

# JTLS-GO

## Version Description Document

November 2016



DEPARTMENT OF DEFENSE  
JOINT STAFF J7  
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JOINT THEATER LEVEL SIMULATION - GLOBAL OPERATIONS  
(JTLS-GO 5.0.0.0)

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

JTLS-GO 5.0.0.0 is a Major 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 5.0.0.0 of the configuration managed Joint Theater Level Simulation - Global Operations (JTLS-GO<sup>®</sup>) software suite. JTLS-GO 5.0.0.0 is a Major delivery for the JTLS-GO 5.0 series of releases.

JTLS-GO 5.0.0.0 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 5.0.0.0 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 Obsolete/Outdated Documents

The *JTLS ATO Translator User Guide* has been deleted from the documentations suite. It is replaced by a new Air Tasking Order (ATO) Services User Guide, which covers both the new ATO Translator (ATO-T) and the new ATO Generator (ATO-G).

#### 1.2.2 Unchanged Documents

JTLS-GO 5.0.0.0 is a major redesign of the JTLS-GO system and all of the documentation has been updated for this release.

#### 1.2.3 Updated Documents

- *JTLS-GO Analyst Guide* (JTLS-GO Document 01, Version 5.0.0.0)
- *JTLS-GO Controller Guide* (JTLS-GO Document 04, Version 5.0.0.0)
- *JTLS-GO Data Requirements Manual* (JTLS-GO Document 05, Version 5.0.0.0)
- *JTLS-GO DDS User Guide* (JTLS-GO Document 06, Version 5.0.0.0)

- *JTLS-GO Director Guide* (JTLS-GO Document 07, Version 5.0.0.0)
- *JTLS-GO Executive Overview* (JTLS-GO Document 08, Version 5.0.0.0)
- *JTLS-GO Installation Manual* (JTLS-GO Document 09, Version 5.0.0.0)
- *JTLS-GO WHIP Training Manual* (JTLS-GO Document 10, Version 5.0.0.0)
- *JTLS-GO Player Guide* (JTLS-GO Document 12, Version 5.0.0.0)
- *JTLS-GO Standard Database Description* (JTLS-GO Document 14, Version 5.0.0.0)
- *JTLS-GO Software Maintenance Manual* (JTLS-GO Document 15, Version 5.0.0.0)
- *JTLS-GO Technical Coordinator Guide* (JTLS-GO Document 16, Version 5.0.0.0)
- *JTLS-GO Entity Level Server User Guide* (JTLS-GO Document 19, Version 5.0.0.0)
- *JTLS-GO Federation User Guide* (JTLS-GO Document 20, Version 5.0.0.0)
- *JTLS-GO C4I Interface Manual* (JTLS-GO Document 21, Version 5.0.0.0)
- *JTLS-GO Version Description Document* (JTLS-GO Document 17, Version 5.0.0.0)

#### 1.2.4 New Documents

- *JTLS-GO Air Services User Guide* (JTLS-GO Document 03, Version 5.0.0.0)

#### 1.2.5 Delivered Software Components

JTLS-GO 5.0.0.0 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)
- Terrain Modification Utility (TMU)
- 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-Hosted Interface Program (WHIP) and its component programs:
  - Apache Server (APACHE)
  - JTLS XML Serial Repository (JXSR)
  - Order Management Authority (OMA)
  - Synchronized Authentication and Preferences Service (SYNAPSE)
  - XML Message Service (XMS)
  - Total Recall Interactive Playback Program (TRIPP)
- Entity Level Server (ELS)
- JTLS Operational Interface (JOI) for both OTH-Gold and Link-16 generation
- Tactical Electronic Intelligence (TACELINT) Message Service
- KML Operational Interface (KOI)
- JTLS Transaction Interface Program (JTOI)
- JTLS Interface Network Navigator (JINN)

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

Instructions for installing JTLS-GO 5.0.0.0 are provided in the *JTLS-GO Installation Manual*. Installing a previous version of JTLS prior to installing JTLS-GO 5.0.0.0 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.

### 1.2.6 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 5.0.0.0 requires the following versions of support software, including operating systems, compilers, scripting utilities, database tools, transfer protocols, and display managers.

- Operating system for the model: Red Hat Linux Enterprise Edition Version 6.8 (ES), 64-bit architecture.

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

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

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

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

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

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

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

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

- There are no restrictions on the operating system for client workstations, except that the operating system must have a Java-enabled web browser. JTLS-GO 5.0.0.0 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 112 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 112, which expires on 17 January 2017. A new version of JTLS-GO will be released prior to that expiration date.

JTLS-GO has completed the IA program mandates and the JTLS-GO 5.0 series of releases has been granted an Authority To Operate (ATO) on DoD systems. Contact the U.S. Government Program Manager, Mr. Don Weter.

- JTLS-GO database tools require use of a certified Oracle database server and the full Oracle Client installation for runtime requirements. Refer to [Section 1.5.2](#) of this chapter for additional installation details.
- Windows software, X11R5 server, Motif 1.2 Library, Motif Window Manager: These items are included as part of the supported versions of Red Hat Linux ES.
- TCP/IP is required for inter-process communication between the JODA data server and all user interface programs. The version of TCP/IP included with the supported versions of Red Hat Linux ES is sufficient.
- The Perl script language is used by the JTLS-GO system and game setup scripts. The version of Perl included with the supported versions of Red Hat Linux ES is sufficient. The Perl program is typically located in the /usr/bin directory. If Perl is installed in a another location, a link should be created from the /usr/bin directory to this program.
- SIMSCRIPT II.5 (SIMSCRIPT to C) translator/compiler: SIMSCRIPT is required for recompiling JTLS-GO code. It is not necessary to have a SIMSCRIPT compiler to execute JTLS-GO, because all JTLS-GO software executables are statically linked with the SIMSCRIPT libraries. The compiler is needed only if you are a U.S. Government organization that can obtain source code and plan to re-compile JTLS-GO SIMSCRIPT code. To obtain a SIMSCRIPT compiler, contact CACI Inc.

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

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

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

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

- KML Operational Interface (KOI)

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

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

### 1.3.2 JTLS-GO High Level Architecture Compliance

The JTLS-GO 5.0.0.0 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 5.0.0.0 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

Significant database structure differences exist between JTLS-GO 5.0.0.0 and any previous 4.1 series database. For this reason, after installing JTLS-GO 5.0.0.0, you **must** unload and reload any JTLS 4.1 series scenarios that you may have.

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

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

Prior to unloading your JTLS-GO 5.0.0.0 formatted data from your Oracle database server into a JTLS-GO 5.0.0.0 scenario ascii file, you must execute the JSYMS program using the procedure listed below, which will reorganize the structure of the .gs and .scf symbols-related files.

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

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

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

The JTLS-GO Default Symbol Set delivered with this release has been modified to use the Us 2525C symbology standard and well as the NATO Joint Military Symbology [APP-6(c)] standard. If you choose to propagate this new Default Symbol Set to any of your scenarios that use the 4.1 Default Symbol Set, use the procedure that follows. You should not make any modifications to the Default Symbol Set, but you are free to copy the Default Symbol Set and create your own set to meet your needs..

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

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

#### 1.4.3 Standard Database Changes

Additional Standard Database changes that are applicable to JTLS-GO 5.0.0.0 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 this version, 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 \$JGAME/{scenario} directory before setting up their scenario for execution. Prior to running Option 3 - "Setup System for a Specific Scenario" of the JTLS-GO menu, all users must remove the existing files in their scenario game directory. Failure to clean-up the \$JGAME/{scenario} directory will result in a program crash while generating the OPM (Option 4).

### 1.5.2 Oracle Compatibility and Installation

A full Oracle Client installation (not Instant Client) that matches your database server version is currently a requirement for running some JTLS-GO applications. The Oracle Instant Client is not sufficient for JTLS-GO applications because Oracle utilities, such as sqlldr, imp, exp, tnsping, etc., are missing. If you have applied a patchset to your database server, the same patchset should be applied to the Oracle Client installation. A 64-bit Oracle Client installation must be used. The JTLS-GO scenario/database modification process also expects Oracle 11.2.0.1 or higher full Oracle Client installation. Some sites NFS mount their database server as Oracle Client; other sites prefer a full install of the Oracle Client to a different directory that mounts (simple NFS will suffice) to JTLS-GO. Your system administrator can choose the appropriate installation. Assigning the full Oracle Client installation location (or mount point) as the ORACLE\_HOME in the JTLS .cshrc file allows connecting to an Oracle database server (11.2.0.1 or higher - including 11gR2 XE) running on any Oracle-certified database server platform.

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

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

### 1.5.3 Disabling Certificate Authority

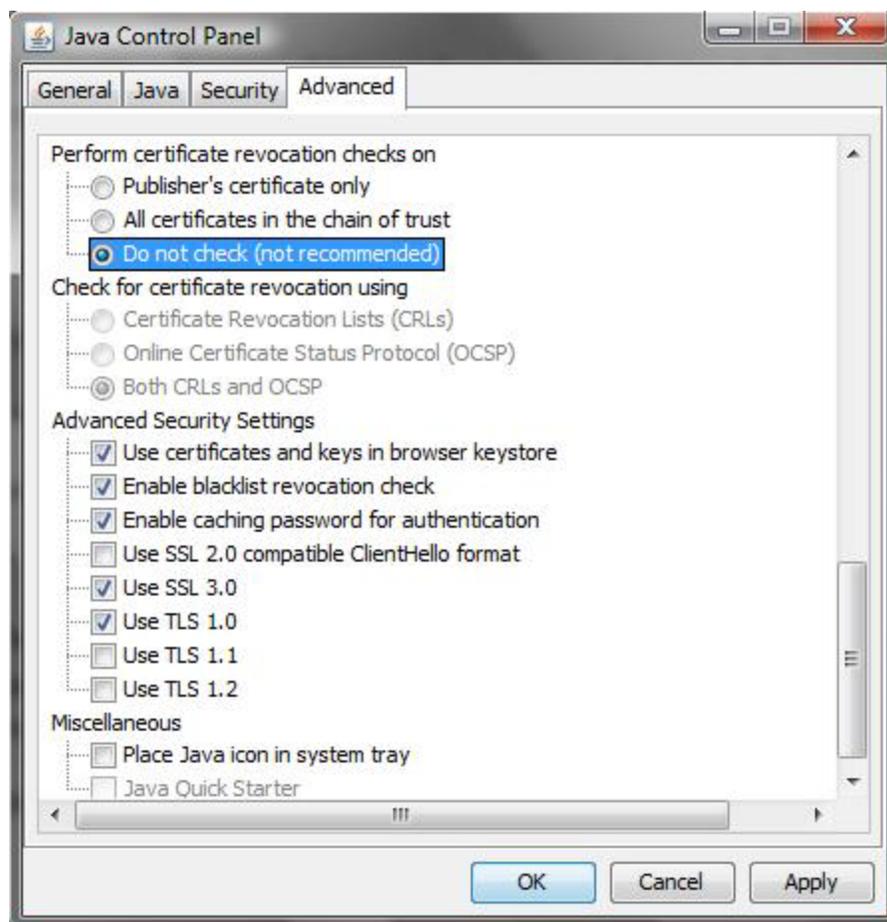
Industry standard programming practices strongly recommended that Web Start technologies be signed by a Certificate Authority (CA) to validate that an application being run comes from a trusted and registered source under the PKI. Keeping with high security standards, R&A has opted to sign its web enabled applications with a certificate from the COMODO, which uses the Public Key Infrastructure (PKI) to validate the digital signature. Local area networks, intranets and standalone systems that have no outside connection to the Internet must configure their

installation to disable certificate revocation checks. If this step is not taken under a closed environment, the JTLS-GO web-enabled applications will experience a significant delay in start up while the PKI attempts to validate the certification on COMODO's servers via the Internet.

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

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

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



**Figure 1.1 Control Panel**

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

#### 1.5.4 Map Vector File Format Update

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

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

The script has 2 usages:

1) To convert a single file:

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

2) 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 5.0.0.0, 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 in the input files.

## 2.0 ENGINEERING CHANGE PROPOSALS

This chapter summarizes model capabilities added to JTLS-GO 5.0.0.0 as a result of implementing authorized Engineering Change Proposals (ECPs).

### 2.1 JTLS-0017 - Ground Directives Egress Route

#### Summary of Model Change Request

Add the capability to specify an Ingress Path and/or Egress Path to task-based Ground Orders. For example, a unit could be directed where to move after a target is attacked or destroyed.

#### Design Summary

Each task-based Ground Order panel has fields where the desired Ingress Path and/or Egress Path can be specified. Each path is converted to a separate Move Order that becomes a series of movement tasks in the ground object's Execution Plan.

### 2.2 JTLS-0076 - Airlift Supply Alternative Landing Location Logic

#### Summary of Model Change Request

Improve the logic used to select an appropriate alternative landing location for delivery of airlifted supplies. Currently, the model does not ask where the receiving unit is located, and does not consider friendly or neutral landing locations which are close by.

#### Design Summary

All air missions have an execution plan or a list of tasks that should be accomplished. The landing base for the pickup and drop-off of airlifted supplies can be specified and changed at any time prior to the execution of the task. When on the ground, the mission must simply be within the database parameter COLOCATED DISTANCE to provide or receive the supplies.

### 2.3 JTLS-0110 - Load Assignment DDS Summary Print

#### Summary of Model Change Request

Create a Database Development System (DDS) report from the Online Player Manual (OPM) that prints the contents of the Load Assignment array only for aircraft that exist in the scenario.

#### Design Summary

An Aircraft Load Assignment Array report was added to the DDS, which is able to print the Load Assignment array for individual aircraft classes, a list of aircraft classes, or for an entire Force Side.

## 2.4 JTLS-0120 - Change Emergency Refuel Location

### Summary of Model Change Request

Provide the capability to alter the assigned Emergency Refuel Location after a mission order is entered.

### Design Summary

The concept of the Emergency Refuel Location has been removed from the model because of the flexible execution plan concept. If an Air Mission decides that it needs fuel, either a Base Fuel or Tank Fuel task is automatically added to the mission's execution plan. The user now has the ability, using the Manage Mission Task Order, to change the task's specified tanker or base.

## 2.5 JTLS-0147 - Display Current Engineering Task

### Summary of Model Change Request

Allow the WHIP SITREP to directly display a unit's current engineering task. This item is reported on the SITREP obtained from the Message Processor Program (MPP). Also improve the WHIP SITREP to indicate whether the unit is repairing a target, destroying a target, emplacing mines, or clearing mines.

### Design Summary

Land based units also have an execution plan allowing a user to specify multiple sequential tasks that should be implemented. As with all object execution plans, land unit plans can be viewed on an Information Management Tool (IMT) screen. Engineering tasks, such as destroying targets, repairing targets, and emplacing mines are placed on a unit's execution plan and can be viewed from an IMT. Each task has a task sequence number. A sequence number of zero indicates that the task is currently executing.

## 2.6 JTLS-0151 - Constant Sunrise/Sunset

### Summary of Model Change Request

Represent the proper light condition based on location and the current date time group.

### Design Summary

In previous versions of JTLS, the light condition was constant over the full game board. Since JTLS-GO has removed the game board concept, the ECP had to be implemented. The model now includes the mathematical equations to compute whether it is day or night at a specified latitude and longitude location and the specified game time within the scenario. The impact of the light condition has not changed within the model. The user can view the light terminator on the WHIP map.

## 2.7 JTLS-0170 - IMT Air Mission Destination 2 Location Field

### Summary of Model Change Request

The Air Mission IMT shows Destination 1 Location for Insert/Extract and Air Transport Missions, but the Destination 2 Location is blank. Both of these missions frequently have multiple stops. As a minimum, the second destination should be listed. Ideally, the current next two locations on the Insert/Extract List or Transport Instructions would be shown on the Air Mission IMT display.

Additionally, all Air Missions should list their final destination, including home base location, when it is within the next two destinations.

### Design Summary

The Execution Plan concept solves all of the problems mentioned in this ECP. Each task and each stop, including the mission's final task, can be viewed on the Air Mission Task IMT screen.

## 2.8 JTLS-0185 - Status Of Destroyed Shows For Returned Convoys

### Summary of Model Change Request

The IMT displays a Destroyed status for a Convoy that returned to its home unit. The row describing the Convoy data does not appear when the Reload option is selected or when the IMT screen is closed and reopened. Only objects actually destroyed (for example, by air attack) should be indicated as Destroyed status objects. Objects that have returned to their home units should be indicated as Completed status objects.

### Design Summary

The final task for a Convoy is called its "Mission Complete" task. When this task is executed, the convoy is assigned a final status of either "Completed", "Destroyed", or "Canceled". After assigning this status, the convoy is removed from the game. If the convoy is being displayed on the IMT when the "Mission Complete" task is executed, the user can view the convoy's last status update. If the IMT is refreshed or reopened, the convoy information will no longer be displayed.

This means that the portion of the ECP which expects the convoy to remain available on the IMT for a period of time has not been implemented. If this capability is desired in the future, a new ECP should be submitted through proper channels.

## 2.9 JTLS-0197 - Enhance Close Air Support Current Operations

### Summary of Model Change Request

If an Offensive Air Support (OAS) mission is sent to conduct Close Air Support (CAS) operations or attack a target, users cannot abort the operation and send the aircraft back to the mission's

alert base or orbit station. The operator should be able to break off the attack in a manner similar to the break-off of an intercept by a Combat Air Patrol.

### Design Summary

All tasks, including the “CAS” task and “Fire Weapons” task, can now be added or removed from an OAS mission’s execution plan using the Manage Air Mission Tasks order. When a task is canceled, the mission will simply move on to its next assigned task which could be either another “CAS” task, “Fire Weapon” task, “Alert” task, “Orbiting” task, or if desired a “Mission Complete: task.

#### 2.10 JTLS-0202 - Reserve Air Assets

### Summary of Model Change Request

Reservation of aircraft is possible only when a specific mission is assigned to the aircraft. Air planners can reserve aircraft without tasking a mission and later define the role or mission of the aircraft. Other operators cannot allocate the reserved aircraft. Allow operators to reserve aircraft from a Squadron for a specific period by a specific user. Only that user would be allowed to task the aircraft during the alert period.

### Design Summary

Every JTLS-GO air mission type can now be placed on Alert, which reserves the aircraft for future use. Once on alert, the mission can be assigned to accomplish any desired task using the Manage Air Mission Task Order.

It is possible to place a mission on Alert as one type of mission, and alter the mission type prior to assign tasks. For example, it is possible to place an aircraft on alert as a Patrol mission and decide to alter its type to a Reconnaissance mission prior to assigning a specific execution task. The only restriction is that the mission’s aircraft type has an entry in the Load Assignment Array for the new mission type.

Defensive Counter Air (DCA) missions and OAS missions are still automatically assigned to intercept detected enemy missions or fulfill CAS requests respectively. If for a specific DCA or OAS mission, the desire is to not allow the mission to be automatically assigned, the original order for the mission should set the “Manual Pair” to “No”.

#### 2.11 JTLS-0203 - Packages Without Air-to-Ground Missions

### Summary of Model Change Request

JTLS Packages include at least one Air-to-Ground attack mission. Air planners requested the capability to fly Packages without this requirement. For example, a Package-leading mission could be a RECCE mission. It is also desired to be able to keep several missions together for

other purposes, such as escorting a VIP mission, creating an Orbiting OAS mission package, or even an alert mission package.

### Design Summary

Air Mission Packages are designed to accomplish a set of fairly complicated coordination rules, which require that the package include at least one Attack mission. This cannot nor should be changed. Instead, the capability described in the ECP has been implemented as a new type of Task that can be given to absolutely any Air Mission type. This new task is called a “Shadow” task. “Shadow” is not a type of mission, it is a task for a specific mission.

A “Shadow” task can be given to any mission and it specifies which own-side mission should be shadowed. A mission conducting a “Shadow” task will go where the mission that is being shadowed goes. While shadowing, the missions will stay together in a coordinated manner. The user has the ability to indicate whether the shadowing mission should land when the shadowed task lands or should remain airborne even if the shadowed mission lands.

## 2.12 JTLS-0321 - Display Current Operations

### Summary of Model Change Request

Expand the capability to monitor current operations for air missions, ground units, and convoys by providing access to tasking order data via IMT displays for each object.

### Design Summary

In previous versions of JTLS, only Naval Units, Formations, and High Resolution Units (HRUs) could have execution plans. In JTLS-GO, all objects use the Execution Plan concept. Thus, Land-based Units, Naval Units, HRUs, Formations, Air Missions, and Convoys each can be given a sequence of tasks to accomplish. Each object type has its own IMT Task screen that can be used to view currently scheduled object tasks.

The manner in which tasks are managed and displayed for each object type has been consistently implemented, making it easier to understand model operations.

## 2.13 JTLS-0405 - JTLS Air Symbology

### Summary of Model Change Request

JTLS symbology must be upgraded to comply with Military Standard 2525B and match other simulation models, as well as current C2 systems. JTLS is non-standard in virtually all air symbols, which are not meaningful to a training audience that uses the Common Operational Picture (COP).

## Design Summary

A new JTLS-GO “Default” symbol set has been created, replacing the older JTLS icon data. The new symbol set is compatible with the US and NATO common military symbols as outlined in MIL-STD-2525 and APP-6A. Although not all rules of the standards have been adhered to, an object’s displayed symbol will change based on the relationship of the symbol to the viewing WHIP.

In particular there are two standard concepts which were not used for JTLS symbol representation. These are:

- The symbol standards do not include the concept of color coding by side; instead they are normally color coded based on relationship. The design team felt that adhering to this standard would greatly diminish the WHIP usefulness; therefore, symbols remain color-coded by the side to which the object belongs.
- The symbol standards hold different symbols for “Friendly”, “Neutral”, “Enemy”, and “Unknown” objects. JTLS-GO currently does not represent the concept of an “Unknown” object except for Air Missions. The decision was to not build “Unknown” versions of each symbol, until the concept of an “Unknown” unit is built into JTLS-GO.

### 2.14 JTLS-0435 - Optional Refueling

#### Summary of Model Change Request

Under current air routes, users can designate that an aircraft stop at a specific base and refuel. Allowing the model to select where the aircraft refuels distorts the numbers when the user is tracking fuel consumption. Provide a similar user option to direct aircraft whether to refuel or not at a specific base.

#### Design Summary

In previous versions of JTLS, a user could tell an Air Mission to land at a specific base, naval unit, or FARP. Once the mission landed, it automatically rearmed and refueled. This is not always desired. The purpose of this ECP is to allow the user to decide whether the mission should or should not rearm and refuel.

Two new flags were added to the “Air Route” utility panel, a “Refuel Flag” and an “Rearm Flag”. When set to “Yes”, an appropriate task to the mission’s execution plan. For example, if a route point indicates that the mission should land, a “Land” task is given to the mission. Based on the setting of the flags, the mission may also be given a “Refuel” task and/or a “Rearm” task. Thus, by looking at the mission’s execution plan on the IMT, the user can easily determine (and change if necessary) the mission’s orders to refuel and/or rearm at each stop along its route.

## 2.15 JTLS-0502 - Change Heading, Speed, And Altitude

### Summary of Model Change Request

Provide all operators at all workstations with the capability to override all JTLS automatic flight profiles and restrictions, regardless of Faction, Side, or control level. These capabilities apply to all phases of flight, from mission initialization to ATOT processing and completion of the mission (landing).

### Design Summary

The new Manage Air Mission Tasks order allows both a mission's heading and altitude to be changed. The current heading is changed by adding a new route segment (move task) using the executed now option. The "Change Mission Parameter" order allows a mission's current speed and altitude to be changed simply by specifying the new values.

## 2.16 JTLS-0536 - Ground Withdraw Order Points

### Summary of Model Change Request

Many existing ground orders have a Player option to input a single point or a route of points. Add this convenient feature to the Withdraw order to simplify the order capability.

### Design Summary

The Withdraw order has been modified to add the capability to order the Unit to withdraw to a specific location or along an ordered route.

## 2.17 JTLS-0561 - Delay Pre-Launch Missions

### Summary of Model Change Request

Provide a user capability to delay or change the mission time for a mission in a Pre-Launch or Scheduled state.

### Design Summary

When an Air Mission is in a "Scheduled" or "Pre-Launch" status, it has what is called its first "Primary Task". When the original order was submitted, the start time of the "Primary Task" was set to the Time On Task (TOT) specified by the user. The new Manage Air Mission Task order provides the capability to alter the start time of any task, including the "Primary Task". When this is done, the model logic automatically recomputes when the mission should go through its "Resource" task and/or its "Begin" task.

## 2.18 JTLS-2006-1619 - Improve Airlift/Airdrop Order

### Summary of Model Change Request

Interface Controllers (ICs) should be able to issue multiple airlift instructions to the same mission on the same order panel, so that the mission will pick up a unit at an airbase or location, drop it off at another, and continue subsequent missions. Allow the Airlift order to be more efficient, especially when ships are involved. Modify the HRU Insert/Extract order to allow the mission to pick up or drop off the unit at a unit (naval/airbase) or location.

### Design Summary

The new Manage Air Mission Tasks order allows existing mission tasks to be modified or new tasks to be added to an active airlift mission.

## 2.19 JTLS-2006-1630 - Multiple Mission Air Orders

### Summary of Model Change Request

Enhance the representation of multi-role tactical aircraft in JTLS by allowing the designated mission type of an existing air mission to be changed on-the-fly.

### Design Summary

The new Manage Air Mission Tasks order provides this flexibility by allowing the mission type of an existing mission to be changed if the aircraft type is capable of executing a different mission. The existing "Load Assignment Array" is used to determine whether the mission is allowed to accomplish the newly specified mission type.

## 2.20 JTLS-2006-1648 - Improve Port Capacity Representation

### Summary of Model Change Request

Port storage capacities are not properly represented. JTLS must represent the maximum number of ships in port, supplies that can be stored, and consider off-loads for port capacity.

### Design Summary

In previous version of JTLS, ports were not specifically modeled. Any land based unit could be given Materiel Handling Equipment (MHE) which could be used to load and offload units or supplies from ships. In JTLS-GO, a unit can be established as a port Unit. The player is then allowed to order a ship to enter a port, at which time the ship's capability is subject to the restrictions of its air defense AD PORT FIRING ALLOWED data and its aircraft AC PORT LAUNCH ALLOWED data.

In addition, when a ship is considered in port, it is now allowed to enter an equipment shelter. This capability was primarily built to properly represent submarine shelters used for protection and to hide submarines from overhead sensors. When intelligence is collected on the port unit, the collection logic automatically looks at the non-sheltered ships and provides a realistic intelligence report. When a ship leaves port, it is removed from the port set and must be independently detected by intelligence collection assets.

Controller orders were implemented to allow changes to the status of a unit as a valid port, and to change the home port for a naval unit.

## 2.21 JTLS-2006-1659 - River Network

### Summary of Model Change Request

Represent movement of air, ground, sea, and space objects as smooth movement between locations with respect to Synthetic Natural Environment (SNE) characteristics.

### Design Summary

This ECP concentrates only on the smooth movement along a river network.

When the hexagon terrain board was removed from JTLS, the concept of rivers following hex edges also had to be removed. This was replaced by the representation of a river as a “Polyline” or series of latitude and longitude points. HRUs and barge convoys following the river now move smoothly over the river Polyline representation. The disjointed nature of moving along a hex edge has thus been removed from JTLS.

## 2.22 JTLS-2006-1706 - Large Map Road Networks

### Summary of Model Change Request

Zooming in closely is required to view road networks on the WHIP Map. Add the capability to view road networks on the larger (zoomed-out) map.

### Design Summary

Road networks existed in the previous version of JTLS, but were not used by the model. Road networks have been fully integrated into the model logic used within the JTLS-GO system. There is no limitation concerning the number and display of existing model road networks on the WHIP.

The user can move the map cursor over any road node or road arc to see the specific information held by the model on the road segment. Road networks can be filtered on, off or highlighted and are visible to some degree no matter what map resolution is being displayed.

## 2.23 JTLS-2006-1711 - Change Holding Aircraft Departure Time

### Summary of Model Change Request

While creating Insert/Extract or Air Transport missions, the IC specifies a Delivery Item List. Each point within this list can have a Not Leave Earlier Than time that instructs the mission to remain at that location at least until the specified time. This time cannot be adjusted while the mission is at that location and in Holding posture. ICs should be allowed to adjust that time.

### Design Summary

The new Manage Air Mission Tasks order provides this capability by allowing the Player to adjust the hold time for a current or future Ground Wait task for all missions, including the Air Transport and Insert/Extract missions.

## 2.24 JTLS-2006-1747 - Report BDA Area HRU Casualties

### Summary of Model Change Request

ICs can create Battle Damage Assessment areas. All damage that occurs within the area is accumulated and reported during each Periodic Report event. Damage caused to HRUs and by HRUs should be separately recorded and reported in the BDA Area Reports.

### Design Summary

HRU damage caused by HRUs and to HRUs are now included in the BDA areas that have been created by the user.

## 2.25 JTLS-2006-1762 - IMT Naval Formations Context-Sensitive Menu

### Summary of Model Change Request

Naval Formations are listed on the IMT. Implement a WHIP context-sensitive menu for naval Formations to enable users to access Formation orders from an IMT window.

### Design Summary

Players can now view a context-sensitive menu for naval Formations from the IMT window, in the same manner as context-sensitive menus for Units.

## 2.26 JTLS-2006-1763 - Display Formations On WHIP Map

### Summary of Model Change Request

Display naval Formations as objects on the WHIP Map and display the center of the Formation with an icon that can be selected, provide a context-sensitive menu, and allow the Formation symbols to be filtered as the other map unit icons.

### Design Summary

Naval Formations are now displayable objects on the WHIP. A single new database parameter identifies which symbol should be used to display the Formation. The context sensitive menu created for [JTLS-2006-1762 - IMT Naval Formations Context-Sensitive Menu](#) can also be accessed by right-clicking on the Formation icon. Finally as requested, Formations can be filtered on, off, highlighted, or to blink as specified on the filter panel.

In addition to these basic icon capabilities, a Formation icon has one additional feature. The user can ask to highlight all of the ship icons that belong to a given Formation. This capability is accessed from the Formation's context-sensitive menu.

## 2.27 JTLS-2006-1764 - IMT Panel Modify/Delete Fuel Chits

### Summary of Model Change Request

Allow the user to alter data associated with a Refuel Chit listed in an IMT window, such as changing the amount of fuel to be transferred, the refueling time, or the supplying tanker, or deleting the chit.

### Design Summary

The ability to change a Refuel Chit existed in previous versions of JTLS. The desire of this ECP is to make the process of altering Refuel Chits easier for a user. To fulfill this request, the WHIP was given a new order structure called an "Order Spreadsheet". A user can go to any IMT display window and highlight one or more rows of the IMT matrix. When the proper rows are highlighted, the user can right-click and bring up a spreadsheet version of certain orders.

The "Order Spreadsheet" is automatically filled with the existing data on the IMT screen. From there the user can alter the order data as required to meet their needs. The "Order Spreadsheet" orders can be checked and submitted directly from the "Order Spreadsheet" interface.

To fulfill this specific ECP, the Refuel Chit IMT display is set up to use this new spreadsheet option. A user can highlight the Refuel Chits that should be changed, right-click and bring up the proper "Change Refuel Chit" spreadsheet order. The majority of fields will be filled with the information from the highlighted IMT rows. Any remaining needed information can be easily added to the spreadsheet and the order can then be checked and submitted to the game from the "Order Spreadsheet" panel.

## 2.28 JTLS-2006-1766 - Cancel Egress Route Option

### Summary of Model Change Request

Currently, when a user cancels an Air Mission, the model selects the nearest point of the mission's Egress Route. A field should be added to the Cancel Air Mission order to indicate the mission must head directly home and not use the mission's nearest egress point.

### Design Summary

A field called "Follow Egress Route" was added to the Cancel Air Mission order, which forces the air mission to follow a designated egress route if selected. If this field is left unselected, the air mission will fly directly home when canceled.

## 2.29 JTLS-2006-1829 - Ground Movement Order Arrival Time

### Summary of Model Change Request

Information required for many ground orders is inconsistent. Some orders execute immediately, some orders require users to enter a Start Time for the order, and other orders require users to enter the Start Time of the task associated with the order. Consistency can be improved by allowing users to enter the order Start Time or order Task Time that would occur after the unit moves into position for the task.

### Design Summary

Numerous Ground orders have been modified to improve consistency by allowing users to specify that the Units ordered to begin a task do so either at their arrival time or at a specific start time. All orders end up on the unit's execution plan and can be viewed and altered as desired.

## 2.30 JTLS-2007-2012 - Integrate ATOG Functionality To WHIP

### Summary of Model Change Request

Create a WHIP format interface for the Air Tasking Order Generator (ATO-G) or include its capability within the WHIP.

### Design Summary

A completely redesigned ATO-G has been included with JTLS-GO. The user can establish commander's guidance from the ATO-G WHIP panels. When the orders are generated by the ATO-G service running on a JTLS server, it returns the planned ATO. The orders for the missions that were generated can be viewed on the available WHIP Air Mission Spreadsheets. The user can then review the generated orders, alter the orders if desired, check and submit the orders to the game.

The ATO-G is useful to reduce the workload of the Opposing Force (OPFOR) WHIP and can be used for own-side ATO generation if the exercise audience does not include a full air planning staff.

### 2.31 JTLS-2008-10023 - Ship Movement Speed

#### Summary of Model Change Request

For all naval routes, allow Players to select the speed at which the naval unit proceeds along the route.

#### Design Summary

The new Manage Naval Unit Tasks and Manage Formation Tasks orders provide this capability by allowing a new speed to be entered for a specific naval move task. Note that each segment in a naval route has a corresponding move task allowing a different speed along each route segment.

### 2.32 JTLS-2008-10024 - Represent Pre-Defined Logistics Routes

#### Summary of Model Change Request

Allow users to set up Logistics routes. Automatically generated Convoys would use these routes and not necessarily the optimized routes.

#### Design Summary

The Directed Resupply order allows the user to specify a detailed route that the convoy should follow. For convoys that are automatically generated by the model in response to unit requisition, the user has the ability to alter the route using the “Manage Supply Run Task” order. This order allows the user to establish or modify the route that the Supply Run should follow. For all Supply Runs, route points can be added, deleted, or modified at any time the Supply run is still actively in the game.

### 2.33 JTLS-2008-10091 - Change Or Remove Route Wait Time

#### Summary of Model Change Request

Any Air Mission is able to place a route point with a Leave Not Earlier Than (LNE) time in the mission's route. Several missions allow multiple stops. For each stop, users are also able to specify an LNE time. Prior to reaching the airborne hold point or the ground delay point, this information can be changed. At the hold point the time cannot be changed. Enable users to cancel or extend the LNE time.

## Design Summary

For all objects, not just Air Missions, the user can specify route points that should be followed. Each route point can be given a specific LNE time or a relative LNE duration time. When the object reaches the route point location, if an LNE time or duration has been specified, the model places the object in a Ground Wait state or for flying Air Missions in Air Hold state. The object will complete the wait task at the specified LNE time. In the case of an LNE relative duration time, the LNE specific time is computed when the object arrives at the route point. In other words, the LNE relative duration time is converted into an LNE specific time by adding the duration to the current game time.

This information is visible to the user on the object's execution plan IMT display. The appropriate "Manage Object Task" order can be used to alter the time as desired.

### 2.34 JTLS-2008-10094 - Cancel Route Instead Of Replace Route

#### Summary of Model Change Request

As part of the Change Air Mission Parameter order, implement a capability to cancel a portion of the mission's route, such as canceling the Transit Route or Egress Route without requiring users to enter a replacement "dummy" route.

#### Design Summary

The concept of a "Ingress" route, "Egress" route, and "Transit" route are still referred to in Air Mission orders, but once the order is received by the model, the concept is translated into simply a series of points that the mission should follow. Each of these points is visible on the Air Mission's Task IMT display. Any single route point or group of route points in the mission's task list can be added, deleted or modified by the user with the new "Manage Air Mission Tasks" order.

This improvement was not limited to Air Missions; the capability also applies to all objects that have execution plans.

### 2.35 JTLS-2008-10101 - Multiple Orbit Points

#### Summary of Model Change Request

Allow all orbiting missions to accept multiple orbit locations. For example, proceed to Location 1 and orbit until 0200, then proceed to location 2 and orbit until 0400. Enable this option for all orbiting mission types.

#### Design Summary

All orbiting missions now have the capability for perform multiple tasks, including multiple orbit points.

### 2.36 JTLS-2009-10108 - Alter Air Mission TOT

#### Summary of Model Change Request

Allow the user to alter the desired Time On Task (TOT) for an Air Mission's Primary Task. This should automatically alter the mission's Resourcing Task and Begin Task as appropriate.

#### Design Summary

The new Manage Air Mission Task allows the user to alter the desired Time On Task (TOT) for an Air Mission's Primary Task. This automatically alter the mission's Resourcing Task and Begin Task as appropriate.

### 2.37 JTLS-2009-10275 - Air Mission Relative Wait Points

#### Summary of Model Change Request

Add the capability to direct an air mission to wait for a specified duration at an airborne or ground location along an air route.

#### Design Summary

A new Task Duration option is added to the Air Route utility panel to provide this capability. When the mission arrives at the designed route point, the duration is removed from the task and converted to an absolute leave time by adding the duration to the current game time.

If altering the time of a Ground Wait or Air Hold task, the user can also specify a relative duration. For tasks scheduled for the future, the duration is held on the route point task until the object reaches that point. If the wait task is currently executing, the duration is immediately converted into an End Time by adding the entered duration to the current game time.

### 2.38 JTLS-2009-10278 - Robust Landing Transit Points

#### Summary of Model Change Request

An Air Mission can be assigned a route, which is a series of points through which the mission must travel. One of these route points can be designated as a refuel location. Allow for specifying a landing point for helicopters or other aircraft types, not necessarily for fuel, but for waiting without using fuel for a duration of time.

#### Design Summary

As with any route point, an air mission can be told to land, optionally rearm and/or refuel and wait at the point until a specific time or for a duration. The tasks are all available for viewing on the mission's IMT task screen and can be altered or deleted as desired.

### 2.39 JTLS-2009-10284 - Allow Target Type List Change Flying Missions

#### Summary of Model Change Request

Allow users to modify the Target Type List (TTL) of an Air Mission after the original order has entered the game.

#### Design Summary

The Change Mission Parameter order allows the TTL to be modified for an active air mission. If it is done prior to the mission executing its resourcing event, the new TTL will be used to determine the proper load for the mission.

### 2.40 JTLS-2009-10335 - Place Alert Missions Off Game Board

#### Summary of Model Change Request

Place Air Missions on alert at off-board locations. The limitation of accomplishing their task on the game board is sufficient, but the missions must go on alert from the off-board location.

#### Design Summary

The game board concept has been removed from JTLS-GO. Any mission, irregardless of the mission type, can be paced on alert at any legal landing location.

### 2.41 JTLS-2009-10392 - View Transport Instructions

#### Summary of Model Change Request

Air Transport and Insert/Extract missions have Transport Instructions that indicate the mission's destination. Entering the instruction number is necessary to edit these instructions, but WHIP users cannot view these numbers. Display this information on the WHIP.

#### Design Summary

Airlift missions, Air Transport missions, and Insert/Extract missions have been combined into a single "Mobility" mission type. Mobility missions can have several tasks and each of these tasks can be viewed on the Air Mission IMT task screen. A task has a sequence number and this number is also shown on the new IMT task screen. When a user wants to alter a task for an Air Mission, whether it is an associated Mobility mission task or any other task, the user enters the task number as shown on the IMT screen.

Task number zero is reserved for the currently executing task, and although there are some limitations concerning the changes, some attributes of the currently executing task can be altered.

## 2.42 JTLS-2009-10396 - Full Mission Type Alert Capability

### Summary of Model Change Request

Only orbiting missions can currently be placed on alert. Air Tasking Orders (ATOs) also include Supply Transport missions and Combat Search and Rescue (CSAR) missions as Alert missions, which is typically not represented in JTLS. A real-world ATO Command, Control, Communications and Computer Information (C4I) system requires the status of the mission to be represented, and therefore be scheduled in JTLS. Therefore, all missions need an alert capability.

CSAR missions have the added need to be able to fly as airborne Alert missions; if an emergency occurs, they can immediately fly and pick up the downed pilot. JTLS represents these missions as Insert/Extract, which should have an orbiting/alert capability.

### Design Summary

All mission types can be placed on alert and told to orbit or conduct an Air Hold at a specific location. JTLS-GO can now easily and properly represent CSAR missions.

## 2.43 JTLS-2010-10465 - Base Fuel Mission Cancellation Option

### Summary of Model Change Request

Several years ago, the JTLS logic that applies when an Air Mission obtains base fuel was altered. The previous logic allowed the mission to divert for base fuel and continue its mission. The change automatically cancels the mission when it heads for base fuel. Several users have complained about this new logic. The recommendation is that whether the mission cancels should be determined by one or several database parameters. For example, rotary aircraft automatically cancel; cancellation is an ACP characteristic; use different rules for refueling from a land base or a naval ship; use the same rules for each mission type.

### Design Summary

The implemented design does not include a new database parameter as suggested by the ECP. Instead, the mission automatically does not cancel its task when its heads for base fuel. Instead, the user can decide whether this should happen by entering a "Cancel Air Mission" order.

The user also has the ability to change his or her mind concerning the cancellation. A mission's task list is not cleared when a mission cancellation is scheduled via Player order or automatically by the model. Instead, a "Mission Complete" task is placed at the top of the mission's task list and will immediately execute. All other tasks stay on the mission's task list. Thus if the user does not want a mission to cancel, the "Mission Complete" task can be deleted and the mission will return to its original assigned execution plan.

## 2.44 JTLS-2010-10470 - JOI, SOI, TOI Services

### Summary of Model Change Request

For ease of managing the system, all operational interface programs (JOI, SOI, and TOI) should become services that can be started, stopped, and monitored from the Web Services Manager (WSM). These operational interface programs are:

- The JTLS Operational Interface (JOI) which generates both Over The Horizon Gold (OTH-Gold) messages and Link-16 messages.
- The JTLS Strategic Operational Interface (SOI) which interfaces with Transportation Command C4I systems.
- The Transactional Operational Interface (TOI) which interfaces with the Theater Battle Management Core System (TBMCS) and NATO's Interactive Command Control (ICC) system. The TOI, through library calls, updates the C4I systems' underlying relational database management system.

### Design Summary

Only the JOI was converted to a service in this version of JTLS-GO. New separate ECPs have been created for transferring the SOI and TOI to a service oriented architecture.

The JOI is started and managed using the Web Services Manager (WSM). The user can then adjust the filtering of the objects being fed directly to the C4I system using a new WHIP JOI module. No additional filtering capabilities were built into the JOI WHIP Control panel under this ECP.

## 2.45 JTLS-2010-10481 - Air Transport Plans On IMT

### Summary of Model Change Request

Strategic Lift missions are currently able to fly to multiple locations and accomplish tasks. Each of these stops is visible on the IMT. Air Transport and Insert/Extract missions are also able to make several stops. Display each stop on the IMT in a manner similar to the Strategic Lift missions.

### Design Summary

All mission types, not just Strategic Lift, Air Transport or Insert/Extract missions, now display their execution plans on the IMT.

## 2.46 JTLS-2010-10514 - Air, Sea, Space Object Smooth Movement

### Summary of Model Change Request

Smooth network movement of ground objects was delivered with JTLS 4.0. Accomplish similar changes for air and naval objects. The ECP discusses space objects, but since JTLS currently does not represent moving space objects, the ECP should be viewed as incorporating the movement of space objects in a smooth manner.

### Design Summary

The old hexagon terrain board and terrain representation have been replaced with a variable grid, world-wide terrain representation. In addition a wide range of movement networks have been placed on top of the variable-grid terrain. These movement networks include roads, rivers, rail, air corridors, and sea lanes. Object can move on these movement networks or off the network on appropriate terrain grids. All objects now move either in a straight line along network arcs or if off network in a straight great circle path.

Space objects are also represented using real-world orbital mechanics equations to represent their proper space movement. Satellites move smoothly using these externally generated paths and collect intelligence information under their computed flight path. The satellites are represented as displayable objects on the WHIP maps and can be filtered like any other displayable object.

## 2.47 JTLS-2010-10543 - Robust Use Of Alert Missions

### Summary of Model Change Request

JTLS allows users to place aircraft of any orbiting mission on alert, including CAP missions. Users can then allow the model to automatically assign the mission to intercept an enemy aircraft or assign the mission an orbiting point, but cannot direct the mission to serve as an escort of an Air Mission Package. C4I systems must see all Alert missions, but the exercise audience should be able to use the alert aircraft for any desired mission, regardless of its original mission type.

### Design Summary

All JTLS-GO mission types can be placed on alert and their status fed to C4I systems appropriately. In addition, the use can change the mission type of an Air Mission at any point in time.

## 2.48 JTLS-2010-10702 - Ground Route Wait Time

### Summary of Model Change Request

LARCOM, an alternative NATO JTLS entry capability, allows users to specify a Wait Time at various ground route points. For example, a ground unit can be directed to move to Point A, wait

15 minutes, move to Point B, wait 45 minutes, and continue to Point C. This behavior is difficult to accomplish within JTLS. A direct JTLS capability would reduce the need for LARCOM. The Wait Time must be optionally relative or absolute; for example, wait 15 minutes or leave at 011200Z.

### Design Summary

This is now possible in JTLS-GO as described in ECP [JTLS-2009-10275 - Air Mission Relative Wait Points](#). All object route points work in the same manner and allow the user to enter a specific or relative wait time at each route point.

## 2.49 JTLS-2011-10933 - Maritime Supply Routes

### Summary of Model Change Request

This capability is listed separately, but is linked to two other ECPs. Maritime Supply Routes (MSRs) should be available to use as part of the ship smooth movement incorporated in the smooth movement ECP. MSRs and roads should be included in the ECP that includes named object routes within the model; objects follow the named object routes. Users can specifically enter the routes to be followed, which can be displayed on the WHIP.

### Design Summary

JTLS-GO has added the concept of Sea Lanes or Sea Routes. The Sea Lane network represented in JTLS-GO is a worldwide network. Any ship that is told to move will look for a Sea Lane route before attempting a straight line great circle route.

Each Sea Lane arc has a width and a ship that is traveling on the arc will stay within this distance of the arc center line. The entire Sea Lane network can be viewed on the WHIP. Although a user cannot tell a ship to follow a Sea Lane by name, the entry of the planned route can be quickly entered using the Sea Route Utility directive and the points can be entered in such a way the naval object will follow the specified route.

## 2.50 JTLS-2011-10935 - Create Convoys At Future Time

### Summary of Model Change Request

Create Convoys that execute at a future time. For example, leave the Support Unit at time X and head for Unit B. Convoy behavior could resemble Air Mission behavior. Convoys and HRUs could also be combined as a single object, which may be more difficult.

### Design Summary

The “Directed Resupply” order is used to create a user defined Supply Run. The user can specify the time the Supply Run should be created and leave its home station. From the time the order is entered, until the Supply Run receives its truck, rail, or barge resources, the Supply Run can be viewed on the WHIP with a Status of “Scheduled”.

## 2.51 JTLS-2011-10936 - IMT Future Unit Orders Display

### Summary of Model Change Request

JTLS currently holds orders that specify an execution time as Received Orders for all units except naval units. Develop order queues for each unit that are displayed on the IMT, as currently displayed for naval units.

### Design Summary

Land-based units, as well as all other JTLS represented objects, have execution plans in this new version of JTLS-GO. All execution plans, along with important information for each task within the plan, can be viewed on the IMT.

## 2.52 JTLS-2012-11184 - Model Road Network

### Summary of Model Change Request

Migrate from the hex-based road network to a real-world road network.

### Design Summary

JTLS-GO holds data that represents real-world road networks. Each arc within a road network has a maximum speed and the type of road surface. JTLS-GO is delivered with a fully capable set of world-wide road networks from which a user can build a network suitable for their area of operations. The newly delivered JTLS-GIS Tool also allows the user to use their own available shape files to build the JTLS required road network data files.

Once an object is on a road network, it moves in a straight line along each network arc.

## 2.53 JTLS-2012-11366 - Amphib Operation Specify Formation Location

### Summary of Model Change Request

Currently, the user has little control over the exact location from which a formation should conduct an amphibious operation. The user inputs the location of the amphibious assault or pickup and then the distance out from shore that the formation should be positioned. Based on these two input parameters, the model determines the best location for the formation. The end result does not always meet the needs or desires of the user.

This ECP requests that the Amphibious Operation order be changed and the user should have the option of allowing the model to select the location, as it currently does, or input a specific location from which the formation should conduct the operation.

### Design Summary

Amphibious operations within JTLS-GO has not changed much, but all of the logic formerly in the model to determine the shoreline that will be used for the operation has been removed from the model. Instead, the user now enters the location at which the formation should be when the operations start. Additionally the user must enter either the pickup location or the assault location for the units being moved as part of the amphibious operation.

A straight line between these two points is drawn, and the assault/pickup location determined by the underlying terrain. There is one of two possibilities from this computation:

- The line crosses a terrain-represented shoreline.
- The line crosses an implicit shoreline, which is a grid edge between a land grid and an ocean or dual-capable grid.

Both the formation location and the operation location must be within the database parameter COLOCATED DISTANCE from the computed shore crossing point.

Table 2.1 describes the basic amphibious operations logic under these two situations.

**Table 2.1 Basic Amphibious Operations Logic**

OPERATIONS	SHORELINE BARRIER	IMPLICIT SHORELINE
<p style="text-align: center;"><b>ASSAULT</b></p>	<p>The small boats used for the assault travel from the formation to this line, and are attrited by enemy artillery that covers the crossing point and any ANTI.INVASION minefields associated with the shore arc. The remaining small boats off-load their portions of the unit being carried and return for another load as appropriate. The offloaded portion of the unit does not arrive at the unit until enough time has passed for the unit to move over the ground to the assaulted parent location.</p>	<p>The small boats used for the assault travel from the formation to this line, and are attrited by enemy artillery that covers the crossing point. No ANTI.INVASION minefields can cause attrition under this situation. The remaining small boats off-load their portions of the unit being carried and return for another load as appropriate. The offloaded portion of the unit does not arrive at the unit until enough time has passed for the unit to move over the ground to the assaulted parent location.</p>

**Table 2.1 Basic Amphibious Operations Logic**

OPERATIONS	SHORELINE BARRIER	IMPLICIT SHORELINE
<b>PICKUP</b>	<p>No time is required to move the portion of the land unit to the computed pickup point. The small boats used for the pickup travel from the formation to the intersection point on the shoreline. The small boats are attrited by enemy artillery that covers the crossing point and any ANTI.INVASION minefields associated with the shore arc. This attrition is assumed to occur on the empty small boats. The portion of the unit is loaded and the forces returned to the formation ships. The small boats return to pickup another load as required.</p>	<p>No time is required to move the portion of the land unit to the computed pickup point. The small boats used for the pickup travel from the formation to the intersection point on the implicit shoreline grid edge. The small boats are attrited by enemy artillery. This attrition is assumed to occur on the empty small boats. ANTI.INVASION minefields cannot cause any attrition. The portion of the unit is loaded and the forces returned to the formation ships. The small boats return to pickup another load as required.</p>

2.54 JTLS-2013-11440 - Terrain Movement Multipliers CS Function

**Summary of Model Change Request**

Currently the time requirement for a unit to move through a given terrain area is adjusted based on the terrain type, such as Good Road, Forest, Mountain, etc. The issue is that this single terrain type database parameter is used for all units that travel through the terrain area. A SOF unit containing only personnel is degraded at the same speed adjustment as a unit that includes tanks. This makes it difficult for end users to establish a single time multiplier for a given terrain type. This ECP requests that the time multiplier be made a function of the type of combat systems owned by the moving unit.

**Design Summary**

This was a fairly large ECP. The process starts with the definition of Barrier Types within the database. In previous versions of JTLS, Barrier Types were hard-coded and could not be changed. In JTLS-GO, Barrier Types are defined. There is no data associated with a Barrier Type, only a name. Once a Barrier Type is defined, the database can be assigned physical barriers, which are simply a series of latitude and longitudinal points that form a line. These lines are know as “Polylines” and they are assigned a type.

In addition, a new database concept was created for this ECP called Agility Type. Examples of possible Agility Type objects are “Towed”, “TrackedVehicle”, and “Foot”. The following objects are assigned an Agility Type in the database:

- Every Combat System Prototype - Combat System combination. Both ARU and HRU movement is limited across barriers based on the Agility Type of the Combat System they own.

- Every Ship Unit Prototype - Barriers can be placed in water areas, and ships are limited by their Agility Type when determining whether they can cross the barrier.
- Every Transportation Class - Convoys consist of Transportation Class type entities. These entities determine where the convoy is allowed to travel or not.
- Every Small Boat - The Agility type determines which small boats are allowed to be used for an amphibious operation. The model determines which type of shore barrier is crossed and only those available Small Boat types allowed to cross the selected barrier can be used.

This leads to one last piece of new data which links and indicates if an object can or cannot cross a given barrier. This data array, known as the MCP BT AGT DELAY TIME(I, J, K) holds the delay an object, whose Faction uses Mobility Counter Mobility Prototype (MCP) I and has Agility Type J assets will incur when it crosses a Barrier Type (BT) K. A value of “zero” indicates the object cannot cross the barrier.

#### 2.55 JTLS-2013-11470 - Contaminate/Decontaminate Multiple Hexes

##### Summary of Model Change Request

Allow Chemical and Nuclear effects weapons to contaminate a “region” via a single grid square when delivered. The size of the region, essentially an effects radius, would be the TW attribute. Also provide for changes to the ALTER TERRAIN order to allow a user to change the end of contamination time for an entire region (polygon entered on the order and the hexes it contains) instead of for just a single hex.

##### Design Summary

In previous versions of JTLS, a chemical or nuclear detonation only contaminated the single hexagon in which the detonation occurred. This was improved in JTLS-GO. The database parameter TW RADIUS OF EFFECTS for these weapons represents the circular coverage area for the contamination. Any grids that are covered by the circle are marked as contaminated but only objects that fall within the circle are affected by the contamination.

#### 2.56 JTLS-2013-11502 - Expand DDS History Table

##### Summary of Model Change Request

This ECP requests that the following three DDS History table issues are solved:

- The DDS History Tables only track record updates made through the DDS. It does not track record additions and deletions, Furthermore, the history table only tracks up to 3 columns of data changes.

- The DDS History Table does not get downloaded to an ASCII table during database unload, and thus it is wiped clean every time the user does a database load.
- Lastly, if a record's primary key column is changed, that record's history comes up blank because the history is keyed by the old value.

### Design Summary

Each of these issues were fixed.

## 2.57 JTLS-2013-11679 - Ground Execution Plans And Viewer

### Summary of Model Change Request

The desire of this ECP is to give Ground Units an execution plan, which is the same ability that Naval Units and HRUs currently have. Once the execution plan exists, the plan should be viewable in a viewer, similar to the ATO Viewer.

### Design Summary

As previously mentioned, all objects in JTLS-GO now use the concept of an Execution Plan, including Ground Units. These Execution Plans are available to be reviewed on the WHIP's IMT.

The portion of this ECP that requests an "ATO-like" Viewer to summarize a group of Ground Units execution plans was not implemented. If after reviewing the new Execution Plan capability delivered as part of JTLS-GO, such a viewer is still desired, users should resubmit an ECP request with more specific details on the type of information desired for such an Execution Plan Viewer.

## 2.58 JTLS-2013-11680 - Air Mission Execution Plans

### Summary of Model Change Request

The desire of this ECP is to give Air Missions an execution plan. This means that you can give the mission a series of orders that can be viewed, such as speed up or change mission type, and which is the same ability that Naval Units and HRUs currently have. Once the execution plan exists, the plan should be viewable in a viewer, similar to the ATO Viewer.

### Design Summary

As previous mentioned, all JTLS-GO objects have Execution Plans. This includes Air Missions. The Execution Plan for a specific mission can be reviewed on the WHIP's IMT.

## 2.59 JTLS-2013-11721 - Air Mission Refuel Unit Information

### Summary of Model Change Request

When an Air Mission is heading to a unit for fuel, the name of the unit to which it is heading is not available on the IMT. Since the mission does not hold a route to the unit, but instead is flying an intercept path to the unit, there is no way for an operator to tell where the mission is heading. This information is important and needs to be made available to the user.

### Design Summary

One of the tasks that can be held by an Air Mission in its Execution Plans is a TASK BASE FUEL. On the IMT, The base to which the mission is heading is listed on the IMT's Mission Task. The Manage Mission Task order can be used to change the base to which the Air Mission is heading for fuel. The same is also true for the Air Mission's Task Tanker Fuel.

## 2.60 JTLS-2013-11737 - Change HRU Home Unit

### Summary of Model Change Request

It is currently not possible to tell an HRU to rejoin a different unit. This needs to be a capability of JTLS.

### Design Summary

This capability was added to the model. An HRU can be given a "Task Attach" as part of its Execution Plan. If the HRU is told to "Rejoin" its parent, the "Task Attach" is added to the HRU's Execution Plan. The unit to which the HRU should rejoin is shown on the WHIP's IMT and can be changed by using the Manage HRU Task order.

## 2.61 JTLS-2013-11738 - Ability To Control Non-Detected Missions

### Summary of Model Change Request

Currently within JTLS, an own-side mission that is labeled as non-detected because there is no radar coverage cannot be accessed or controlled by the IC. This is very frustrating and can in fact cause exercise issues. For example, it is possible that a user wants to temporarily hide an air mission because it has strayed off the desired course. The IC will hide the mission, so its location is not sent out to the exercise audience. While in this state, the user cannot give the mission corrective orders.

### Design Summary

On the WHIP a new filter capability has been added for Air Missions. The user can decide whether they want to display or not display the non-detected missions. If the user decided to not display these missions, it will be easier to keep a consistent storyline when communicating with

the exercise audience. On the other hand, displaying the non-detected missions will make the job of controlling these missions easier.

## 2.62 JTLS-2013-11744 - Air Corridors Recognize National Boundaries

### Summary of Model Change Request

Currently when an air mission is flying on an air corridor, it does not recognize that it is crossing a forbidden national boundary. The Air Corridor optimization logic needs to consider National Boundaries.

### Design Summary

This could have been considered a “Bug” within the previous version of JTLS, but it was implemented as an ECP because of the global nature of the underlying issue, All objects have the ability to travel either on a represented network or off the network using a great circle path. For example, an Air Mission can travel along Air Corridors or use a great circle flight path, while Naval Units can travel along Sea Lanes or use a great circle travel path.

This ECP was expanded to make sure that for all moving objects, whether moving on or off a network properly recognize national boundaries and stop or cross based on their assigned boundary permissions.

## 2.63 JTLS-2013-11750 - Change Attack To OAS

### Summary of Model Change Request

Currently within JTLS, it is possible to change an OAS mission into an Attack Mission, but the reverse cannot be accomplished. This would be used under the following circumstances. Assume that the exercise audience has changed their minds concerning the target an Attack mission should attack. It is not possible to change the Attack mission into an OAS mission while a new target is selected.

### Design Summary

There is no longer a concept of an Attack Mission Type and an Offensive Air Support (OAS) Mission Type. The Attack Mission Type was removed from JTLS-GO. Offensive missions are assigned a Mission Type of OAS and are given tasks. These tasks include Task Alert, Task Orbit, Task Close Air Support (CAS) and Task Fire Weapons. As tasks, they can be altered, canceled, and postponed. At any time, the user can stop an Air Mission from firing its weapons by canceling a Task Fire Weapon and tell the mission to return to its orbit location by adding a new Task Orbit.

## 2.64 JTLS-2013-11755 - Give Convoys Specific Routes

### Summary of Model Change Request

Currently it is not possible to provide a Convoy a specific route that should be followed. You can provide this type of information for all other moving entities, and it should be available for supply Runs or Convoys too.

### Design Summary

The capability was added to allow the player to direct a convoy to follow a specific route when a convoy or supply run is created using the Directed Resupply order or the Transport Unit order. In addition, any supply run that exists, including those automatically created by the model in response to a requisition, can have its current Execution Plan altered. The user has the ability to change or add a new route to the supply run as long as it is active.

## 2.65 JTLS-2013-11861 - Easier User UOM Preferences

### Summary of Model Change Request

Currently the DDS and the WHIP are initialized with supply Units of Measure (UOMs) set to Tons and Gallons. It is an extensive job for a user to set up the desired supply preferences. Although some manual manipulation of data files can be done, this setting of the preferences is usually accomplished by each WHIP user, resulting in a fairly personnel-intensive requirement.

The desire of this ECP is to allow the database builder to establish a UOM preferences file that can be delivered to each WHIP. Each user will be allowed to alter as needed for their own use, but the majority of work will be done once by the database builder, prior to exercise start.

### Design Summary

Each Sustainment Logistics Prototype (SLP) - Supply Category (SC) combination has a new database parameter called the Preferred UOM. During scenario setup, this data is used to create a WHIP's preference file. Once the WHIP starts up, users can alter the initial preferences to meet their specific needs.

## 2.66 JTLS-2014-12225 - Remove Impossible Unit Posture Data

### Summary of Model Change Request

There are several database parameters that are dimensioned by Unit Posture. The DDS Unit Posture Lookup Table includes three postures: WIPED.OUT, ATTACHED, and OUT.OF.THEATER, which can never be assigned to an active unit, and therefore the data associated with these postures can never be accessed by the model.

### Design Summary

When a unit is in any of the three postures indicated, it is not an active unit in the game; therefore, it cannot access the data. The following data no longer includes data for these postures:

- UP.UP.LANCHESTER.DATA.SET
- CCP.CS.UP.DENSITY.MODIFIER
- CCP.SC.UP.TT.DENSITY
- CSP.UP.AMMUNITION.MODIFIER
- SLP.UP.FUEL.MODIFIER

#### 2.67 JTLS-2014-12231 - Multiple Cancel Air Mission Capability

### Summary of Model Change Request

The user was trying to cancel several air missions and it was difficult because it had to be done one at a time. The desire is to provide an easy way to cancel several missions at once. The current idea is to be able to highlight the missions on the IMT and in some way submit a Cancel Air Mission Order for each highlighted record.

### Design Summary

This ECP was implemented using the WHIP's new Spreadsheet Order capability. From the Air Mission IMT screen, the user can highlight the missions that should be canceled. Using the right mouse button, the context spreadsheet menu will be displayed. If the user selects the "Cancel Mission" spreadsheet, the spreadsheet will be displayed with the mission names already entered. From there the spreadsheet can be altered if needed, the orders verified, and sent.

#### 2.68 JTLS-2015-12463 - Equipment Shelters Should Shelter Supplies

### Summary of Model Change Request

Equipment shelters should have the capability to protect supplies owned by the unit that is being sheltered.

### Design Summary

Every unit has a storage capacity and a carry capacity. The carry capacity is used to determine which supplies, currently owned by a unit, are in an equipment shelter with the sheltered combat systems. Consider this simple example, albeit unrealistic example.

A unit has 5 people, each worth 2 weight strength points, and two tanks, each worth 45 weighted strength points. If currently all 5 people and only 1 tank is sheltered, then 55 weighted strength point are sheltered. This equates to 55% of the unit's carry capacity is considered to be sheltered. If the carry capacity is 100 tons, then 55 tons of the unit's carry capacity is considered in the shelter with the sheltered systems. Any supplies remaining over this amount are considered to be unsheltered, unprotected, and detectable by overhead assets

## 2.69 JTLS-2015-12464 - Certain Sensors Should Not Update COP

### Summary of Model Change Request

Sensor targets detecting objects by visual means should not transmit detection data to the Common Operational Picture (COP), and only radars capable of interfacing with the COP should transmit detection data to the COP.

### Design Summary

Every sensor has a new database parameter called ST.COP.CAPABILITY has three possible values:

- .COP.CAPABILITY.NONE - means that the detection will update the WHIP display, but the collected information will not be sent to the COP.
- .COP.CAPABILITY.OTH.GOLD - means that the detection will update the information sent to the COP via OTH Gold messages.
- .COP.CAPABILITY.LINK16 - means that the detection will update the information sent to the COP via OTH Gold and LINK-16 messages.

## 2.70 JTLS-2015-12465 - Sensors Use Associated Unit JU Number

### Summary of Model Change Request

A mobile sensor can use its associate unit's JU number block to assign a JU number for the detected target. Currently, the following logic is used to assign a Source JU number when a target detects an object:

- If the Target is owned, first use the Owing Unit's JU number, then use the Target's JU number.
- If the Target is unowned, first use the Target's JU number, then the Associated Unit's JU number.

Under the Owned Target logic, a third choice should be added: use the Target's Associated Unit JU Number.

## Design Summary

The following consistent logic was implemented for determining the Source JU number for a detecting target sensor.

- If Target is owned and the owning unit has a JU Number, the owning unit's source JU number is the source number for the detection. The logic is then complete.
- If the Target has an associated unit and it has a JU Number, the associated unit's source JU number is the source number for the detection. The logic is then complete.
- If the Target has its own JU number, then its source number is used for the detection. The logic is then complete.
- Under all other circumstances, detections from the sensor cannot be used to generated Link-16 update messages.

### 2.71 JTLS-2015-12490 - Expiring WHIP Alert Message Notifications

#### Summary of Model Change Request

There is a desire to have alerts expire after a certain amount of time based on the alert type. As an example, an Under SSM Attack alert might expire in 5 minutes while a Ship Has Begun Sinking alert could expire in 10 minutes. The feature would allow the expiration to be a user-settable alert duration that works in conjunction with the ability to filter out all alerts or by type in the Alert filters panel for a WHIP.

#### Design Summary

Each model-generated alert is time stamped. Besides turning on and off alerts, the user can set the expiration time on the WHIP's Alert Filter panel. The WHIP will automatically delete an Alert based on the expiration duration and the alert's generated time stamp.

### 2.72 JTLS-2015-12507 - JOI Filter By JU Block

#### Summary of Model Change Request

The JOI should be able to filter JU number track blocks sent to the C4I system. There are two options: allow the Controller to set the desired track block manually, or allow the JOI to look up the JU block number in JTLS or the database, so the Controller can choose which block they want to use.

#### Design Summary

The JOI interface has a Block filter. The user can indicate that all tracks from source JU number XXXXX to YYYYY should not be sent to the COP.

### 2.73 JTLS-2016-12632 - WHIP Notification Tool

#### Summary of Model Change Request

JTLS delivers a WHIP Notification Tool (WNT) that is integrated into the JTLS system structure. The purpose of this ECP is to redesign the WNT to accommodate a greater range of color and font selections when generating messages to be sent out to one or more of the JTLS WHIPs.

#### Design Summary

The specified improvements were made to the WNT.

### 2.74 JTLS-2016-12635 - Improve Techttool to Handle Time Jumps

#### Summary of Model Change Request

The Techttool is an interactive program designed to help the Technical Controller investigate problems by examining critical orders and messages for a scenario. The Technical Controller specifies run number, checkpoint range, and search phrases. The Techttool will check all pertinent message and order files and list those that contain the specified search phrases. The Technical Controller can then examine in detail the contents of the messages or orders, sorted chronologically, in tabular form.

The time that the order was submitted is recorded in decimal days since the start time of the scenario; the time of the message is recorded as a date-time group. In other words, orders use relative time and messages use absolute time. The Techttool adds the order time to the start time to determine the date-time of the order so that the tool can chronologically sort the order and the messages resulting from that order properly.

The Techttool will display an order before its associated messages, but an issue occurs if a time jump (changing the start time for the scenario) is executed in the middle of the JTLS exercise. The Techttool will add the order time to the new start time and determine a different date-time for the order. Nothing changes with the message times since they are absolute times, so the new date-time of the order may chronologically follow the times of its associated messages. As a result, the Techttool will display these messages before the order. To correct this problem, the Techttool will be modified to properly sort the orders and messages when a time jump occurs.

#### Design Summary

The Techttool reads critical orders from text files and reads messages from XML documents; the text files and XML documents are created whenever checkpoints are taken. Order times currently are recorded as relative times while message times are recorded as a date-time group. The relative time of the critical order can be augmented with an absolute time using the same date-time group format used for message times (referred as XML time). The Techttool reads the critical order's absolute time which, like the message time, is not affected by the new start time

caused by a time jump. This allows the Techtool to properly sort and display the orders and messages in chronological order regardless of whether a time jump occurs during the exercise.

No modification is required for the message files.

## 2.75 JTLS-2016-12638 - OTHGold Display Track Name

### Summary of Model Change Request

Ensure that duplicate track names are visually discernible in the OTH-Gold WHIP module. This allows the user to keep track names unique, if desired.

### Design Summary

This request was fulfilled. Refer to the *JTLS-GO C4I Interface Manual* for information on how to insure Track names are unique.



### 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. No STRs have been identified for this JTLS-GO Major release. Code corrections issued for the previous JTLS 4.1 have been tested with the model enhancements delivered with JTLS-GO 5.0.0.0 and are included.

[Chapter 4.0](#) describes STRs that remain outstanding from previous versions; however, because of the model enhancements included with JTLS-GO 5.0.0.0, no previously-identified STRs are considered valid. Errors identified for JTLS-GO 5.0.0.0 and corrected for future Maintenance releases in the JTLS-GO 5.0 series will be documented in this chapter.



## 4.0 REMAINING ERRORS

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

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

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

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

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

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

### 4.3 WHIP - Pipeline Not Shown On IMT

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

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

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

### 4.5 WSM - Many Messages Cause Lockup

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



## APPENDIX A. ABBREVIATIONS AND ACRONYMS

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

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

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

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

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

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LOGIN	Logistics Input
LOGREP	Logistics Report
LONG	Longitude
LOTS	Logistics Over The Shore
LR	Long Range
M&S	Modeling and Simulation
MAPP	Modern Aids to Planning Program
MB	Megabyte
MCP	Mobility Counter-mobility Prototype
MCR	Model Change Request
MG	Machine Gun
MHE	Material Handling Equipment
MIP	Model Interface Program
MOGAS	Motor Gasoline
MOPP	Mission-Oriented Protective Posture
MOSAIC	NCSA user interface software
MOTIF	X Window System graphical interface
MP	Maneuver Prototype
MPP	Message Processor Program
MSC	Major Subordinate Command
MSG	Message
MTF	Message Text Formats
MUREP	Munitions Report
MUSE	Multiple Unified Simulation Environment
NCSA	National Center for Supercomputing Applications (University of Illinois)
NEO	Noncombatant Evacuation Operations
NFS	Network File Server
NGO	Non-Governmental Organization
NIS	Network Information Service or Network Information System
NM	Nautical Mile
NTSC	Naval Telecommunications System Center
OAS	Offensive Air Support
OBS	Order of Battle Service (formerly UGU: Unit Generation Utility)
OCA	Offensive Counter-Air

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

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

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

## APPENDIX B. Version 5.0.0.0 STANDARD DATABASE CHANGES

### B.1 Ship Unit Prototypes (SUPs)

The following Ship Unit Prototypes were added to the database:

- ABSALON\_DK
- ADM.GRIGOROVICH\_RU
- AGILE\_FR
- AZMAT\_PK
- BRAUNSCHWEIG\_DE
- BUYAN\_RU
- COLOSSUS\_GB
- COMM.RIVIERE\_FR
- CV.PA2\_FR
- DESCARTES\_FR
- DILIGENCE\_GB
- ECHO\_GB
- GORSHKOV\_RU
- GREMYASHCHY\_RU
- HARTLAND.PT\_GB
- METEORO\_ES
- NANSEN\_NO
- NARVIK\_FR
- PETYA.III\_RU
- PETYA\_RU
- POHANG\_RGM84\_KR

- PROVIDER.AOR\_CA
- SACHSEN\_DE
- SILBA.LSM81\_HR
- SILBA.LSM82\_HR
- SKJOLD\_NO
- SKORYY\_RU
- TIDE\_GB
- TUO.JIANG\_TW
- TURYA\_RU
- TYPE26.GCS\_GB
- UPHOLDER\_CA
- VANGUARD\_GB
- VICTORY\_SG

The following SUPs were renamed in the database:

- SUP - POHANG\_SSM\_KR was renamed to POHANG.MM38\_KR.

#### B.2 New UOM (Added)

- HAESEONG.SSM
- 155MM.ExCALIBUR
- GMLRS-DPICM
- GMLRS-UNITARY
- BARAK8
- BRAHMOS.BLK1
- BRAHMOS.BLK2
- BRAHMOS.BLK3

- BRAHMOS.PJ10
- CHEON.RYONG
- DH-10
- MALD
- MALD-J

### B.3 Targetable Weapons

- Changed RADIUS\_OF\_EFFECTS for all Chemical Weapons.

The following Targetable Weapons were added to the database:

- HHQ-10
- HHQ-9A
- HQ-9
- NUC.BOMB.10KT
- SA-21.40N6
- SA-21.9M96E
- SA-21.9M96E2
- TY-90.AAM

### B.4 Supply Category (Added)

- CL.V.AS-NUC

### B.5 SKL (Added)

- NUC.BOMB\_SKL

### B.6 Area Kill Lethality (AKL)

The following Area Kill Lethality data were added to the database:

- NUC.BOMB\_SKL

### B.7 Agility Type Data

- All Agility Type Data Values were updated.

### B.8 Depth Zones

- Depth Zone for "Deep" changed to 32000.

### B.9 Prototypes (Changed)

- All Prototypes named Block 1, 2, 3 renamed to BEST, LESS, LEAST.

### B.10 Sea Lanes

- All Sea Lanes were updated.

### B.11 CSP\_CS Table

- Changed all CSP\_CS Scores.

### B.12 Combat System Prototype Table

- Added Political Country values to CSP table.

### B.13 Equipment Shelter Types (Added)

- SUB.SHELTER
- PA.BOAT.SHELTER

### B.14 SUP STORAGE\_FLOOR\_AREA

- Added values to all SUP STORAGE\_FLOOR\_AREA in the database.

### B.15 Supplies added to SUPs (Added)

- Added supply CL.V-MINE-CON to the following SUPs.
- WONSON\_KR
- YUKTO1\_KN
- YUKTO2\_KN
- SNAG-O\_MINE\_KN

## B.16 Sensors

The following Sensors were added to the database:

- CHEESEBOARD\_LAA
- CS-SPG-6N\_SAA
- CS-SPG-6N\_SGN
- GRAVE.STONE\_LAM
- PAL-N\_VGN
- SATEL.SAR\_AGR
- SATEL.PHOTO\_AGR
- TYPE-120\_LAA
- TYPE-305A\_LAA
- TYPE-305B\_LAA
- TYPE-348\_SAA
- YLC-2\_LAA

## B.17 New Airfield and Runway

- WAKE.ISLAND.AFLD\_US
- PWAK.RWY10-28

## B.18 Aircraft Loads

The following aircraft loads were added to the database:

- KC46A.TANKER

## B.19 Naval Units

The following naval units were added to the database:

- DDH183\_JP
- DDH184\_JP

- LCS4\_US
- SSN785\_US

The following naval units were renamed in the database:

- LPD15\_US renamed AFSB15\_US
- ARS50\_US renamed T-ARS50\_US
- ARS51\_US renamed T-ARS51\_US
- ARS52\_US renamed T-ARS52\_US
- ARS53\_US renamed T-ARS53\_US

The following naval units were removed from the database:

- FFG40\_US - Decommissioned
- FFG41\_US - Decommissioned
- FFG43\_US - Decommissioned
- FFG45\_US - Decommissioned
- FFG46\_US - Decommissioned
- FFG47\_US - Decommissioned
- FFG48\_US - Decommissioned
- FFG49\_US - Decommissioned
- FFG50\_US - Transferred to Taiwan
- FFG51\_US - Decommissioned
- FFG54\_US - Decommissioned
- FFG55\_US - Decommissioned
- FFG56\_US - Decommissioned
- FFG57\_US - Decommissioned
- FFG58\_US - Decommissioned

- FFG59\_US - Decommissioned
- FFG60\_US - Decommissioned
- FFG61\_US - Decommissioned
- LHA5\_US - Decommissioned
- LPD10\_US - Decommissioned
- LPD9\_US - Decommissioned
- MCM1\_US - Decommissioned
- MCM2\_US - Decommissioned
- SSN701\_US - Decommissioned
- SSN714\_US - Decommissioned
- SSN755\_US - Decommissioned
- T-AE32\_US - Decommissioned
- T-AGM23\_US – Decommissioned
- T-AGS51\_US – Decommissioned
- T-AGS61\_US – Decommissioned
- T-AK9205\_US – Decommissioned
- T-AOE10\_US – Decommissioned
- T-AOT1122\_US – Decommissioned
- T-AOT1123\_US – Decommissioned
- T-AOT1124\_US – Decommissioned
- T-AOT5084\_US – Decommissioned
- WHEC723\_US – Decommissioned
- WHEC725\_US – Transferred to Bangladesh
- WMEC167\_US – Decommissioned

- WMEC38\_US – Decommissioned

## B.20 Aircraft Class

- Changed Aircraft Names from multiple to single names for DIS Enumeration values.

The following aircraft classes were added to the database:

- 737.BOEING
- 757.BOEING
- AB205.
- AB212.TWIN.HUEY
- AN2.COLT
- AN24.COKE
- AN26.CURL
- BELL206
- BOEING.C32
- BOEING.C40
- C130H.HERCULES
- C130J.HERCULES
- C130K.HERCULES
- C23A.SHERPA
- C37B
- C47.DAKOTA
- CJ6\_YAK18
- CL601.CHALLENGE
- CL604.CHALLENGE
- DASH8

- DC3
- DHC6.TWIN.OTTER
- DHC8
- DO128.SKYSRVANT
- DO28D.SKYSRVANT
- E3D.SENTRY
- E3F.SENTRY
- F18A.HORNET
- F18B.HORNET
- FBC1.FLYING.LEO
- FC1.XIAOLONG
- FT5.FRESCO
- FT6.FARMER
- FT7.FISHBED
- FTC2000.MTN.EAG
- GULFSTREAM.G550
- HH3.JOLLY.GG
- HUGHES.300
- J1.JASTREB
- J21.JASTREB
- JF17.THUNDER
- JH7.FLOUNDER
- JJ5.FRESCO
- JJ6.FARMER

- JJ7.FISHBED
- JL8.KARAKORM
- JL9
- K8.KARAKORM
- KA27.HELIX-A
- KA28.HELIX-A
- KA29.HELIX-A
- KA32.HELIX-A
- KC-46A.PEGASUS
- L39.ALBATROS
- L59.ALBATROS
- MI17.HIP-H
- MI4.HOUND
- MI8M.HIP-H
- PC12
- S61.SEAKING
- S70.BLACK.HAWK
- S70A.BLACK.HAWK
- SA321SPRFRLN
- SHORT.330
- TH55.OSAGE
- TH57.SEA.RANGER
- TH57\_67
- TH67.CREEK

- U28A
- UH1H.IROQUOIS
- UH1N.IROQUOIS
- UH60A.BLACKHAWK
- UH60L.BLACKHAWK
- UV18
- Y5C
- Y7
- Y7H
- YAK18.MAX
- Z5
- Z8

The following aircraft classes were removed from the database:

- 737.BOEING\_C40
- 757.BOEING\_C32
- AN2\_Y5C.COLT
- AN24\_Y7.COKE
- AN26\_Y7H.CURL
- BELL206\_TH57\_67
- C130HJK.HERC
- C23A\_330.SHERPA
- C37B.G550
- C47\_DC3.DAKOTA
- CJ6\_YAK18

- CL601\_CL604
- DHC8\_DASH8
- D028D\_128.SKYSV
- E3D\_E3F.SENTRY
- F18A\_B.HORNET
- FC1\_JF17THUNDER
- HH3\_S61.SEAKING
- HUGHES.300\_TH55
- J1\_J21.JASTREB
- JH7\_FBC1.FLNDER
- JJ5\_FT5.FRESCO
- JJ6\_FT6.FARMER
- JJ7\_FT7.FISHBED
- JL9\_FTC2000
- K8\_JL8.KARAKORM
- KA27\_28.HELIX-A
- KA29\_32.HELIX-A
- L39\_59.ALBATROS
- MI4\_Z5.HOUND
- MI8M\_MI17.HIP-H
- TH57\_67
- U28A\_PC12
- UH1H\_AB205
- UH1N\_AB212

- UH60A\_S70A.BHWK
- UH60L\_S70B.BHWK
- UV18\_DHC6.OTTER
- Z8\_SA321SPRFRLN

#### B.21 Air Defense Class

The following Air Defense Classes were added to the database:

- HHQ-10.16VLS
- HHQ-10.24VLS
- HHQ-10.8VLS
- HHQ-9A.6VLS
- HQ-9.BTRY
- REDUT.8VLS
- SA-17.BTRY
- SA-21.BTRY

#### B.22 Air-to-Air Lethality (AAL)

The following Air-to-Air Lethality types were added to the database:

- TY-90\_AAL

#### B.23 Calibers

The following new calibers were added to the database:

- 100SGM30CG122.4
- 130FGM30CG
- 130SGM37SG
- 30CG23SG
- 30FG20SG

- 57FGM25SG
- 5FGS30CG
- 5SGS30SG20CG
- 76FGL37SG25SG

#### B.24 Tactical Unit Prototypes (TUPs)

The following Tactical Unit Prototypes were added to the database:

- SA17.SAM.BN\_KP
- SA17SAM.BTRY\_KP
- SA21.BTRY

#### B.25 Supply Categories

The following Supply Categories were added to the database:

- CL.V.SA-SA21.40
- CL.V.SA-SA21.E
- CL.V.SA-SA21.E2

#### B.26 Surface-to-Surface Missiles (SSMs)

The following Surface-to-Surface Missile types were added to the database:

- SS-N-26.VLS
- UKSK.8VLS

#### B.27 Surface-to-Air Lethality (SAL)

The following Surface-to-Air Lethality types were added to the database:

- HHQ-10\_SAL
- HQ-9\_SAL
- SA-21.40N6\_SAL
- SA-21.9M96E\_SAL

## APPENDIX C. Version 5.0.0.0 DATABASE CHANGES

The following changes were made to the JTLS-GO 5.0 database.

### C.1 ADDED DATA TABLES/FIELDS

1. The new BARRIER\_TYPE table was added with the following initial values:

- 'IMPASSABLE'
- 'REEF'
- 'SHORE'
- 'SHORE\_LCAC'
- 'TANK\_DITCH'
- 'WADI'

2. The new AGILITY\_TYPE table was added with the following initial values:

- 'AIRCRAFT'
- 'AMPHIB'
- 'BOAT'
- 'BOAT\_LCAC'
- 'FOOT'
- 'NOT-USED'
- 'SHIP'
- 'TOWED'
- 'TRACKED'
- 'TRANSPORTED'
- 'WHEELED.OFF.ROAD'
- 'WHEELED.ON.ROAD'

3. The new GRID\_SIZE\_LU lookup table was added with the following values:

- 'GRID.SIZE.10.DEGREES', 1
  - 'GRID.SIZE.5.DEGREES', 2
  - 'GRID.SIZE.1.DEGREE', 3
  - 'GRID.SIZE.30.MINUTES', 4
  - 'GRID.SIZE.15.MINUTES', 5
  - 'GRID.SIZE.5.MINUTES', 6
  - 'GRID.SIZE.1.MINUTE', 7
  - 'GRID.SIZE.30.SECONDS', 8
  - 'GRID.SIZE.15.SECONDS', 9
4. The new MCP\_BT\_AGT child table was added, to hold the compound MCP.BT.AGT.TIME.DELAY value, which is not a multiplier, but an actual time delay.

Note: This table was initially populated with existing data from the mobility prototype, barrier type and agility type tables, with a default time delay of 0.

5. The new terrain types 'JUNGLE' and 'SWAMP' were added to the TERRAIN\_LU lookup table and the child tables were populated accordingly.

Note: Other valid terrain types in this lookup table are: 'OPEN', 'FOREST', 'DESERT', 'CITY', 'MOUNTAIN', 'SMALL\_ISLAND', 'OCEAN'.

6. The new ROAD\_TYPE\_LU lookup table was added with the following values:

- 'NO\_ROAD'
- 'POOR\_ROAD'
- 'GOOD\_ROAD'

7. The new TT\_RDT (Terrain Type, Road Type) child table was added, to hold the compound TT.RDT.MOVE.TIME.MULTIPLIER value.

Note: This table was initially populated with existing data from the terrain type and road type tables, with the default move time multiplier set to the previous move time multiplier values of the terrain\_type table.

8. Replaced the obsolete LCAC\_FLAG column of the SMALL\_BOAT table with the new SB\_AGILITY\_TYPE field.

The new SB.AGILITY.TYPE is the small boat LCAC ability by type.

The initial SB\_AGILITY\_TYPE field value is set to 'BOAT\_LCAC' if the old sb\_lcac\_flag value was set to 'YES'.

9. Added the AGILITY\_TYPE column to the Ship Unit Prototype table.

Note: the initial value for the new SUP.AGILITY.TYPE field is set to 'SHIP' by default.

10. The obsolete Target Network table (target\_network) was removed.

11. Dropped the obsolete REF\_DETECTION\_DISTANCE, SUNSET\_TIME and the SUNRISE\_TIME data fields from the Global Values table.

12. Dropped the obsolete TC\_PK\_ADJ\_HEX field from the Transportation Class table.

Note: The old TC.PK.ADJ.HEX value was holding the probability of kill if found in an adjacent hex.

13. Changed the unit orientation values from text to integer values.

Note: the following case statement was used to assign the new values:

```
CASE
WHEN xx_orientation = 'N'
THEN 0
WHEN xx_orientation = 'NE'
THEN 60
WHEN xx_orientation = 'SE'
THEN 120
WHEN xx_orientation = 'S'
THEN 180
WHEN xx_orientation = 'SW'
THEN 240
WHEN xx_orientation = 'NW'
THEN 300
ELSE 0
```

14. Added the AGILITY\_TYPE column to the CSP\_CS table.

The initial default value for the new compound CSP.CS.AGILITY.TYPE data is set to 'TRACKED'.

The value is set to 'FOOT' if the CS.PERSONNEL.FLAG was set to YES.

The value is set to 'WHEELED.OFF.ROAD' if the CS.ELS.LIFT.FLAG was set to YES.

The value is set to 'WHEELED.ON.ROAD' if the CS.NAME was 'TRUCK-HET'.

15. Created a new child table of the Pumping Station Target table.

The related design specifies that the `pumping_station_target` table needs a child table that contains the supply storage targets that they can feed.

16. Added the new `associated_target` columns to the `RAILROAD_ARCS`, `ROAD_SEGMENT_ARCS`, `RAILROAD_NODES` and the `ROAD_SEGMENT_NODES` tables.

17. Created the new `TERRAINING_LAYER` table.

18. Created the new `TERRAINING_LAYER_GRID` table.

19. Added the `agility_type` column to the Transportation Class table.

Note: The default value of the `TC.AGILITY.TYPE` field is set to 'NOT-USED'

If the transportation class type was 'BARGE', the new value is set to 'BOAT'.

If the transportation class type was 'CARGO\_TRUCK' or 'TANKER\_TRUCK', the new value is set to 'WHEELED.ON.ROAD'.

20. Created the new `BARRIERS` and `BARRIER_POINTS` child tables

21. Added the new maximum move update time Modeling Parameters.

- `MAX.MOVE.UPDATE.TIME.HRU`, "HRU Move updates as least this often
- `MAX.MOVE.UPDATE.TIME.LAND`, "ARU Move updates as least this often
- `MAX.MOVE.UPDATE.TIME.SHIP`, "Ship move updates as least this often
- `MAX.MOVE.UPDATE.TIME.AM`, "AM move updates as least this often
- `MAX.MOVE.UPDATE.TIME.CM`, "CM/Torp move updates as least this often
- `MAX.MOVE.UPDATE.TIME.SR`, "SR move updates as least this often
- `MAX.MOVE.UPDATE.TIME.TBM`, "TBM move updates as least this often
- `MAX.MOVE.UPDATE.TIME.WF`, "WF move updates as least this often

22. Added the `SEA LANES` related nodes and arcs tables.

23. Added the primary direction of movement and direction deviation data fields to the `WEATHER_FRONT` table.

New fields are: `WF.EXPECTED.DIRECTION`, `WF.DIRECTION.DEVIATION`

24. Created the new WEATHER\_FRONT\_POINTS child table.

By design, we did not update the user's existing weather front records, given that we now have the new weather\_front\_points (arcs) child table. As specified in the new design, the existing weather front records were removed.

25. Added the Pipeline Node data field to the Pipeline\_Targets table.

Note: the new field was populated by using the source node of the related Pipeline records.

26. Created the new SURFACE\_DETECTION\_METHOD\_LU lookup table with the following default values:

- 'ACTIVITY\_BASED',
- 'INSTANTANEOUS',
- 'OBSERVED',

27. Added 3 new data fields to the SENSOR\_TYPE table.

- ST.DETECTION.METHOD (Detection Method For Surface Search),
- ST.DETECTION.PERIOD (Used to compute time to detection),
- ST.MAX.DETECTION.ALTITUDE (Sensor will not look above this altitude).

Note: during the modification, the ST.DETECTION.METHOD default value is set to 'OBSERVED'. If the collection mode was either 'ELINT' or 'COMINT', then the ST.DETECTION.METHOD is set to 'ACTIVITY\_BASED'.

28. Combined 4 fields (organic reports) of the TUP table into 2 fields:

- TUP.ORGANIC.REPORT.DISTANCE (Distance seen with organic intel),
- TUP.ORGANIC.REPORT.TIME (Time between organic intel reports).

29. Combined 4 fields (organic reports) of the SUP table into 2 fields:

- SUP.ORGANIC.REPORT.DISTANCE (Distance seen with organic intel),
- SUP.ORGANIC.REPORT.TIME (Time between organic intel reports).

30. Replaced 4 random number seeds with 3 new ones:

- 'RNS\_DETECTION\_TIME', 489657150

- 'RNS\_ORGANIC\_DETECTION', 1173154333
- 'RNS\_ORGANIC\_REPORT\_TIME', 1181713969

The following obsolete random number seeds were removed:

- 'RNS\_ORGANIC\_AIR\_DETECTION'
- 'RNS\_ORGANIC\_AIR\_REPORT\_TIME'
- 'RNS\_ORGANIC\_GROUND\_DETECTION'
- 'RNS\_ORGANIC\_GROUND\_REPORT\_TIME'

### 31. The Load Assignment Array was modified.

The CRUISE\_LOAD in the lookup table was replaced with SEAD\_LOAD and the ASW\_LOAD was replaced with USW\_LOAD. The current records in the load\_assign table for the obsolete CRUISE\_LOAD tgc records were replaced with SEAD\_LOAD with no specific load assignment (set to null).

### 32. The Air Mission Types were modified.

The air\_mission\_lu table includes JTLS air mission types (abbreviations), which are referenced from the ACP\_MISSION table. These abbreviations are also used other places in the model such as the IMT screens. We did insert the new abbreviations for the new air mission type classifications before processing old records and removing the obsolete ones.

The new air mission type abbreviations are:

- 'OAS',
- 'DCA',
- 'MBLTY',
- 'XFER',
- 'MLAY',
- 'MCLEAR',

The following air mission types (abbreviations) were removed:

- 'AR\_REC',

- 'O\_OAS',
- 'ESCORT',
- 'STRAT',
- 'TEAM',
- 'DROP',
- 'ATTACK',
- 'CAP',
- 'LIFT',
- 'TRANSF',
- 'MINE\_W'

33. Recreated the EEV\_NATIONAL\_ASSET\_PASS table for the new JSAT design.

There were too many changes to the structure of the old `eev_national_asset_pass` table. There was no child table and the design specifies that the old data will be thrown out because of extensive design changes. Under this circumstances, it would be easier to drop the old table and recreate with its new child table.

34. Created the JSAT design-related new child table `NAP_ORBITAL_PATH`.

35. Added the `SPACE_ROUTE_DISPLAY_INTERVAL` data field to the `GLOBAL_VALUES` table for JSAT design.

Note: the default value for the new `SPACE.ROUTE.DISPLAY.INTERVAL` is set to 0.0625

36. Added the formation symbol field to the `GLOBAL_VALUES` table.

The default value is set to the same value as the current `icon_gen_unit_symbol` field value of the `global_values` table. In the `SDBKOR50` and `DEMSDBKOR50` scenarios, this field will be set to the newly created `FORMATION` symbol. This is by design.

37. Added new terrain types `ROLLING_HILLS` and `ICE` to the database.

Populated the child tables for `ROLLING_HILLS` and `ICE` terrain types.

Our standard database scenario builder recommended using the `MOUNTAIN` and `OPEN` terrain type records to tune the default values in child tables for the newly created `ROLLING_HILLS` and `ICE` terrain type related records.

38. Added the SATELLITE symbol field to the GLOBAL\_VALUES table.

39. Added the delay time to the Rode Network Nodes table.

40. Added a new field (FS\_CONVOY\_REMOVE\_DELAY) to the Force Side table.

41. Renamed 2 data fields of the SLP table.

- Column slp\_mand\_trans\_dist\_max was renamed to slp\_replenishment\_max\_distance
- Column slp\_mand\_transfer\_time was renamed to slp\_replenishment\_time

42. Created the new NATO LOGFAS RIC table.

Created the new table to host the NATO LOGFAS RIC (Reportable Item Code) data. Note that this particular table will act as a dynamic lookup table and will be populated by NATO scenario builders. We will NOT populate the data but will download and load the data in the related ASCII scenario files.

43. Added the new LOGFAS RIC fields to CSP\_CS and SLP\_SC tables.

- CSP\_CS.RIC (LogFAS Reportable Item Code)
- SLP\_SC.RIC (LogFAS Reportable Item Code)

44. Added UOM-related fields to the SLP\_SC child table to support LOGFAS.

- slp\_sc\_uom\_long\_name
- slp\_sc\_uom\_type

45. Added the short classification field to the global\_values table to support LOGFAS.

- short\_classification

46. Created the new NATO LOGFAS NIC table.

Note that this particular table will act as a dynamic lookup table and will be populated by NATO scenario builders. We will NOT populate the data but will download and load the data in the related ASCII scenario files.

47. Added the new LOGFAS NIC fields to CSP\_CS and SLP\_SC tables.

- CSP\_CS.NIC (LOGFAS text National Identification Code)
- SLP\_SC.NIC (LOGFAS text National Identification Code)

48. Added the LOGFAS related field (CSP.PRIMARY.COUNTRY) to the CSP table.

49. Added the LOGFAS related field (nv\_homeport) to the NAVAL\_UNIT (and the NAVAL\_UNIT\_REF) table.

- UT.HOME.PORT

50. Added the C4I\_Name field to UOM table for NATO LOGFAS design.

The new C4I\_Name field values were set to the same of the uom\_short\_name fields of the related records.

51. Added the RIC and NIC related data fields to the NAVAL\_UNIT table.

- UT.RIC
- UT.NIC

52. Added the Maximum Width and Maximum Depth fields to the BARRIER\_TYPE table.

- BT.MAX.WIDTH
- BT.MAX.DEPTH

53. Added the RIC and NIC related data fields to the AIRCRAFT\_CLASS table (LogFAS related).

- AC.RIC
- AC.NIC

54. Added the LOGFAS Force Level Code to the COMMAND\_LEVEL table

- CL.LOGFAS.CODE

55. Created the new NATO LOGFAS\_PROFILE (LOGFAS.PROFILE) table

- LFP.NAME
- LFP.TOP.UNIT

56. Added BT.SHORELINE.FLAG to the Barrier Type table

57. Added the following fields to the Ship Unit Prototype table:

- SUP.STORAGE.FLOOR.AREA
- SUP.SHELTER.PRIORITY

58. In preparation for the ECP JTLS-2015-12464, the ST\_LINK16\_CAPABLE\_FLAG column of the SENSOR\_TYPE table was renamed as "ST\_COP\_CAPABLE" and now referencing to a specific lookup table with 3 values (LINK16, OTH-GOLD, NOT-COP-CAPABLE). The default is "OTH-GOLD".

## C.2 REMOVED DATA TABLES/FIELDS

1. The old HEX\_DEF terrain table was dropped from database schema.
2. Obsolete terrain types, except the following, were removed from the TERRAIN\_LU lookup table:
  - 'OPEN'
  - 'FOREST'
  - 'DESERT'
  - 'CITY'
  - 'MOUNTAIN'
  - 'SMALL\_ISLAND'
  - 'OCEAN'
3. Obsolete terrain type records were removed from the child tables of the TERRAIN\_LU lookup table.
4. The obsolete tt\_mv\_time field was removed from the TERRAIN\_TYPE table.
5. Dropped the hex edge data field from related target tables (interdiction\_pt\_target, tunnel\_target, bridge\_target).
6. Removed the WIPED\_OUT, ATTACHED and OUT\_OF\_GAME postures.
7. Removed the obsolete MISSILE\_UPDATE\_INTERVAL from the global\_values table.
8. Removed obsolete data fields from the WEATHER\_FRONT table:
  - wf\_lower\_left\_dec\_lat,
  - wf\_lower\_left\_dec\_long,
  - wf\_location,
  - wf\_width,

- wf\_height,
  - wf\_probability\_n,
  - wf\_probability\_ne,
  - wf\_probability\_se,
  - wf\_probability\_s,
  - wf\_probability\_sw,
  - wf\_probability\_nw,
9. Dropped the obsolete WEATHER\_SYMBOL\_LU lookup table.
10. Dropped the obsolete DIST\_LOSE\_AIR\_TRACK field of the AIR\_CONTROL\_PROTO table.
11. Dropped the ST\_REPORTING\_METHOD field from the SENSOR\_TYPE table.
12. Dropped the JCATS flag field from the ACP\_MISSION table.
13. Removed the COLOR field from the Area Of Operations table.
14. Dropped the Networks-related obsolete database triggers:
- TRIGGER trig\_pipeline\_inssupd\_row
  - TRIGGER trig\_railroad\_inssupd\_row
  - TRIGGER trig\_rivers\_inssupd\_row
  - TRIGGER trig\_road\_inssupd\_row
15. Dropped the AL\_ST\_LOAD and AL\_JT\_LOAD fields from related tables.
16. Removed 10 unused data fields from the IIP table:
- iip\_org\_air\_pd\_unit ,
  - iip\_org\_air\_pd\_target ,
  - iip\_org\_ground\_pd\_unit ,
  - iip\_org\_ground\_pd\_target ,
  - iip\_org\_air\_int\_fus\_time ,

- iip\_org\_grnd\_int\_fus\_tim ,
- iip\_hum\_coll\_radius\_min ,
- iip\_hum\_coll\_radius\_max ,
- iip\_hum\_pd\_object\_at\_min ,
- iip\_hum\_pd\_object\_at\_max ,

17. Removed JMIRM-related database objects from the database schema:

- DROP TABLE jmrm\_combat\_translation PURGE;
- DROP TABLE jmrm\_target\_translation PURGE;
- DROP TABLE jmrm\_aircraft\_translation PURGE;
- DROP TABLE jmrm\_mobility\_lu PURGE;

18. Removed obsolete JCATS-specific data fields from related tables:

- ALTER TABLE tact\_unit\_proto SET UNUSED COLUMN tup\_jcats\_aggregate\_template CASCADE CONSTRAINTS;
- ALTER TABLE highres\_unit\_prototype SET UNUSED COLUMN hup\_jcats\_aggregate\_template CASCADE CONSTRAINTS;
- ALTER TABLE sensor\_type SET UNUSED COLUMN st\_jcats\_aggregate\_template CASCADE CONSTRAINTS;
- ALTER TABLE jammer\_type SET UNUSED COLUMN jt\_jcats\_aggregate\_template CASCADE CONSTRAINTS;
- ALTER TABLE communication\_center SET UNUSED COLUMN cc\_jcats\_aggregate\_template CASCADE CONSTRAINTS;
- ALTER TABLE surface\_surface\_missile SET UNUSED COLUMN ssm\_jcats\_aggregate\_template CASCADE CONSTRAINTS;
- ALTER TABLE air\_defense\_class SET UNUSED COLUMN ad\_jcats\_aggregate\_template CASCADE CONSTRAINTS;
- ALTER TABLE equipment\_shelter\_type SET UNUSED COLUMN est\_jcats\_aggregate\_template CASCADE CONSTRAINTS;