JTLS-GO

Version Description Document

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DEPARTMENT OF DEFENSE
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JOINT THEATER LEVEL SIMULATION - GLOBAL OPERATIONS
(JTLS-GO 5.0.5.0)

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ABSTRACT

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

This *JTLS-GO Version Description Document (VDD)* describes the new features of the Version 5.0.5.0 delivery of the configuration-managed JTLS-GO software suite.

JTLS-GO 5.0.5.0 is a Maintenance release of the JTLS-GO 5.0 series that includes an updated SBDKOR50 Standard Database, as well as major model functionality changes implemented as Engineering Change Proposals (ECPs), which are summarized in Chapter 2. Code modifications that represent corrections to known Software Trouble Reports (STRs) are described in Chapter 3. Remaining and outstanding STRs are described in Chapter 4.

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

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1.0 INTRODUCTION

1.1 SCOPE

This *JTLS-GO Version Description Document* (VDD) describes Version 5.0.5.0 of the configuration managed Joint Theater Level Simulation - Global Operations (JTLS-GO®) software suite. JTLS-GO 5.0.5.0 is a Maintenance delivery for the JTLS-GO 5.0 series of releases.

JTLS-GO 5.0.5.0 includes the entire JTLS-GO suite of software and the SDBKOR50 Standard Database that supports a realistic scenario based on the current Korean Peninsula theater of operations. Database modifications that were accomplished to upgrade the previous JTLS-GO Standard Database to this current version are summarized in this chapter, as well as APPENDIX B. Detailed descriptions of Engineering Change Proposals (ECPs) implemented for this release are provided in Chapter 2.0.

JTLS-GO 5.0.5.0 executes on the Red Hat Enterprise Linux Version 6 64-bit operating systems. The Web-Hosted Interface Program (WHIP®) 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 5.0.5.0 is a bug release of the JTLS-GO system. Other than date changes, the following documents have had no significant changes since the last release of JTLS-GO.

- *JTLS-GO Analyst Guide* (JTLS-GO Document 01, Version 5.0.5.0)

- *JTLS-GO Air Services User Guide (*JTLS-GO Document 03, Version 5.0.5.0)

- *JTLS-GO Data Requirements Manual* (JTLS-GO Document 05, Version 5.0.5.0)

- *JTLS-GO DDS User Guide* (JTLS-GO Document 06, Version 5.0.5.0)

- *JTLS-GO Director Guide* (JTLS-GO Document 07, Version 5.0.5.0)

- *JTLS-GO Executive Overview* (JTLS-GO Document 08, Version 5.0.5.0)

- *JTLS-GO Installation Manual* (JTLS-GO Document 09, Version 5.0.5.0)

- *JTLS-GO WHIP Training Manual* (JTLS-GO Document 10, Version 5.0.5.0)

- *JTLS-GO Player Guide* (JTLS-GO Document 12, Version 5.0.5.0)

- *JTLS-GO Standard Database Description* (JTLS-GO Document 14, Version 5.0.5.0)

- *JTLS-GO Software Maintenance Manual* (JTLS-GO Document 15, Version 5.0.5.0)

- *JTLS-GO Technical Coordinator Guide* (JTLS-GO Document 16, Version 5.0.5.0)

- *JTLS-GO Entity Level Server User Guide* (JTLS-GO Document 19, Version 5.0.5.0)

- *JTLS-GO Federation User Guide* (JTLS-GO Document 20, Version 5.0.5.0)

- *JTLS-GO C4I Interface Manual* (JTLS-GO Document 21, Version 5.0.5.0)

1.2.2 Updated Documents

- *JTLS-GO Controller Guide* (JTLS-GO Document 04, Version 5.0.5.0)

- *JTLS-GO Version Description Document* (JTLS-GO Document 17, Version 5.0.5.0)

1.2.3 Delivered Software Components

JTLS-GO 5.0.5.0 may be delivered either on a CD or as a set of compressed TAR files to be downloaded. Either method includes the complete suite of software executable code and command procedures. The following software components are included with this release:

- Combat Events Program (CEP)

- Scenario Initialization Program (SIP)

- Interface Configuration Program (ICP)

- Reformat Spreadsheet Program (RSP)

- Database Development System (DDS)

- JTLS Symbols Application (JSYMS)

- ATO Translator Service (ATOT)

- ATO Generator Service (ATOG)

- ATO Retrieval Program (ATORET)

- JTLS Convert Location Program (JCONVERT)

- Count Critical Order Program (CCO)

- JTLS HLA Interface Program (JHIP)

- After Action Review Client (AARC)

- Scenario Data Client (SDC)

- Order Entry Client (OEC)

- Order Verification Tool (OVT)

- JTLS Object Distribution Authority (JODA)

- Web Services Manager (WSM)

- Web Services

    Apache Server (APACHE)

    JTLS XML Serial Repository (JXSR)

    Order Management Authority (OMA)

    Synchronized Authentication and Preferences Service (SYNAPSE)

    XML Message Service (XMS)

- Web-Hosted Interface Program (WHIP)

- Total Recall Interactive Playback Program (TRIPP)

- Entity Level Server (ELS)

- JTLS Operational Interface (JOI) OTH-Gold, Link-16, and TACELINT

- KML Operational Interface (KOI)

- JTLS Transaction Interface Program (JTOI) supporting

    ICC 2.8.2 and 3.0.2

    NEC-CCIS

    TBMCS

- JTLS Interface Network Navigator (JINN)

- JTLS Order of Battle Editor (JOBE)

- Database Configuration Program (DCP)

- DDS User Interface (DDS)

- JTLS Terrain Building Program

Instructions for installing JTLS-GO 5.0.5.0 are provided in the *JTLS-GO Installation Manual*. Installing a previous version of JTLS prior to installing JTLS-GO 5.0.5.0 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 5.0.5.0 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 place 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.

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

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

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

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

CentOS 6 - a free version of Linux 6 that has not been approved by DISA for use by U.S. Government agencies.

• There are no restrictions on the operating system for client workstations, except that the operating system must have a Java-enabled web browser. JTLS-GO 5.0.5.0 has been tested on the following operating systems:

Red Hat Linux Enterprise Edition Version 5 and 6.

CentOS Linux Version 5 and 6.

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

• Java 8 Update 131 is required for all platforms and must be used to support all workstations.

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

One of the DoD IA requirements is that the software must implement a methodology that ensures that the end user keep the software up-to-date and all security patches are properly installed. Java 8 has fulfilled this mandate by implementing an expiration date for its software. After a certain date, all Java related programs will stop working, whether you are connected to an open network or not.

JTLS-GO software releases are linked to the Java 8 security updates to meet this requirement. This version of JTLS-GO is released using Java 8 Update 131, which expires on 18 July 2017. A new version of JTLS-GO will be released prior to that expiration date.

- JTLS-GO database tools require use of a certified Oracle database server and the full Oracle Client installation for runtime requirements. Refer to Section 1.5.2 of this chapter for additional installation details.

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

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

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

- SIMSCRIPT II.5 (SIMSCRIPT to C) translator/compiler: SIMSCRIPT is required for recompiling JTLS-GO code. It is not necessary to have a SIMSCRIPT compiler to execute JTLS-GO, because all JTLS-GO software executables are statically linked with the SIMSCRIPT libraries. The compiler is needed only if you are a U.S. Government organization that can obtain source code and plan to re-compile JTLS-GO SIMSCRIPT code. To obtain a SIMSCRIPT compiler, contact CACI Inc.

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

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

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

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

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

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

- KML Operational Interface (KOI)

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

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

1.3.2 JTLS-GO High Level Architecture Compliance

The JTLS-GO 5.0.5.0 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 5.0.5.0 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). 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 5.0.5.0 and JTLS-GO 5.0.0.0.

Significant database structure differences exist between JTLS-GO 5.0.5.0 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 5.0.5.0 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).

Users must save their Interface Configuration Program (ICP) databases after installing JTLS-GO 5.0.5.0. Changes to the ICP database that affect the WHIP display are included in this release. Failing to save your ICP database will not harm your system, but WHIP windows may display with unusually-colored menus. For more details, see JTLS-2017-13096 Minor User Interface Improvements, Section 2.7

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.
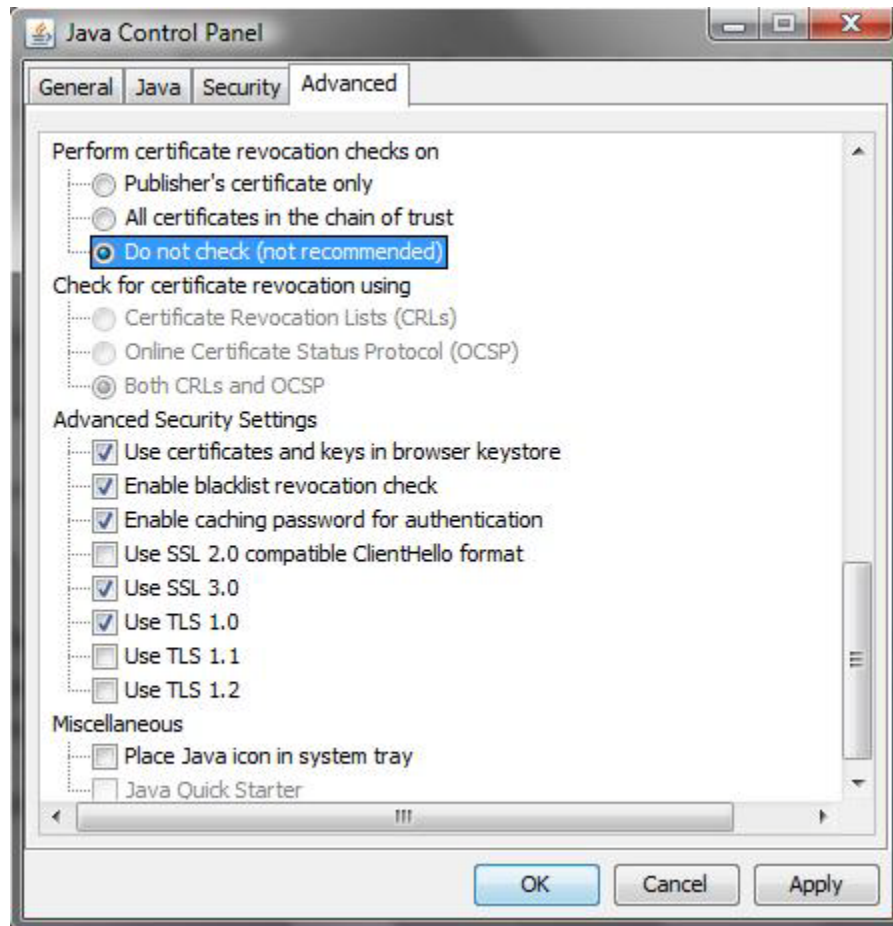
Figure 1.1   Control Panel

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 has changed. Files in the new format are delivered with JTLS-GO. The files are located in $JTLSHOME/data/maps/vector and are in XML format.

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

The script has 2 usages:

- To convert a single file:

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

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

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

The optional "-c shoreline" argument causes only the shoreline vectors to be converted. Rivers and national boundaries no longer follow hex-edges in JTLS-GO 5.0.5.0, 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 5.0.5.0 as a result of implementing minor Engineering Change Proposals (ECPs).

2.1 JTLS-2017-13058 Remove Railroad Spurs When Networks Trimmed

Summary of Model Change Request

A railroad spur is a secondary track that allows entities to load and unload rail-cars without interfering with railroad traffic on the main line. Railroad spurs aren't necessary for JTLS-GO, since the supply sender and receiver can use the global variable COLOCATED.DISTANCE to take spurs into account. This means that spurs can add unnecessary arcs and nodes to the rail network, especially in heavily industrialized areas. This ECP allows the user to instruct the GIS Tool to optionally remove spurs when rail networks are trimmed.

Design Summary

For JTLS-GO, a spur is defined as a polyline of a rail network where the following three conditions are met:

1. One end of the polyline forms a terminus (the end node is attached to only one arc).

2. The second end of the polyline forms a junction (that end node is attached to three or more arcs).

3. The great circle distance between the end nodes is less than a user-specified spur length.

When the user wants to trim a rail network, the user enters the minimum arc length and maximum allowable deviation into the Constraints dialog as before. The user is also presented with a check box to indicate whether spurs should be removed as well. Two options are available to the user:

1. The user marks the check box. In this case the user must also specify the spur length. Any polyline that satisfies conditions 1 through 3 are removed from the network. If a polyline satisfies conditions 1 and 2, but not condition 3, the nodes from that polyline are trimmed according to the user-specified minimum arc length and maximum allowable deviation constraints.

2. The user clears the check box. The spur length is ignored in this case. Any polyline that satisfies conditions 1 through 3 are not removed from the network, but its nodes are trimmed according to the user-specified minimum arc length and maximum allowable deviation constraints.

2.2 JTLS-2017-13066 GIS Tool Access Elevation Models Simultaneously

Summary of Model Change Request

The GIS Tool currently accesses only one elevation model, either DTED or ETOPO1. It cannot handle the two elevation models simultaneously.

Some users have DTED that is limited to a region of interest only. If the tool tries to get an elevation or depth at a latitude/longitude outside the region, DTED return a value of -32767, indicating the elevation is not available at that coordinate. In addition, if the region covered by DTED includes any part of an ocean, a coordinate over the ocean may not return a negative value depth but a value of zero.

For these reasons it is desirable for the tool to use both DTED and ETOPO1. The tool should use DTED to retrieve elevation values from the area covered by DTED and use ETOPO1 for the rest of the world.

Design Summary

The GIS Tool can now be set up to access only DTED or only ETOPO1 as before, along with the additional capability to access both elevation models when required. When both are used, DTED is called for coordinates inside the DTED coverage area while ETOPO1 is called for everywhere else. In addition, if DTED returns zero, the tool calls ETOPO1 and checks its value. If that value is negative (indicating depth) it is substituted for the DTED value; otherwise, the DTED value takes precedence.

2.3 JTLS-2017-13068 Tech Tool Order Group Copy

Summary of Model Change Request

There were further improvements made to the user interface of the Order Group Copy tool.

Design Summary

The user interface was further simplified by omitting the requirement of entering a From Scenario as part of the connection to a local/remote host. Instead, after a connection is made, a drop down list of valid scenarios existing on the specified host are made available for selecting where the Order Groups to be copied come from. In addition, users can now copy Order Groups to any WHIP of the same side.

2.4 JTLS-2017-13070 ATOT-Generated Order Group Increments

Summary of Model Change Request

The ATO Translator creates several order groups containing the orders from the translated ATO. Air mission orders are placed in one of two groups, a generic order group for non-refuel missions

and a refuel order group for tanker missions. This order grouping does not allow the user to easily send early period orders separate from the later period orders. All orders are combined and sending the earlier ones would require sorting through each one.

Design Summary

The ATO Translator now creates groups for mission orders that are aligned with specific time slices during the ATO period. The tanker order group is listed first and should be sent prior to the earliest mission order group. This change in group ordering requires that the ATOT create separate refuel chit orders that are placed immediately after the receiving mission's order group along with any other utilities needed by the non-refuel missions.

In summary, the ATOT now creates the following order groups:

- The ATO ID Group
- The Tanker Group
- Mission Time Slice 1
- Refuel Chits For Missions in Time Slice 1
- Mission Time Slice 2
- Refuel Chits For Missions in Time Slice 2,
- Etc.

2.5 JTLS-2017-13073 ATOT Alert Attack Missions Auxiliary Task Utility

Summary of Model Change Request

Occasionally an ATO produced by ICC contains alert attack missions, which also have orbit locations or attack instructions as part of the message. The current Translator assumes that an alert mission only has an alert task. The purpose of this ECP is to improve the Translator by removing this assumption and properly translating the ATO to expect multiple tasks even if one of the tasks is an alert task.

Design Summary

Although this is unique to ICC ATO generation, the specification for Message Text Format (MTF) provides format records that allow an ATO mission to be configured for both alert and attack tasking. The Translator now creates an order and its associated multi-task utility to allow the mission to be sent with alert tasks and attack tasks.

2.6 JTLS-2017-13085 Read Flat Files Holding Terrain Layers/Grids

Summary of Model Change Request

There are situations when the user creates a set of terrain layers and grids, exports them to the JTLS scenario text file format, performs refinements with the Database Development System (DDS), but then discovers that some additional layer(s) are needed.

For example, suppose there is an island off of a mainland and the grids covering that area are dual capable. This circumstance allows ground units to move at will from the mainland to the island. Since this kind of movement is not acceptable, the user would like to add a new terrain layer with smaller grids over this area; the grids between the mainland and the island would be designated as ocean grids, thereby preventing the unwanted movement. Since the only way to add new terrain layers and grids is through the GIS tool, the user would lose all of the refinements when the layers and grids are re-exported from the tool.

The tool needs the capability to read (import) the scenario text files .tl (terrain layer) and .tl_gd (terrain grid), where the grid attributes from the .tl_gd file are used to update the grids stored within the tool's project. Once the project has been updated, the user can proceed to add new layers and grids, export everything back to text file format (with no loss of the earlier refinements), and make additional refinements with the DDS.

Design Summary

When the user select a scenario, the tool now read that scenario's .tl file first. For each terrain layer listed in the .tl file, the tool performs a series of checks by applying the following rules:

1. The layer name from the .tl file must match a name of a layer stored in the project. If a name match is found, two additional tests are applied:

2. The size of the layers' grids must be identical

3. The layers must have the same number of X and Y grids

The first layer from the .tl file that fails any of the above tests causes the import to fail.

If all the layers from the .tl file pass the tests, the tool proceeds to read the .tl_gd file. For each grid listed in the .tl_gd file, its terrain type, road coverage, max elevation, average elevation and average depth values are read and applied to the matching grid stored in the project.

When the import is complete, the user can proceed to add layers and grids using the current capabilities of the tool.

2.7 JTLS-2017-13096 Minor User Interface Improvements

Summary of Model Change Request

A number of small improvements were made, based on user feedback.

Design Summary

The following minor improvements where made:

1. On the WHIP, allow users to set a name or short description for a Message Browser and Map.

2. Several changes were made to the OTH-Gold interface:

   • When regenerating all track names, also check for duplicate track names.
   • Add colorful connection indicators to infoport status page.
   • When a call sign update is received for an air mission, regenerate that mission's track name.
   • Add game time to infoport status page.

3. Add dynamic font change to TechTool's main tab.

4. ATOG - Pick up discarded squadrons by pulling their name from the saved XML file instead of trying to acquire them from the map collections.

5. OVP - Add wait cursor while orders verify. This is particularly important if a group of orders being verified is extremely large.

6. Add the ability to set the WHIP and WSM menu bar background color from the WHIP tab of the Interface Control Program (ICP). This improvement makes it easy for a user to distinguish a WHIP from one game and a WHIP from another game. During large exercises it is not uncommon for a user to be attached to the production game, a shadow game and a test game simultaneously and this improvement helps users from entering orders into the wrong game.

> Because of this improvement, users must save their Interface Configuration Program (ICP) databases after installing JTLS-GO 5.0.5.0. If no color is selected on the WHIP tab for the menu, the standard gray menu is used.

3.0 SOFTWARE TROUBLE REPORTS

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

3.1 JTLS-2017-13051 JOI OTH-Gold Feed On Button Updates

When turning the OTH-Gold feed on from the JTLS Operational Interface (JOI) module, the "Feed On" radio button would not update immediately. Even though the feed was on, the "Feed Off" radio button appeared to be selected. The "Feed On" button became selected only after the module received a fresh update from the service.

The "Feed On" and "Feed Off" buttons were fixed to immediately reflect the correct state of the feed.

3.2 JTLS-2017-13052 Open CSP_CS Table With No Data

When the user selected the corrective action for Scenario Verification Program (SVP) Warning 1223 to open the CSP_CS table, the table was blank.

The corrective action had an incorrect column specification. The SVP template file was corrected to use the appropriate column specification and now the table is displayed with the appropriate records shown.

3.3 JTLS-2017-13053 SAM Range Avoidance Check

An air mission can be told to avoid entering SAM coverage areas. When an air mission assessed the threat from a SAM site before moving into the area, the model incorrectly compared the target's range to the SAM site's altitude zone range instead of considering the distance between the target and the mission's next location. This error caused the mission to falsely conclude the SAM site was out of range, simply because the target range was greater than the altitude zone range.

The logic was corrected. First the range of the SAM site is computed. This is the minimum of the target's range and the range for the type of SAM site for the altitude zone in which the mission is currently flying, This computed range value is compared to the distance between the target and the mission's next location. If the distance between is greater, the SAM site is considered out-of-range and the mission is allowed to move to the next location.

3.4 JTLS-2017-13054 Naval Unit Dumps Supplies On Ground Crash

The model crashed when attempting to dump supplies on the ground in an ocean grid.

Two similarly-named routines existed in the model to destroy a list of supplies. Supplies dropped in an ocean grid are assumed to sink, and should be destroyed. One routine accomplished this task properly, and one routine did not. The incorrect routine was being called under some circumstances. In all cases the correct routine is now being called. The incorrect routine was no longer needed and was removed from the source code.

3.5 JTLS-2017-13055 Remove Old Delivery Item Construct

As part of normal code maintenance, a review of model data structures is conducted randomly. An old data structure called DELIVERY ITEM still existed in the code.

References to this old data structure were removed from the model base.

3.6 JTLS-2017-13056 National Asset Pass Order Errors

Several errors were uncovered concerning the National Asset Pass order used to create a satellite in the game for collecting national intelligence.

The following National Asset Pass order errors were corrected:

- JODA errors were being generated when the model published a new satellite on the JTLS Data System (JDS).

- The Force Side for the satellite was not properly assigned when it was created.

- Similarly, the satellite route was not re-initialized correctly when more route points were added to the satellite.

- The model could crash when removing a satellite from the game that had been specified to start long before the start date of the scenario.

- It was possible for a satellite not to process all path movement orders if the specified start and end times were compatible with the current game time.

3.7 JTLS-2017-13057 National Asset Pass Order Real Time Sensors

The National Asset Pass order contained a data field where the Controller specified the sensor that was on-board a satellite. These sensors must be real-time sensors, but the order panel allowed the user to select any type of sensor.

This change only limited the allowed types of sensors used in the National Asset Pass order. The user can now only pick a real-time sensor. Before this change, the user could pick any sensor, but only orders which used a real-time sensor were accepted by the model. A new set of data were added to the dynamic vocabulary which contained the list of real-time sensors.

3.8 JTLS-2017-13059 Crash Reading Supplies While Restarting

During a restart from a checkpoint, the model crashed while attempting to read supply data.

The supply data in the model are held by objects called Inventory Owners. The model crashed while reading these data which were associated with supplies to be carried by a mobility air mission. The supplies were not properly assigned to their Inventory Owner, so the model crashed. A correction was made to correctly perform this assignment, and the model no longer crashes when reading these data.

3.9 JTLS-2017-13060 Task Cancellation Messages

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

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

3.10 JTLS-2017-13061 Airlift Unit Excessive Load Time

An air mobility mission was tasked to perform an airdrop. Before the Mobility Mission order was submitted, the Airlift Estimate report indicated the entire operation would require about one and a half hours to complete, including a short-distance flight time. The mission flew to the pickup location and began loading the unit. However, the loading task required several hours to finish before the mission flew to the drop location.

The loading process uses elementary loading facilities (ELFs) that belong to the lifted unit when materiel handling equipment (MHE) is not required. In this case, MHE was not required to load the unit. The available ELFs are assigned to each aircraft on a one-for-one basis so that the aircraft are loaded in parallel as much as possible.

Before the loading operation starts, a child unit is created to hold the combat systems and supplies of the lifted unit in anticipation of a partial delivery. When the child unit is created, all of the ELFs are transferred from the parent unit to the child unit. Later, the logic accesses the parent unit to determine how many ELFs to use to load the aircraft. Because the ELF count is zero in the parent, the model proceeds to load each aircraft sequentially, which greatly increases the overall load duration.

The problem was solved by saving the original ELF count before the child unit is created, and then reinitializing the parent's ELF count afterwards. Testing showed the total operation time was close to the Airlift Estimate report, plus three refueling durations to support three round trips.

3.11 JTLS-2017-13062 Missing Senior Controller Menu

The Senior Controller WHIP menu was not available.

The Senior Controller WHIP Menu was erased from the system after the first version of JTLS-GO was released. It was removed with the understanding that it would be easier to recreated after all other menus were updated. The original menu was recovered and altered to meet the requirements of JTLS-GO.

3.12 JTLS-2017-13063 Inaccurate Error Message For Bad Saved Orders

The Web-Hosted Interface Program (WHIP) would provide an inaccurate error message when attempting to open a saved order with an incorrect file extension. The message in the error dialog was not helpful in addressing the problem in the saved order. This can occur when orders are generated outside the WHIP, such as by the Air Tasking Order - Translator (ATOT) service.

The error message was made specific to the check when opening a saved order, so that it informs the user that the file extension is incorrect in the order file. This STR is only important for those users creating their own programs that an create saved orders. The programs delivered as part of JTLS should not generate any of these errors.

3.13 JTLS-2017-13065 Multiple Shapefiles Country Outline Not Working

The "Country Outline" check box in the GIS Tool is used to show and hide the outlines of countries and islands on the world map layer. The code was originally written to handle a single shapefile, but was later modified to handle multiple shapefiles. The GIS Tool reads the shapefiles from the `$JDATA/worldgis/<master database>/terraintype/rendering/map` directory.

It was discovered that while the check box still functioned properly when only a single shapefile was present in the map directory, it had no effect when multiple shapefiles were present.

The code could not find the sub-layers used to show and hide the outlines on the map. This error has been fixed.

3.14 JTLS-2017-13067 MDP Should Send Messages To Port Individually

The Message Delivery Program (MDP) was given a host IP and port to receive Non-Theater Designated Search Area (DSA) Collection reports. The MDP connected to the port and continued to deliver messages until it received new delivery instructions, when it closed the port. The recipient was not processing any of the delivered messages until the port was closed, so the messages had been queued in the socket for hours. The MDP should open a fresh socket, deliver a message, and close the socket for each message it sends to a host/port combination.

The code was modified to open the socket when delivering a messages, deliver the message, and close the socket.

3.15 JTLS-2017-13069 Empty Database Schema Creation Data

The force_side_lu and force_side_cont_lu lookup tables and the slp_sc and csp_cs tables were not populated properly when a new empty scenario schema was created.

The related SQL script was modified to properly populate the force_side_lu and force_side_cont_lu lookup tables and the slp_sc and csp_cs tables. The deepest depth zone value was changed to 32000 feet to eliminate certain terrain errors, and the default Force Side color was changed to CYAN (from BLUE). The VERY_WIDE_RIVER record was included when populating the barrier_type table to eliminate SVP Error 671.

3.16 JTLS-2017-13071 Out-Of-Game Squadrons In ATOT Missions

The ATOT generates air mission orders for each mission described in the ATO data message. These mission orders are built with the squadron used in the ATO for each mission. Missions belonging to squadrons that are out of the JTLS-GO game are not being retained by the ATOT in the tasking unit linking page; therefore, these squadrons do not get included in the final mission orders. The order field for the squadron is left blank and the order fails checking.

The ATOT routinely compares the user-linked squadrons with the list of available squadrons but ignores any that are out-of-game. This prevents the ATOT from retaining the user-linked squadron and therefore leaves the mission orders without a squadron.

The logic for ignoring a squadron which is out-of-game has been removed from the checking routine of the ATOT. Mission orders are now created with proper squadrons, regardless of out-of-game status.

3.17 JTLS-2017-13072 ATOT Overwrite Selected ATO Orders

Following each translation of the ATO data, the ATOT overwrites all the orders for a given ATO. If the user is required to manually modify any of the orders produced by the ATOT, they are lost if the ATO needs to be retranslated.

The ATOT and WHIP must include a capability to allow the user to choose missions in order to leave then unaffected by multiple translations. The WHIP Translator interface now includes a list of click boxes, one for each mission of a given ATO, to allow the user a capability to selecting corresponding missions that should not be overwritten during subsequent translations. The ATOT uses the list of selected mission to refrain from generating the corresponding mission orders during the translation process.

3.18 JTLS-2017-13074 Improve OPM Network Tables

The road, river, rail, pipeline, sealane, and flight path network data within the Online Player Manual (OPM) is not presented in a consistent manner, and many of the pages are too large to load within a reasonable time period.

The format of the OPM pages has been reworked to display a node-oriented table for each of the networks, and to display arc data as sub-rows with the arc's source and sink nodes. This similar organization was previously used for the pipeline data, but that consisted of tables within tables which was slowing down the load time for the page.

3.19 JTLS-2017-13075 Use XML Vocabulary Files

While adding a new scenario vocabulary item to the dynamic vocabulary files, the question was raised whether both the XML and ASCII versions of the files need to be updated or if all programs had been transferred over to recognize the XML versions. A quick check of the system indicated that only the Reformat Spreadsheet Program (RSP) and the HLA Interface Program (HIP) still used the ASCII version of the files. A determination was made that it would be more time efficient in the future to switch these two remaining programs to use the XML versions than to maintain both versions.

Existing Simscript XML routines from the CEP and Scenario Initialization Program (SIP) were used to add the read capability to the Reformat Spreadsheet Program (RSP). Existing C language vocabulary files were used to give the HIP the same capability. This was done for both the dynamic and static vocabulary files.

While performing this upgrade it was observed that the atoret, a separate program to retrieve JODA data, was only used by the RSP. Previously it had been used by both the RSP and ATOT. The atoret was removed from JTLS Configuration Management and its routines and capabilities were given directly to the RSP.

Lastly it was noticed that an unused vocabulary item, Hex_Edge, existed in the static_voc.xml file. Although its presence did not affect any programs on the system, this unused vocabulary was removed.

3.20 JTLS-2017-13076 Trimmed Network Arcs/Nodes Not Saved

The GIS tool does not save the arcs and nodes of networks that have gone through the node trimming process.

The trimming process runs on a background thread. Road, river, and rail networks are broken down into polylines, and the nodes in each polyline may be removed based on minimum arc length and maximum allowable deviation constraints entered by the user. An exception was being thrown, but not caught, when all the nodes between the first and last node of a polyline were flagged for removal. Since the exception was not caught, the whole process came to a halt

and program control reverted back to the GUI without the user knowing what happened. As far as the user was concerned, the trimming executed cleanly.

The exception was thrown because of an array indexing problem. As each node in the polyline was processed, there were indices that to a node array that were updated. One index was the index to the current node being evaluated; a second index was the index to the node immediately following the current node. The indices were referenced properly except for the case where all the nodes between the first and last node of the polyline were flagged for removal where an array out of bounds exception was thrown. The index referencing has been corrected.

3.21 JTLS-2017-13077 ATO Mission Type Config File Incorrect Mappings

Several mission type mappings defined in the linking file are incorrect. These are types: GAMC, GJCP, GMED, GSEC, GSPT and GSRI. In all cases the stationing type is not "Alert" as it should be. This causes the ATOT to mis-translate these missions.

The ato_constants.xml file was modified to correct the stationing for each of these mission types.

3.22 JTLS-2017-13078 ATO Parser Incorrect ATO ID Number

The F068 specification for the NATO Message Text Format used by the ICC program describes the proper location within a message for obtaining the identification number of the ATO. However, messages generated by the ICC program places the ATO identification number in a specific reference line located near the top of the message but different from the location described in the F068 specification. The Parser is not obtaining the ID from this location and therefore always gets an incorrect ID for messages in the F068 format.

The Parser was modified to locate and take the ATO identification number from the location where the ICC program places it in the ATO message. The location is in the third field of the first REF record having "O" as the first field and "ATO" as the second field.

3.23 JTLS-2017-13079 WSM Lock Up

When the save of a new ICP database instructs the Web Services Manager (WSM) to load the new configuration, the WSM locks up for 30-90 seconds.

When saving the Interface Configuration Program (ICP) database, the WSM service monitor requests, or service pings, were not being stopped soon enough and caused contention between service monitor threads and the database reload thread. The contention was mitigated by stopping the service pings before the database load is started.

3.24 JTLS-2017-13080 Tech Tool Order Group Copy Connection Issues

The home path may not always contain the name "home" in the home path name, and the user name was being used to determine between the local and the remote server. These caused connection issues on systems with such conditions.

On a Secure Shell connection, the "pwd" command that prints the working directory is now used to get the true home path name, no matter how the file system paths are named. The system user name is no longer used to determine host machines, but the system copying the Order Groups is maintained as the local host.

3.25 JTLS-2017-13081 Mobility Mission Using Generic Squadron Crash

A user entered a Mobility Mission order and specified the generic squadron option. This option should only be used for Strategic Lift missions. The order entered was not for the Strategic Lift option.

The order panel was changed to check that if the generic squadron option is used, the order is for a Strategic Lift mission.

3.26 JTLS-2017-13082 Short Range Missiles Run Out Of Fuel

Short range missiles fired from aircraft consistently indicated that they ran out of fuel on the way to the target. All indications were that the missiles were fired from an appropriate range and should not have had a fuel problem.

The problem was that the first move for the mission assumed that the full distance that it could travel in the maximum Cruise Missile movement time would be needed. For short range missiles this assumption was not true. The missile flew well past its target and then headed back, thus causing it to run out of fuel. The logic error was fixed.

3.27 JTLS-2017-13083 Air Mission Jumps Home

An air mission had been assigned a return location as part of the original order. The mission was canceled before it ever completed its primary task. The mission jumped back to its original squadron without flying there.

The mission in question was a Mobility mission and it was canceled while it was on the ground at the ordered return location. Since the primary task of picking up supplies at this location had not been completed, the mission executed its last remaining task. This task was a MISSION.COMPLETE task.

The unit associated with this task is the expected return location for the mission. The mission said it was already at the return location and immediately executed the MISSION COMPLETE task. The mission was not at its return location, but was at the planned return location, and the plan was by design not followed because of the cancellation of the mission. When the MISSION.COMPLETE task was executed, the mission immediately went into maintenance at its original launching squadron. It did not fly there.

The logic error was solved. When a MISSION COMPLETE task is now executed, the model changes the planned location for this task to the actual location for the task as identified by the mission's current location.

3.28 JTLS-2017-13084 Improper ATOT Directory Structure

The default linking data files and the user-updated linking data files, which are used by the ATOT, are stored in a directory along with the data files for ATO-created missions. This is a confusing location for operators tasked with data organization. The files should be placed in a separate directory.

The JTLS scenario setup script was modified to create a separate directory for storing both initial link data and user-updated link data. The ATOT was modified to obtain and manage linking data files in the new directory.

3.29 JTLS-2017-13086 Convoy Loading Supplies Crash

A Directed Resupply order for a multi-stop truck convoy was submitted to the model. The CEP crashed when the convoy began loading supplies at its origination.

The crash occurred when the model attempted to access the latitude and longitude of the receiving unit which was null. The receiving unit was accessed from the convoy's SR UNIT HEADED FOR attribute which was also null. The attribute was null because, when the Directed Resupply order is first processed, the SR UNIT HEADED FOR attribute is initialized only for single stop convoys.

New code was added to the routine that begins the loading process: If the receiving unit is null (meaning the convoy is a multi-stop convoy), search the convoy's pending task list for the next offload task to obtain the receiving unit. This change prevents the crash.

3.30 JTLS-2017-13087 ATOT Organize Generated DSA Order Groups

All the DSA orders generated from the ATO by the ATOT are getting placed in a single generic order group. This degrades the user's ability to management and control DSA orders for the game. The generated DSAs should be placed in order groups arranged by airspace usage.

The ATOT was modified to include the ability to carry an airspace usage attribute, with each airspace data structure obtained from the ACO data. With this additional attribute the ATOT was also modified to create separate order groups, named for each usage which hold DSA orders of the same usage type.

3.31 JTLS-2017-13088 OAS Mission Intercepted And Returned Home

A Manual Pair order was submitted for an OAS mission. The OAS mission type changed to DCA and the intercept task was executed. After the DCA mission expended its last air-to-air weapon, the mission did not revert to its previous OAS mission. Instead, the mission returned home.

When a DCA mission expends all its air-to-air weapons, the model checks the previous mission type before sending the mission home. If there is a previous mission type (i.e. AM.OLD.MISSION.TYPE is not equal to zero), the mission reverts to that mission type and

continues. However, the model had failed to set the AM.OLD.MISSION.TYPE to the current mission type when the mission was converted from an OAS to a DCA mission. The missing assignment statement was added to correct the error.

3.32 JTLS-2017-13089 ATOT Improper Load Assignment Error Report

The ATOT does not always detect a load error condition. When no JTLS-configured loads are available for an ATO mission of a specific aircraft type and mission type and also considering the potential types of targets the mission may be tasked with attacking, the ATOT is not always reporting Error 506, which informs the user that the mission is incorrect for the present linking and ATO mission setup.

Two changes were made to the ATOT in order to properly set up the checking parameters. The Target Types List for a mission was not correctly establishing the list of potential targets and not including the name for the standard Load Category items by mission type. Also, the data file containing the load assignments did not have the correct Load Category name for all the categories. The CEP generates this data file so a modification was necessary to fix this. Generally the suffix "_LOAD" was added in to coordinate with the naming in the ATOT.

3.33 JTLS-2017-13090 Mission Needing Fuel Attempts To Run Away

An air mission decided that it needed fuel and scheduled the Head for Fuel task. Later in the routine, the mission decided that it needed to Run Away and the model eventually crashed.

The emergency Head for Fuel and Run Away tasks interfered with one another. The logic error was fixed.

3.34 JTLS-2017-13091 Canceling Offload Unit Task Causes Crash

The user canceled an offload unit task, and the model crashed an hour later.

The events that offload each aircraft used in the mission were not properly canceled. When the events were complete, the model realized that the mission was no longer offloading the unit and the model crashed. The task is now fully canceled.

3.35 JTLS-2017-13092 Crash Ordering Empty Formation To Move

A formation was created and none of the ships had made it to their formation location. They were all still en-route to their assigned station position. The model crashed.

If the user attempts to give any task to a formation that has not been even partially formed, the tasks are now canceled.

3.36 JTLS-2017-13093 Inappropriate Help In Manage BDA Order

The help associated with the Manage Battle Damage Assessment (BDA) order was confusing to users, since it still referred to the concept of a playing surface.

There are currently no restrictions on where a user creates a BDA order. The help was altered to alleviate any confusion.

3.37 JTLS-2017-13094 Manage Pass Intel Order Cannot Be Saved

The Manage Pass Intelligence Order could not be saved. The user wanted to manage when a Force Side sent intelligence information to another Force Side. Each time the user wanted to use the order, it had to be recreated.

A reference field was added to the order and the order can now be saved and recalled from a WHIP.

3.38 JTLS-2017-13095 Error 508 Incorrectly Generated

An HRU without a boat was placed in a dual capable grid. The SVP reported this as Error 508.

This error should only appear if the HRU is placed in a terrain ocean grid and it is not located at its parent unit. The code was corrected.

3.39 JTLS-2017-13097 Orbit Altitude Not Used By Several Air Missions

The order panel incorrectly indicated where the mission's orbit altitude should be placed. The model did not receive this information and the result was that these missions always orbiting at their cruise altitude.

The order panels for all orbiting missions (SEAD, Refuel, Patrol, and EC) were checked, and the placement of this information and the wording used for orbit altitude was made consistent over all orbiting mission order panels.

3.40 JTLS-2017-13098 Altering Escorting Mission's Tasks Crash

The model crashed when the user submitted a Manage Mission Task order for an escorting mission in an Air Mission Package. The user told the mission to go to a base for fuel.

The mission appropriately stopped escorting the package and went for fuel. When the mission completed the refuel task, it attempted to restart its escort task. The model assumed that the escort task would never be started when the mission was on the ground. It assumed that the mission would always start this task from the specified airborne rendezvous point.

This assumption and oversight was corrected. When attempting to start an escorting task, the model checks to make sure the mission is airborne. If it is not, a Task Take Off is automatically scheduled.

3.41 JTLS-2017-13099 ICC Reason Code And Limiting Factor Not Reset

When an airbase is not fully operational, the model assigns a limiting factor and a reason code. These two values, along with the operational status of the airbase, are sent to ICC via the JTOI. When the airbase solves its operational problem and become fully operational again, the ICC is notified by the JTOI of the new operational status. The limiting factor and reason code are not reset to blank as they should be since the base is fully operational.

When setting a base to fully operational, the JTOI now clears the reason code and limiting factor.

3.42 JTLS-2017-13100 LOGFAS Available Systems Reported Incorrectly

The LOFAS service informs the NATO LOGFAS system of the number of combat systems that are operational at a unit. The service was sending available systems, and NATO correctly preferred that LOGFAS receive the value of manned systems.

The change was implemented.

3.43 JTLS-2017-13101 Improve Unrequested Intelligence Message

Users requested that the unrequested intelligence report, generated when using communications intelligence (COMINT), include the graphics symbol information for the unit on which the intelligence was collected.

The graphics symbol was added to only the MTF version of the report.

3.44 JTLS-2017-13102 Crash Sending Unowned Target Intelligence

The model crashed when the Controller attempted to send a Pass Target Intelligence order for a black or unowned target.

The problem was solved.

3.45 JTLS-2017-13103 NATO ICC Not Informed Of All Aircraft Losses

NATO's Integrated Command and Control (ICC) system is not being informed of all aircraft losses.

A review of the code was made. ICC is not informed of aircraft losses under the following circumstances: Surface-to-Air kill, Air-to-Air kill, crash landing, kills from external models, and when the Controller kills an aircraft.

3.46 JTLS-2017-13104 Infinite Loop Checking Terrain Masking

The model went into an infinite loop attempting to determine if a sensor attempting to detect an air mission was being masked by intervening terrain.

The issue was caused by a rounding error in the computation. The issue was fixed.

3.47 JTLS-2017-13105 Incorrect Filters For Associated Objects

The order MANAGE AIR MISSION TASKS option Change Tasks, Associated Object, Unit: restricts unit selection to same side units. This filter is incorrect for tasks such as FIRE.WEAPON that require an enemy associated object unit. The order option cannot be used correctly in this condition.

The order panel restriction of same side units for order MANAGE AIR MISSION TASKS option Change Tasks, Associated Object, Unit was removed. Any active unit from any side may now be selected. CEP code was updated to include appropriate unit checks, depending upon the task, for the Change Tasks, Change Associated Object, Change Unit option in order MANAGE AIR MISSION TASKS. The allowable side/relationship data checks were coded for the following Air Mission Tasks:

- Alert - Same side unit

- New HQ - Same side unit

- Load/Offload Supplies - Same side, friendly or neutral unit

- Load/Offload Unit - Same side, friendly or neutral unit

- Refuel - Same side unit

- Rearm - Same side unit

- Close Air Support - Same side, friendly or neutral unit

- Fire Weapon - Suspect or Enemy unit

3.48 JTLS-2017-13106 Incorrect River Created During Game

The user created a river during game execution, and the model crashed the first time a unit attempted to cross the river.

The problem was that the river created did not match any of the allowable river barriers defined in the database. The SVP checks for this situation; therefore, the model should make the same checks. If the situation is found to happen, the model automatically corrects either the depth or width of the river so it matches on of the available barrier types.

This error was easy to make because the automatic database upgrade script, made the deepest available river 50 feet deep, but the order panel to create a new river had a default depth of 100 feet. Besides insuring the error cannot occur, the order panel was changed to make the default river depth a legal depth given the values created during the database upgrade procedure.

3.49 JTLS-2017-13107 Naval Units Do Not Use Fuel

Naval units were not using fuel according to the database parameters.

The problem was solved.

3.50 JTLS-2017-13108 World-Wide Sealane Optimization Not Working

When a ship is told to move, the model first determines if a straight line great circle path from the ships current location to its new ordered location intersects land. If it doesn't, the optimization routine only looks for a sealane path within a defined region, based on database parameters and the distance between the two points. This region is defined so the ship does not go out of its way in an attempt to find a sealane route.

If there is intervening land, the model allows the sealane optimization algorithm to look over the full sealane network for a good path. This option was always returning a "No Sealane Route Found" result. This was not true.

The logic error resulting in this situation was solved. The model now correctly optimizing over the entire sealane network if there is intervening land between where the ship is and where the ship wants to go.

3.51 JTLS-2017-13109 Crash Altering OPAREA Polygon

The model crashed when the user submitted an order to alter the polygon associated with an OPAREA.

The problem had nothing to do with the OPAREA or order submitted. The problem occurred because when an air mission patrolling the OPAREA was killed by surface-to-air fire, the mission was not removed from the OPAREA's set indicating the objects currently patrolling in the area. When the mission is killed, the model now insures the mission is no longer referenced in the OPAREA's set.

3.52 JTLS-2017-13110 Controller Setting Fast Mission Speed Uses Fuel

The Controller decided to hide a mission and then set its speed to a very fast movement rate to get it back home as quickly as possible. The mission ran out of fuel as a result of this action.

The model was changed. If an air mission has a speed greater than its maximum allowable speed, as stated in the database, the mission no longer consumes fuel. the only way the mission could be in this situation is if the controller has modified the mission for some specific purpose.

3.53 JTLS-2017-13111 HRU Report Not Sent To HRU's Controlling WHIP

The HRU intelligence collection report was going to the player responsible for the HRU's parent's intelligence function. It should also be sent to the WHIP responsible for the HRU.

This change was made.

3.54 JTLS-2017-13112 Emplaced Bridge Road Network Too Good

Users complained that when they emplaced a bridge, the model automatically build a road to that bridge from the closest road network. Theoretically, this could be several hundreds of miles. Users felt this was inappropriate.

When emplacing a bridge over a river or other barrier, the model still automatically builds a road to and from the emplaced bridge, but no larger than the database parameter COLOCATED DISTANCE. If no node can be found on each side of the bridge arc, then the rad arc connecting the bridge too an existing network is not created.

3.55 JTLS-2017-13113 Model Crashed Reading Checkpoint IADS Data

The model crashed reading in the IADS data on a checkpoint.

An HRU owned some magically created targets that were part of the IADS network. When the HRU rejoined its parent, the magically created targets were properly not given to the parent unit. Instead these target were inactivated and lost any reference to the side that owned them. when reading in a checkpoint, the IADS network to which the targets belonged could not be identified and the model stops reading in the data because of this inconsistency.

These magically created and inactivated targets are now properly removed from the IADS network and the checkpoint restart issue no longer occurs.

3.56 JTLS-2017-13114 Air Missions Appear On WHIP With No Name

Several air missions were seen on a WHIP with no name.

The problem mission were missions that had completed or been destroyed. The problem occurred, when the JODA was brought down to investigate an unrelated issue. When the JODA was restarted, the model properly informed the JODA of these missions, but the logic did not properly pass a name for these inactive missions.

3.57 JTLS-2017-13115 Modify Number SEAD In Package Causes Debug

The user submitted a Modify Air Mission Package Order and indicated that only the number of needed SEAD should be changed. This is a perfectly legal order, but the model entered the debug mode unnecessarily.

The issue was corrected. It turns out that this was not a crash, but simply an inadvertent entry into the debugger. A simply "C" for continue resulted in the normal execution of the order.

3.58 JTLS-2017-13116 Improve IMT Help For Cumulative WIA

Users complained that the information provided on the IMT Combat System screen was difficult to understand.

The help for the column labeled Cumulative WIA (Wounded In Action) was rewritten for clarity.

3.59 JTLS-2017-13117 Aircraft Not In Squadron LOGFAS Holdings

Aircraft with proper identification codes (RIC) were not showing up in LOGFAS holdings.

The logic error was corrected.

3.60 JTLS-2017-13118 Change Method To Generate LOGFAS NIC

The SIP automatically creates a National Identification Code (NIC) for combat systems and supplies that have a RIC code. NATO requested that a different algorithm be used for this automatic generation function.

If no NIC code is specified for an item that has a RIC code, the LOGFAS initialization procedure now creates a NIC code that is a simply concatenation of the owners two-digit Political Country code and the RIC code.

3.61 JTLS-2017-13119 Crash Changing RECCE Mission Type

The model crashed attempting to decide if it was legal to change the mission type of an existing reconnaissance mission when the aircraft had no default load specified in the database.

The typographical error that caused the issue was fixed.

3.62 JTLS-2017-13120 Unit Attempts To Use Picked Up Bridge

A unit continually attempted to use a bridge road arc even after the bridge that represented the arc had been picked up.

The optimization algorithm did not check to determine if the bridge had been picked up; therefore, the algorithm indicates that a good route was found. When it came time to move across the bridge, the operational logic did check and said the route was blocked. This caused the unit to re-optimize and again it came to the conclusion that a good route was found.

The optimization logic was corrected and it now recognizes when a bridge arc is no longer operational since the bridge had been picked up.

3.63 JTLS-2017-13121 Bridge Ops Message Not Going To PET WHIP

When a Pending Execution Task (PET) is complete, if there is no easy way to get the information from the WHIP, a message is generated. This supposed to go to the WHIP that entered the task and the WHIP responsible for the object that completed the task. In the case of a complete bridge operation, the PET owner was not informed.

The issue was solved. Now the owner of the PET and the WHIP assigned to the ground function of the unit that accomplished the task are each informed of the task completion.

3.64 JTLS-2017-13122 Mobility Mission Jumps Home

If a mission is told to recover at a different location from which it launched, the model sets the location of its Mission Complete Task to the location of the recovery location. This is done so the path of the mission looks like the user's plan for the mission. If the mission cancels before reaching its primary task, the mission by design does not transfer to the new location. When the mission executes the Mission Complete task, it goes to the planned recovery location and then jumps back magically to the location from which it originally started.

The logic issue associated with this error was solved. When the Mission Complete task is executed, the model determines which location should be used as the mission's recovery location.

3.65 JTLS-2017-13123 Slow Moving Weather Not Immediately Displayed

A very slow moving weather front did not display until after its first movement and that could be hours from the time it was supposed to start.

A weather front move event is scheduled when the front moves approximately 15 seconds in distance or in a time equal to the database parameter called MAX MOVE TIME WEATHER FRONT. To solve the problem, the model now schedules the first weather front move event at the time it is suppose to start instead of the time of its first move. The result of this fix is that the weather front is now displayed on the WHIPs from the moment it starts to exist within the model.

3.66 JTLS-2017-13124 Unit Hit In An Attack Sent Near Miss Report

A unit hit and damaged in an attack sent a near miss report. This was inconsistent with the next message that said it was damaged.

The logic for the near mission report was improved. Any unit within COLOCATED DISTANCE of an impact location that has visual sensors covering the impact location and was not damaged by the impact is now eligible to send the report. The unit on each side closest to the impact location that meets the above eligibility requirements is selected as the one unit to send the near miss report.

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.

APPENDIX A. ABBREVIATIONS AND ACRONYMS

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

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

BADGE   Bilateral Air Defense Ground Environment (used by Japan Defense Agency)

BAI   Battlefield Air Interdiction

BDA   Battle Damage Assessment

BDE   Brigade

BN   Battalion

C3   Command, Control, and Communications

C3I   Command, Control, Communications, and Intelligence

C4I   Command, Control, Communications, Computers, and Intelligence

CA   Civil Affairs

CADRG   Compressed ARC Digitized Raster Graphics

CAP   Combat Air Patrol

CAS   Close Air Support

CAT   Category

CCF   Central Control Facility

CCP   Command Control Prototype

CCU   Controller Change Unit

CEP   Combat Events Program

CMDR   Commander

COP   Common Operational Picture

CP   Combat Power

CS   Combat System

CSP   Combat System Prototype

CTAPS   Contingency Tactical Air Planning System

CTG   Commander Task Group

CTRL   Control keyboard command

DCA   Defense Counter Air

DCL   Digital Command Language

DDS   Database Development System

DEMSDB   Demonstration Standard Database

DISA   Defense Information Systems Agency

DIV   Division

DMA   Defense Mapping Agency

DoD   Department of Defense

DOS   Days of Supply

DPICM   Dual Purpose Improved Conventional Munitions

DS   Direct Support

DSA   Directed Search Area

DTG   Date Time Group

EC   Electronic Combat

ECM   Electronic Counter Measure

ECP   Engineering Change Proposal

EEI   Essential Elements of Information

ELINT   Electronic Intelligence

ELS   Entity Level Server

EODA   Entity Level JTLS Object Data Authority

ETA   Estimated Time of Arrival

FARP   Forward Arming and Refueling Point

FLP   Fire Lethality Prototype

FLOT   Forward Location of Troops

FOL   Forward Operating Location

FWL   Frederick W. Lanchester (originated a differential equation model of attrition)

GAL   Gallon

GCCS   Global Command and Control System

GRTE   Ground Route

GS   General Support

GSR   General Support Reinforcing

GUI   Graphical User Interface

HARM   High-speed Anti-radiation Missile

HE   High Explosive

HELO   Helicopter

HMMWV   High Mobility Multipurpose Wheeled Vehicle

HQ   Headquarters

HRU   High Resolution Unit

HTML   Hypertext Markup Language

HTT   High resolution unit Target Type

HUP   High resolution Unit Prototype

ICM   Improved Conventional Munitions

ICP   Interface Configuration Program

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

LOGIN   Logistics Input

LOGREP   Logistics Report

LONG   Longitude

LOTS   Logistics Over The Shore

LR   Long Range

M&S   Modeling and Simulation

MAPP   Modern Aids to Planning Program

MB   Megabyte

MCP   Mobility Counter-mobility Prototype

MCR   Model Change Request

MG   Machine Gun

MHE   Material Handling Equipment

MIP   Model Interface Program

MOGAS   Motor Gasoline

MOPP   Mission-Oriented Protective Posture

MOSAIC   NCSA user interface software

MOTIF   X Window System graphical interface

MP   Maneuver Prototype

MPP   Message Processor Program

MSC   Major Subordinate Command

MSG   Message

MTF   Message Text Formats

MUREP   Munitions Report

MUSE   Multiple Unified Simulation Environment

NCSA   National Center for Supercomputing Applications (University of Illinois)

NEO   Noncombatant Evacuation Operations

NFS   Network File Server

NGO   Non-Governmental Organization

NIS   Network Information Service or Network Information System

NM   Nautical Mile

NTSC   Naval Telecommunications System Center

OAS   Offensive Air Support

OBS   Order of Battle Service (formerly UGU: Unit Generation Utility)

OCA   Offensive Counter-Air

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

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

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

APPENDIX B. Version 5.0.5.0 STANDARD DATABASE CHANGES

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

APPENDIX C. Version 5.0.5.0 DATABASE CHANGES

No changes were made to the JTLS-GO 5.0.5.0 database.