comprehensive loading, offloading, and movement plan to be implemented either via a link from JDLM or from a WHIP operator. The help improperly states that the order passes control from JDLM to JTLS-GO.

The help was replaced with a full description of the capabilities and purpose of the order.

### 3.32 JTLS-2018-13737 SVP Errors And Corrections Improvements

Small errors and corrections were made to the SVP and the data file that supports the displaying and corrective actions for errors and warnings within the DDS.

The following SVP corrective actions were implemented.

- Warning 1453, which reports on squadrons that do not have sufficient supplies to launch all their mission options, was not being run for independent squadrons, nor was it checking the default load and non-weapon supply requirements. The same warning also had the word "inadequate" misspelled in its description. These code issues were corrected.



- Warning 1410, which ensures the squadron and home base have supplies for every possible mission type, also did not check the default load, nor look at the supply requirements of a load other than the supplies required for weapons. These code issues were corrected.
- Error 504, which indicates that a unit does not have sufficient Combat System Amphib to support its HRUs, attempted to open the TUP/SUP Combat System Table with a system named "AMPHIB", which may or may not be the name of Combat System Amphib. Error 504 now outputs the name of the special Combat System Amphib so the proper entry in the TUP/SUP Combat System Table can be found.

### 3.33 JTLS-2018-13738 Default Values For Compound ACP ATC Entity

The compound Air Control Prototype (ACP) Aircraft Target Class (ATC) attribute, which specifies whether automatic intercept is allowed or not, was set to Yes, but there was no data in the database for this setting.

An absence of a database entry would normally cause the value to be No, but we often set a default value in the read code. No such setting of the value was found in the read code, but it was found in the creation of the compound entity. This does not adhere to the standard of setting the attribute in the read code.

The setting of the default value was moved from the creation of the compound entity to the standard location within the read code.

### 3.34 JTLS-2018-13739 ACP/MT Data Not Saved On Checkpoint

The Air Control Prototype (ACP)/Mission Type (MT) compound entity contains an acceptable launch fraction, maximum launch delay, icon symbol, and default optimization. These last two pieces of information are new with JTLS-GO 5.0.

Code still existed from pre-JTLS 5.0 that would not bother saving an ACP/MT record on a checkpoint unless either the acceptable launch fraction or the maximum launch delay was greater than zero. Since the default value for these two pieces of information on a read was zero, this was acceptable. However, with the introduction of the two additional pieces of information on the record, data can now be lost.

The read and write code was modified so that default values for the two new attributes are assigned on a read, and to ensure that all records are saved for the ACP/MT compound entities.

### 3.35 JTLS-2018-13740 OPM Probability Of Fratricide For Area Weapons

In the Online Player Manual (OPM), the Air Control Prototype probability of fratricide, which is now used for all area weapon assessments, still states that it is used only for CAS missions.

The label was changed to properly reflect the use of the data.

### 3.36 JTLS-2018-13741 Expanded Help For OpArea ROE Order

The Rules of Engagement (ROE) order allows the operator to set up ROEs for specific Operation Areas (OPAREA). The help for the fields simply tells the user to fill out a list and provides no details on the functionality of the ROES within the model.

The help fields were expanded to specify how each of the OPAREA ROE capabilities is used within the model.

### 3.37 JTLS-2018-13742 Future Standalone Task Crashes Restart

The model could not be restarted from the model when the checkpoint contained a future Standalone Task for an Air Mission.

The checkpoint was perfectly good. The read code was not complete and did not consider the case that an Air Mission or a Convoy could have a Stand Alone Task. The read code was corrected, and the model could be started from the checkpoint and execute the task normally.

### 3.38 JTLS-2018-13743 TUP OPM Page Not Rendering

The OPM generates a single HTML page with all the Tactical Unit Prototypes (TUPs) and the units that use them. When viewing the page on the Windows Firefox browser, the markup rendering of the page terminates half way down the page. This results in links that are not links, and points within the page that cannot automatically be accessed via other links. This behavior does not happen with the Internet Explorer or the Chrome browsers.

The problem was tracked down to self-terminating DIV tags. These tags are used within the OPM to assign an ID as a reference point for other links, so that a link can access a specific point in the page. This is an unusual use of the DIV tag, but we chose the DIV tag for this purpose since it does not affect other rendering. The problem is that the Windows Firefox browser does not recognize that the tag is self-terminated, resulting in an open tag hierarchy that is surpassing an internal limit. The problem was fixed by specifying an explicit separate terminator for the DIV tag.

### 3.39 JTLS-2018-13745 Crash Finding Helo Landing Location

The model crashed when a helicopter mission was identifying possible landing units. The model incorrectly set the filters to find nearby units, by specifying the type of unit within a mask. Since the unit type for squadron is the same as the object type for target, this resulted in targets being put in a set as possible landing units. When the model attempted to determine which unit should be used, a target pointer was accessed causing the model to crash.

The code was modified to just specify that units are desired within the mask, but also expanded to permit friendly, neutral, and suspect units. The restriction on the unit type was moved from the mask and inserted as a check on the returned objects.



### 3.40 JTLS-2018-13746 Logic Error During Rejoin Parent Process

A Rejoin Parent task was submitted to an HRU which owned one target. The HRU rejoined its parent and the target was absorbed by the parent as expected. A logic error was generated because the target was not in the terrain grid's target set when the target was retrieved by the HRU during the rejoin process.

The target had been retrieved earlier during the Rejoin Parent process and had been appropriately removed from the SO.TARGET.SET. Further along in the process, the same logic was repeated when the same routine was called again, thereby generating the logic error. To correct this redundancy, the first subroutine call was removed. The second call was not chosen for removal because it was in a calling sequence that is invoked by other places in the CEP.

### 3.41 JTLS-2018-13747 Supplies Put In Dump 20 KM Away

The user submitted an order to drop supplies at a location at which there were no units. The convoy placed the supplies in an existing Supply Cache 20 KM away.

Before creating a new Supply Dump, the model determines whether there is an existing Supply Dump close by. The model was using a database parameter called COLOCATED DISTANCE which is normally set to around 20 KM. The model should have been using the database parameter MAX OFFSET DISTANCE, which is the database parameter to determine if two object are close enough to each other. This change was made.

### 3.42 JTLS-2018-13748 Downed Crewman HRU Crash

The CEP crashed while attempting to create an HRU representing a surviving crewmember when an aircraft was shot down.

The crash occurred during HRU activation, when the model attempted to place the HRU in the wrong grid set (SO.HRU.SET) because the HRU's location attributes had not been initialized. Earlier, another HRU had been placed in the same Set before its location had been initialized. The uninitialized location contained a latitude and longitude of zero, which caused that HRU to be placed in a Set at the equator (i.e. grid 9,10). Similarly, the second HRU had zero coordinates and the model crashed trying to file the HRU in the equator Set, which by then had been possibly corrupted by other actions involving the first HRU.

To correct his problem, the HRU's latitude and longitude are now initialized with the location of the lost aircraft before the HRU is activated so that the new HRU is filed in the correct grid Set.

### 3.43 JTLS-2018-13749 DDSC CSP\_CS Table Missing Link

When the user right-clicks on the Combat System column heading in the CSP\_CS table, the popup window did not have the link to bring up the DRM page for the Generic Combat System Name.

The link to the DRM page for the csp\_cs table's Generic Combat System Name was added.

#### 3.44 JTLS-2018-13750 ICP Selected CheckBox For AARC

**The SDR Clients tab in the Interface Control Program (ICP) has a start button that brings up the Advance Setup AAR Filtering Interface. If the user clicked the start button while the Active check box for the AARC was selected, and then selected a different row, the AARC check box was incorrectly deselected.**

A cancel cell editing function was added to stop the overwrite of the checkbox when a new row is selected.

#### 3.45 JTLS-2018-13751 Java Versions Higher Than 8

**JTLS-GO cannot be run on Java versions 9 and higher.**

The ICP and DCP were modified to create Java Web Start Control Files that require Java 1.8. If an attempt is made to run on a system with only Java 9 or higher installed, the user is given the option to run, but the WHIP, TRIPP, or DDSC will fail to start.

#### 3.46 JTLS-2018-13752 Incorrect Help On Emission Control Order

**The Help for turning on and off Fire Control Sensors was not correct. It was copied from another field and did not contain any useful information.**

The help for the field was rewritten.

#### 3.47 JTLS-2018-13753 Filtering SVP Findings In DDS Not Operational

**When attempting to filter SVP findings in the DDS using the text box, all findings were unselected.**

The text-based filter uses the check box label to determine if a finding matches the filter. The label had been changed to include counts. The filter has been changed to extract the finding number from the current label.

#### 3.48 JTLS-2018-13754 Crash When No Downed Aircrew HUP Specified

**It is perfectly legal for a database to not specify a High Resolution Unit Prototype for a Downed Aircrew. The SVP crashed when the Downed Aircrew HUP was set to NONE**

The SVP process now correctly checks for the possibility that the DOWNED AIRCREW HUP is set to NONE.

### 3.49 JTLS-2018-13755 Create HRU Rejection Message

A Create HRU order is correctly rejected if the Parent Unit does not hold the correct target type and target mobility type combination, but the rejection message only provided the target type information. The missing target mobility information should be included in the rejection message to give the user sufficient information to diagnose a problem with targets.

The target mobility data was written beside the target type in the HRU Rejection Message.

### 3.50 JTLS-2018-13756 Unwieldy Set TW Order Message

When the “All Data” confirmation message is selected in the Set Targetable Weapon Order, a lengthy list of attribute values for the specified TW is produced. This list includes tabular data that is embedded between many single-value attributes, which makes the information hard to read.

The message was reorganized by moving all the tabular (list) data to the bottom, after all the single value attributes. This change makes the data accessible without having to scroll through many rows of list data first. Headers that correspond to the order tabs were added to delineate the attribute sections.

Additionally, the Minefield Type attribute was corrected to show NONE (instead of blank) when the TW is not a minefield weapon.

### 3.51 JTLS-2018-13757 Amphib Pickup Estimate Time is "NEVER"

An Amphibious Pickup order was submitted with the Estimate Only option selected. Only the Beach Landing option was chosen in the Amphib Ops Unit List. The model generated a message showing the estimated completion time as “NEVER”.

The problem was in the routine that calculated the load/offload rates for an amphibious operation using Beach, Helicopters, Small Boats, or Port Facilities. For the Beach option, the logic correctly calculated the offload rate (LOTS) for an amphibious assault based on the ship(s) in the formation. However, there was no logic present to calculate the load rate for an amphibious pickup. The Beach load rate was therefore zero, which indicated the formation was not capable of a Beach (LOTS) pickup. Because there was no other load option specified in the Amphibious Pickup order, the model correctly assigned NEVER as the estimated operation completion time in the message.

To correct the problem, the missing logic was added for the amphibious pickup situation. Note this problem does not exist when the operation is actually executed.

### 3.52 JTLS-2018-13758 Bridge Pickup Failed

A Bridge Operation order was submitted to an engineering unit to retrieve a deployed pontoon bridge. The unit moved toward the bridge (target) location, which happened to be on the opposite

side of an uncrossable river. When the unit arrived at the river, it was unable to retrieve the bridge target.

The logic that verifies that a unit is close enough to retrieve the bridge was slightly flawed. Each time a unit moves toward the bridge, the logic checks if the unit radius overlaps the bridge radius. If so, the retrieval task is executed. If not, a new move task is created, using the location of the bridge as the destination. As a result, the unit attempts to reach the exact bridge location, which could be problematic if there is intervening blocking terrain. Instead of using the bridge location, the logic was changed to calculate the location where the unit's radius just overlaps the bridge radius as the new destination where the bridge may be retrieved.

### 3.53 JTLS-2018-13759 AFI Script Does Not Provide Available Scenario

The AAR Filter Interface (AFI) script starts the AFI program, called from the ICP that provides a scenario name. However, if the user starts the program from a terminal, it does not provide available scenario names.

An extra argument was added to the ICP code to start to bring up the AFI. Available scenario names are also provided when trying to start the AFI using a terminal.

### 3.54 JTLS-2018-13760 SVP Check for ADA TW Supply Category

The SVP generates Warning 1227 when a TUP/SUP does not have enough Targetable Weapon supplies to fully stock any owned SAM/AAA targets. The automatic data correction option set the TUP/SUP Stockage Objective to equal the supply amount required, but did not offer the same correction to set the TUP/SUP Bring-To-Theater amount. Furthermore, if the supply category record did not exist in the TUP/SUP, the correction failed.

A new correction was added for Warning 1227. The new correction allows the Bring-To-Theater amount to be set for the TUP/SUP.

A new check and message (Warning 1272) for a missing supply category record was added. The corresponding correction option opens the TUP/SUP supply category table to allow input of the missing record, using existing records as a guide.

### 3.55 JTLS-2018-13761 SVP Check For BEF Lacking BE Objects

The SVP checks all the Basic Encyclopedia Facilities (BEFs) in the scenario database to verify each owns one or more BE Objects. For each BEF that does not own any BE Objects, Error 647 is generated. The error correction offered was useless because it simply opened an empty BE Object table.

The correction was changed to open the BE Facility table for the particular BEF number so that new BE Objects can be added. Also, the BEF Name was added to the error message to provide more clarity.

### 3.56 JTLS-2018-13762 National Asset Pass Checkpoint Issue

The model could not be restarted from a checkpoint in which a satellite with hundreds of points existed.

The checkpoint write issue was corrected. Each point is now on its own line.

### 3.57 JTLS-2018-13763 Crash When ACO Contains Spaces In Names

The ATO Translator crashes while translating an ATO and ACO whenever the ACO had some airspace geometries defined with ASCII spaces in their names.

The ATO Translator was modified to substitute an ASCII underscore for every ASCII space in the names of ACO airspaces.

### 3.58 JTLS-2018-13764 No Warning For Missions Having Zero Aircraft

Neither the ATO Parser nor the ATO Translator give any error or warning message whenever an ATO contains a mission defined to have no aircraft. Although the zero value for aircraft is allowed under the US MTF specification, a zero aircraft value under the ICC AdAtp-3 specification is forbidden. The Translator should at least notify the user regardless of whether the specification allows the situation or not.

Added Warning 241 to the Parser and Error 218 to the ATOT to alert the user when an air mission defined in the ATO has zero requested aircraft.

### 3.59 JTLS-2018-13765 Message Definition Files Errors

Messages are generated in JTLS-GO using Message Definition Files (MDF). These files contain the content or words of the message which surround the data values. The content for message 5350 did not match the contained data. As a result of the mismatches between content and data, the resulting message was unreadable.

The MDF for message 5350 had inconsistent content between the versions for the English and for MTF language formats. Some parts of the message were present in the English version, but were missing from the MTF version. The missing content was added to the MTF version. Some spelling errors were corrected in the English version.

### 3.60 JTLS-2018-13766 Player Menu Issues For Naval Orders

The context sensitive menus for objects are accessed by right-clicking on individual objects. For Naval Units, the section for orders included a duplicate entry for the Naval Move and Patrol orders. For Naval Formations, there were no menu entries for these orders.

Several of the Player order menus contained what appeared to be cut and paste errors for the Naval Move and Patrol orders. The context sensitive menus for Naval Units had a second copy of

the orders which were meant to be used for Naval Formations. The menus were modified such that only one Naval Move and one Patrol order were visible for Naval Units. Similarly, the orders were made accessible for Naval Formations.

### 3.61 JTLS-2018-13767 Confusing Messages With Similar Subjects

**Messages 5200 and 5210 had very similar subjects: "Spot Report Covert HRU Detected" and "Spot Report Detected Covert HRU". This was confusing to the user.**

These two messages did represent two different situations in the model. In one case, the model was reporting that a covert HRU had been detected. In the other case, the model was reporting that a unit had detected a foreign covert HRU. To clarify these messages, the subjects were changed to read "Spot Report A Covert HRU Was Detected" (5200) and "Spot Report Unit Has Detected A Covert HRU (5210).

### 3.62 JTLS-2018-13768 Precision Guided Missile Crash

**The CEP crashed while executing a movement event for a precision-guided theater ballistic missile (TBM). The missile was attempting to alter its trajectory to account for a moving target.**

The CEP tried to access a route for the missile, but routes are only present for cruise missiles. Since this was a TBM and not a cruise missile, the model crashed because there was no associated route for the object. A check was added to ensure the model did not access this nonexistent route data for such cases.

### 3.63 JTLS-2018-13770 GTIME Message Permitted Two Arguments

**When dealing with a Message Definition File (MDF), the GTIME function translates a value of decimal days since game start into a time string. The format of the time string can be the user's preferred WHIP preference, a MDF-provided format, or an adjustment of the time to a preferred timezone. Which of these output formats is done depends on the arguments to the GTIME function, which are the decimal days, an optional output format, and an optional boolean on whether the output should be adjusted for the user's timezone.**

**The Message File Parser, which verifies the format of the MDF and translates it into a stylesheet used by all programs, was expecting either 1 or 2 arguments for the GTIME function and was flagging an error, and failing to generate a stylesheet, if the function had 3 arguments.**

The Message File Parser was modified to recognize 1, 2, or 3 arguments to the GTIME function are all valid.

### 3.64 JTLS-2018-13773 Aircraft Lost In Lanchester Battle Not Reported

**Combat System Aircraft lost during Lanchester Combat are not reported in the Aircraft Lost Periodic Report.**



The recording of aircraft lost during Lanchester Battle was not being recorded. The needed code was added to the attrition calculation routine to record the losses.

### 3.65 JTLS-2018-13774 Update ICC Mission MISREP Screen

Several fields of the ICC Mission MISREP screen were not being updated. The missing fields must be modified by hand to enable the proper reporting of mission summaries.

The code was modified to complete the missing fields.

### 3.66 JTLS-2018-13775 Missing ICC Mission Target Records

ICC Mission report damage records are missing or in some cases overwritten. Final mission reports subsequently are lacking the necessary damage data.

The routine buiiccdam.sim was modified to create a damage report record for every weapon delivered. This information is passed to the next program to find any matching records in ICC and update the amount of damage done based on supply category, combat system or target.

### 3.67 JTLS-2018-13776 Interim MISREP Error For Canceled Package

An orbiting Airborne on Call package was changed to a Time on Task timing option with a start time of ASAP. The package did not yet have its escort missions to continue. The package waited the maximum delay time and then aborted, because the required escorts were not available. An Interim MISREP was requested for the package attack mission.

The Interim MISREP incorrectly reported: No minefields have been found, and displayed an invalid date-time field. After the mission completed, the final MISREP showed the correct message with the correct time: Package does not have minimum assets to continue.

The Interim MISREP (3700) error occurred because the message template for submessage 22 - submessage 26 contained the wrong error text description. The submessage was correctly generated because the package had been canceled, which had nothing to do with a minefield. Another message, submessage 22 - submessage 27, indicated a minefield had been cleared, but there was no underlying Simscript code to generate that message.

The final MISREP (3180) for sub 22 sub 26 contained the correct error text. The Interim MISREP text was replaced with the Final MISREP text. In addition, several other differences between the two reports were identified and changed to remove inconsistencies.

### 3.68 JTLS-2018-13777 Bad Output Device For ELS Checkpoint Data

While the ELS was saving a checkpoint, some of the critical data were written to the screen instead of going to a file. This problem appeared to be associated with entities on a ship.

There was an unexpected line of code in one of the routines, used to write the ship unit data, which redirected output to the screen. This unnecessary line was removed. All other check-pointing code was carefully examined. Some additional variables were added to save and then restore the current output device. This would ensure that the program used the proper output device at all times.

### 3.69 JTLS-2018-13778 Controller Set CSP Recovered Attributes Error

**The Set CSP Parameter order was used to change the Prob of System Recovered value for a combat system. The Player message showed the new value next to the Prob System Recovered label. However, the same new value appeared for the Prob Remains Recovered and the Prob System Recovered using the Show All option.**

The model actually changed the Prob Remains Recovered, not the Prob System Recovered, and then displayed the new value next to the Prob System Recovered label. The underlying routines were referencing the wrong CSP attribute to set and show the new Prob of System Recovered value. Instead of using CSP CS PROB SYSTEM RECOVERED for the combat system, the code was using CSP PROB REMAINS RECOVERED which applies to personnel KIA only. The code was corrected to use CSP CS PROB SYSTEM RECOVERED for the combat system.

### 3.70 JTLS-2018-13779 Patrol Mission Infinite Loop

**A Patrol mission decided it had detected something worth hitting, but the actual code to hit the detected object decided that there was nothing worth hitting, causing the model to enter a loop.**

The problem was caused by a completely unrelated piece of code which corrupted the list of detected objects for the Patrol mission. The list is ordered by distance from the detecting air mission and this list was no longer properly ordered. The model stopped looking through the list when the distance value was greater than its longest range weapon; thus causing the loop. The problem that corrupted the ordered list was corrected.

### 3.71 JTLS-2018-13780 Target Hash Table Not Large Enough

**Both the CEP and SIP use a hash table to perform faster lookups of things such as unit and target names. Both programs had a limit of a hundred thousand (100,000) items. For efficiency, the larger the hash table size compared to the number of objects it holds, the better. However, it is possible to have a hash table without any spare spots.**

**Due to a large target database the limit of hundred thousand items was exceeded, which causes the program to stop with a warning, and also decreases the efficiency of the hash as the 100 thousand mark is approached. The limit of a hundred thousand items is a holdover from smaller databases and 32 bit architecture. This limit needs to be expanded as we use larger databases.**

The limit was changed from a hundred thousand items to five hundred thousand (500,000) items. It is felt this limit will be sufficient for expected database size in the next couple of years.



### 3.72 JTLS-2018-13781 Reference To Mission Type Insert/Extract

There was a reference to a mission type of INSERT/EXTRACT in a seldom referenced routine. There is no longer such a mission type.

The reference was changed to the new mission type called Mobility. All other logic was correct.

### 3.73 JTLS-2018-13782 ATO Parser Not Using Proper Completion Time

ATO transfer type missions have the wrong mission completion time when decoded. They use the ATO end time rather than the specified completion time.

Transfer missions can be coded using a REPOSTN record, which provides additional location and timing details for the mission's tasking. The ATO Parser was not properly accounting for the time field of this record when assembling the XML details for a Transfer mission. The resulting XML file was passed to the Translator where the ATO end time was entered for the mission end time.

New error codes were added to indicate when the Parser detects problems with the fields of the REPOSTN record: a missing time (PE230) or a problem with the location (PE229).

### 3.74 JTLS-2018-13783 IMT Shows Zero Supplies

After the model is stopped, restarted, stopped a second time, and finally restarted, the IMT loses access to a unit's supplies. The model has the supplies and everything works normally, but the IMT no longer shows the supplies. They all appear as zero.

On the first stop and restart, the model lost access to the special support units for a specific type of supply. On the second restart, the WHIP lost access to the amount of supplies owned by units. The same checkpoint restart error that caused each of these issues was corrected.

### 3.75 JTLS-2018-13784 MDP Language Missing

A new language, jtums, was created for use within the Message Delivery Program (MDP) and assigned to one of the MDP format profiles. The Tech Controller did not follow one of the documented steps when creating the new language and failed to insert it into the languages.xml file. When the MDP was started it wrote an error message "NO RENDER\_PROFILE for locale jtums, see languages.xml" and produced a traceback and exited.

Nowhere in the GUI configuration is there any concept of a RENDER\_PROFILE, this term is only used within the code. Second, the message was easily missed because of the traceback which would normally indicate a crash situation rather than a controlled shutdown.

The output error message was modified to read "No language jtums for format JTUMS. Language must exist in languages.xml. MDP Terminating..." The use of the term "format" vice the term "RENDER\_PROFILE" matches what the Tech Controller sees in the configuration GUI and it also

lists the name of the format, JTUMS, in question. It is felt this provides explicit, unambiguous instructions for the Tech Controller so the traceback was removed to avoid further confusion.

### 3.76 JTLS-2018-13785 CEP Crash Determining Shore Location

**A user entered an Amphibious Assault location from a fairly large distance from shore. The model was going through each grid between the formation location and the assault location looking for a shore barrier to cross. In doing so, it crossed a grid that had absolutely no objects and so the set that is looking for the shoreline barrier did not exist. This caused the model to crash.**

The model now checks if the set that would hold the shore barriers exists before accessing it. Note that this situation is unusual because the formation ship's sensors would normally guarantee that the set exists. Since the user entered the order when the formation was quite a distance offshore, the situation occurred.

### 3.77 JTLS-2018-13787 ELS Writing Specific Template Crash

**The ELS crashed attempting to open an output file that was already opened. This would happen when the ELS determined that a unit specific template was required for a split of an existing unit.**

What matters in the code is not the specific output file that is open, but the output unit that is open. The output unit is an integer between 1 and 99. While the opening and closing of the file in question was happening properly, the ELS was not resetting the output unit when the file write was completed. This was causing another file to be automatically opened, using that unit, when the next output was done. Then, when the explicit file was needed again, the ELS would attempt to open the output unit again, resulting in the crash. The crash was fixed by properly re-directing the output when the file was completed.

### 3.78 JTLS-2018-13788 ELS Crash Determining Target Effective Radius

**The ELS crashed in a routine which is used to get the radius of a target.**

The ELS crashed because it was trying to access the incorrect object. It was using the wrong local variable to determine the properties of the object which owned the target. When the crash occurred it was trying to determine if the target was owned by a Naval Unit or a ground-based Unit. Rather than checking those unit types, it was checking the actual target, which was incorrect. A change was made to resolve this problem.

### 3.79 JTLS-2018-13789 CEP Memory Leak For Detected Objects

**The CEP experienced problems with memory management. The issue was tracked down to an excess of memory being used by the class of objects used for processing detections in the model.**

When the CEP processes the detection of objects, the potential detections are placed in a set of surrounding objects. When an object is not confirmed as a detection, it is removed from this set.

Unfortunately, the object was never deleted after it was removed from the set. This resulted in a leak of the memory used by the CEP. Over time, this leak could cause a crash if the CEP server were to run out of memory. A code change was made to prevent this memory leak.

### 3.80 JTLS-2018-13791 Directed Messages Listed As Broadcast

The Extended Markup Language (XML) Message Service (XMS) received two messages for delivery as the result of a unit-directed destruction of a target: a Target Destruction Report and a Counter Intelligence Report. Both messages were being sent to the WHIP specified as the destroying unit's primary WHIP, making them directed messages. However, within the vocabulary file they are listed as broadcast messages, causing the XMS to flag an issue. This issue does not affect delivery of the messages or the XMS in anyway. Instead, it means that the messages will not be properly filterable on the Message Delivery Program (MDP) configuration screens.

The two messages were removed from the broadcast message list within the vocabulary file and inserted into the directed message list.

### 3.81 JTLS-2018-13792 Flying Missions Improperly Taking JU Numbers

The self-reporting JU Numbers of an air mission that just landed were being re-assigned to a flying mission that was already assigned some JU Numbers, when there was still a requirement for additional JU Numbers at the squadron.

The database or the Controller can specify the JU Numbers available at a squadron. When an air mission launches, it will take between 1 and the number of aircraft in the mission of the JU Numbers if available. Exactly how many the mission takes is dependent on the number of JU numbers and unassigned aircraft at the squadron. The model wants to maximize the number of missions with JU numbers and conservatively estimates that each unassigned aircraft could be a mission.

This is not an issue when the squadron has as many JU Numbers as it has aircraft. But when the squadron has fewer JU numbers than aircraft, some missions will not fly with a JU Number for each aircraft. In this situation, the model also reassigns JU Numbers when an air mission completes, going through each flying mission to determine if it can use the released JU Number. This algorithm is the same algorithm that assigns the air missions their initial JU Numbers, attempting to ensure JU Numbers are left for non-flying aircraft while maximizing the number on the mission. The algorithm, as stated above, would take at least one JU Number if needed and available. This works on the initial assignment, but on a re-assignment it meant the mission was getting an additional JU Number, even if the JU Number should have been left with the squadron for the non-flying aircraft.

For example, assume that a squadron has 4 JU Numbers but 10 aircraft. Mission A launches with 2 aircraft and requests 2 JU Numbers, but realizes there are 8 unassigned aircraft at the squadron and only takes 1 JU Number. Mission B does the same. Mission C and D are launched with a single air mission each and each take 1 JU Number. All of the JU Numbers are assigned,

and there are still 4 unassigned aircraft at the squadron. Mission A completes, releasing its single JU Number and increasing the unassigned aircraft to 6. At this point the model checks if any of the existing missions could use this just-returned JU Number. Mission B has 2 aircraft but only 1 JU Number, so it could use it. Despite this, it should leave the JU Number for one of the 6 unassigned aircraft. Instead, it is taking the just-released JU Number and depriving other potential air missions of a JU Number.

The code was modified so that the mission wants at least one JU Number and ideally one for each aircraft. However, instead of insisting on one if it is available, it checks if it already has any. If it does then it will accept a minimum of zero even if there are JU Numbers available.

### 3.82 JTLS-2018-13793 Unit With Immobilized Entities Crash

The ELS crashed while attempting to reactivate a unit. Some of the unit's entities were immobilized when they were destroyed. The crash occurred while restoring these combat systems to their original condition.

When reactivating a unit, the ELS must fully restore the combat systems in units to their state at full strength. This only occurs when a unit has been destroyed but the player wishes to continue to use that unit. When combat systems are destroyed in the ELS, they are marked as immobilized. This prevents the dead entities from moving if the alive-portion of the unit moved.

At the time of reactivation, the previously immobilized combat systems were not correctly managed within the data sets held by the ELS. This caused problems with accessing destroyed entities. The process for handling dead and immobilized entities was corrected to ensure that more proper handling is done.

### 3.83 JTLS-2018-13799 ADA Engagement Report Missing SAM

The Spot ADA Engagement Report against a missile (i.e. cruise missile or TBM) did not include the name of the SAM/AAA Targetable Weapon fired at the missile, but the name was included when an aircraft was engaged. The report should include the Targetable Weapon name in both circumstances.

The missing name of the Targetable Weapon fired at the missile was added to the Spot ADA Engagement Report.

### 3.84 JTLS-2018-13801 Link16 Track Block Constraints Wrong Format

The database check constraints related with the Link16 Track Block data fields were using a wrong format mask, allowing users to enter incorrect data.

The regular expression which was used by the check constraints to verify the format mask of the data in the Link16 Track Block data fields were modified to match the format mask as specified in the MBL.xml order file. The users should reload their scenarios to activate the new check constraints and filter out the wrong data.

### 3.85 JTLS-2018-13802 ELS Linked Objects Incomplete Separation Crash

The ELS crashed because the program was trying to access an object which had already been deleted. This crash occurred in a routine which was processing the movement of linked objects. In the aggregate model, units, air missions, and naval formations may be linked to other objects in order for one object to shadow another object.

This problem was traced back to an air mission which was guiding off of a ground unit. The mission was shadowing the moving ground unit. The crash occurred when the air mission was completed. The air mission was removed in the ELS but the link to the ground unit was never cleaned up. Code changes were made to properly unlink objects when their links are supposed to end.

### 3.86 JTLS-2018-13803 TACELINT Message Service SOI/EMLOC Sets

The first field of the SOI set was not being filled and the EMLOC set was being incorrectly terminated.

The first field of the SOI set is now filled with a shared value of "1" and the EMLOC set is properly now terminated.

### 3.87 JTLS-2018-13804 Copy Checkpoint Does Not Copy ELS Data

The "Move Checkpoint To Shadow Game" option on the JTLS Tools Menu does not move the ELS checkpoint files.

The scripts were modified to also move the ELS checkpoint files, naming them appropriately, and also move any template sub-directories.

### 3.88 JTLS-2018-13805 Add Departure And Return ICAOs

The user could not specify the Departure and Return ICAOs on the ATO spreadsheet.

The spreadsheet ATO has been modified to allow the user to specify the departure and return ICAO codes. This allows the spreadsheet to function closer to real world ATOs with the ability to create and use detachments.

Users will need to rebuild their current spreadsheet ATOs, or insert the two new columns to make them compatible with the new code.

### 3.89 JTLS-2018-13806 Scenario Unlock Script

If the CEP exists abnormally, it leaves a lock file to prevent it from being restarted. The user was required to manually remove the file.

An unlock script was added to list the locked scenarios and remove the lock file if desired.



### 3.90 JTLS-2018-13807 ELS Crash While Restarting From Checkpoint

**The ELS crashed while attempting to restart from a checkpoint. The crash occurred while attempting to restore a convoy.**

At the time of the crash, the aggregate model was already advancing in time. During the time it took for the ELS to reach this point, one of the convoys in the CEP had already completed and was removed from the game. The ELS restart was attempting to access this convoy when the crash occurred. The ELS could not restore a convoy which no longer existed in the CEP.

Code was added to the restart process to allow the read and restore to continue. A temporary convoy was added to facilitate the checkpoint read, but this placeholder was removed before any objects were downloaded to the EODA. This temporary object is required to allow the checkpoint read to completely read all of the convoy data. Since these same circumstances can also occur for air missions in the ELS, the same code changes were made to create temporary air missions when required for the restart.

### 3.91 JTLS-2018-13808 ELS Crash While Writing Checkpoint

**The ELS crashed while attempting to write a checkpoint. The crash occurred during the writing of air mission data.**

When an air mission contains more than one aircraft, the ELS lays out the aircraft in a formation, with distances which depend on the type of aircraft and the type of mission. Template locations are computed and saved on each mission. When a mission changes from one formation to another, such as from a Vee-formation to a trailing arrangement, then the ELS must recompute the relative locations.

The routine which makes this computation was inadvertently erasing the memory which held those locations when the routine completed. This resulted in bad data for the formation locations on an air mission. The clearing of the memory was removed so the air missions now maintain their proper formation locations.

### 3.92 JTLS-2018-13809 DDSC Adding New Squadron

**If the user changed the faction country on the Add dialog, when using the Add/New Record option on a squadron unit's screen to add a new squadron, the home base field did not get updated to units applicable to the new faction.**

The squadron's screen definition file was changed to use different cell editors for sq\_faction\_country and sq\_home\_base, so that when the user changes the faction county on the Add dialog, the list for possible home bases is updated accordingly.

### 3.93 JTLS-2018-13811 Remove Obsolete ATO SDR Files

**Obsolete ATO files were located in the Scenario Data Repository (SDR).**

When ATOs were processed in previous versions of JTLS, the information was stored in the SDR, and an appropriate OEC order would be created for input to the CEP at a later time.

The portion of the process that read the ATO and stored the ATO data in the SDR has been removed. The associated files are no longer needed and were removed. The portion of the process related to OEC orders remains.

### 3.94 JTLS-2018-13812 ATOT Overwrite Tanker Chit Orders

An ATO was translated for a second consecutive ATO period and had a refuel mission with the same name as a refuel mission from the previous period. In this case a single ATO was used for the next ATO period because the missions were going to be the same. In this case the ATOT overwrote the chit order for the refueler for the previous period with the chit details for the refueler from the current period. Attempting to send the orders for the second ATO period caused an error from the WHIP order checker.

The ATOT has a convention for naming the references for chit orders when they are produced. This convention uses the name of the refuel mission combined with a chit numbering scheme. When a name for a refuel mission, as defined in the ATO, is the same for two ATO messages, the references for the chit orders collide. This caused the second translated chit to overwrite the first.

The naming convention has been changed to include the ATO period name, along with the name of the refuel mission and the numbering scheme (as in "<mission>\_C<#>\_<ATO>").





## 4.0 REMAINING ERRORS

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

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

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

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

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

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

### 4.3 WHIP - Pipeline Not Shown On IMT

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

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

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

### 4.5 WSM - Many Messages Cause Lockup

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

### 4.6 Strategic Airlift Does Not Work

Users should not submit Strategic Airlift Orders

### 4.7 Tactical Ground Formation Attacks Do Not Work

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

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

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

#### 4.9 Port Amphibious Operations Do Not Work

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

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

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

## APPENDIX A. ABBREVIATIONS AND ACRONYMS

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

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

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

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

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

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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 Format
MUREP	Munitions Report
MUSE	Multiple Unified Simulation Environment
NCSA	National Center for Supercomputing Applications (University of Illinois)
NEO	Noncombatant Evacuation Operations
NFS	Network File Server
NGO	Non-Governmental Organization
NIS	Network Information Service or Network Information System
NM	Nautical Mile
NTSC	Naval Telecommunications System Center
OAS	Offensive Air Support
OBS	Order of Battle Service (formerly UGU: Unit Generation Utility)
OCA	Offensive Counter-Air

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



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

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

## **APPENDIX B. Version 5.0.12.0 STANDARD DATABASE CHANGES**

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



## **APPENDIX C. Version 5.0.12.0 DATABASE CHANGES**

No changes were made to the JTLS-GO 5.0.12.0 database for this maintenance release.