JTLS-GO

Version Description Document

August 2022

DEPARTMENT OF DEFENSE
JOINT STAFF J7
116 LAKE VIEW PARKWAY
SUFFOLK, VA 23435-2697

JOINT THEATER LEVEL SIMULATION - GLOBAL OPERATIONS
(JTLS-GO 6.1.7.0)

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ABSTRACT

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

This *JTLS-GO Version Description Document (VDD)* describes the new features of the Version 6.1.7.0 delivery of the configuration-managed JTLS-GO software suite.

JTLS-GO 6.1.7.0 is a Maintenance release of the JTLS-GO 6.1 series that includes an updated repository of standard data, a demonstration scenario based in the western Pacific, as well as a major model functionality improvement implemented as Engineering Change Proposals (ECPs), This ECP is 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:

> JTLS-GO Development Team Leader
> ROLANDS & ASSOCIATES Corporation
> 120 Del Rey Gardens Drive
> Del Rey Oaks, California 93940 USA
> jtlsgo@rolands.com

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1.0 INTRODUCTION

1.1 SCOPE

This *JTLS-GO Version Description Document* (VDD) describes Version 6.1.7.0 of the configuration managed Joint Theater Level Simulation - Global Operations (JTLS-GO®) software suite. JTLS-GO 6.1.7.0 is a Maintenance delivery for the JTLS-GO 6.1 series of releases.

JTLS-GO 6.1.7.0 includes the entire JTLS-GO suite of software, a repository of engineering level data, and a realistic demonstration scenario based on the Western Pacific theater of operations called "wespac61". There were no database format changes made to support this maintenance release. Database modifications that were accomplished to upgrade the previous JTLS-GO database format to the JTLS-GO 6.1 series format were summarized in the VDD for Version 6.1.0.0 delivered in the documents directory.

This release is being provided as part of the normal JTLS-GO maintenance program, in which new maintenance release versions are closely coordinated with Java security patch releases. In addition, both Joint Staff / J7 (JS/J7) and the NATO Communications and Information (NCI) Agency requested system corrections to potential cyber-security issues. The corrections to these problems are discussed in Chapter 3.0, along with other Software Trouble Reports (STRs) identified during testing and operational exercises. A few minor improvements to the model are summarized in Chapter 2.0.

JTLS-GO 6.1.7.0 executes on the Red Hat Enterprise Linux Version 8.4 64-bit operating systems. The Web-Hosted Interface Program (WHIP®) user workstation interface can be executed on any operating system from any Java-compatible Web browser.

1.2 INVENTORY OF MATERIALS

This section lists documents and software that are relevant to JTLS-GO. All JTLS-GO documents included in this delivery are provided in PDF format within the documents subdirectory.

1.2.1 Obsolete/Outdated Documents

No documents have been deleted or become outdated as a result of this release.

1.2.2 Unchanged Documents

- *JTLS-GO Analyst Guide* (JTLS-GO Document 01, Version 6.1.2.0)

- *JTLS-GO Configuration Management Plan* (JTLS-GO Document 03, Version 6.1.0.0)

- *JTLS-GO Controller Guide* (JTLS-GO Document 04, Version 6.1.0.0)

- *JTLS-GO Director Guide* (JTLS-GO Document 07, Version 6.1.0.0)

- *JTLS-GO WHIP Training Manual* (JTLS-GO Document 10, Version 6.1.4.0)

- *JTLS-GO Player Guide* (JTLS-GO Document 12, Version 6.1.2.0)

- *JTLS-GO Repository Description* (JTLS-GO Document 14, Version 6.1.0.0)

- *JTLS-GO Software Maintenance Manual* (JTLS-GO Document 15, Version 6.1.0.0)

- *JTLS-GO Entity Level Server User Guide* (JTLS-GO Document 19, Version 6.1.0.0)

- *JTLS-GO Federation User Guide* (JTLS-GO Document 20, Version 6.1.2.0)

- *JTLS-GO DoD Architecture Framework* (JTLS-GO Document 22, Version 6.1.0.0)

1.2.3 Updated Documents

- *JTLS-GO Executive Overview* (JTLS-GO Document 02, Version 6.1.7.0)

- *JTLS-GO Data Requirements Manual* (JTLS-GO Document 05, Version 6.1.7.0)

- *JTLS-GO DDS User Guide* (JTLS-GO Document 06, Version 6.1.7.0)

- *JTLS-GO Installation Manual* (JTLS-GO Document 09, Version 6.1.7.0)

- *JTLS-GO Technical Coordinator Guide* (JTLS-GO Document 16, Version 6.1.7.0)

- *JTLS-GO Version Description Document* (JTLS-GO Document 17, Version 6.1.7.0)

- *JTLS-GO C4I Interface Manual* (JTLS-GO Document 21, Version 6.1.7.0)

- *JTLS-GO DDS Training Manual* (JTLS-GO Document 23, Version 6.1.7.0)

- *JTLS-GO ATO Services User Guide (*JTLS-GO Document 24, Version 6.1.7.0)

1.2.4 New Documents

No new documents were produced for this version of the software.

1.2.5 Delivered Software Components

JTLS-GO 6.1.7.0 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)

- JTLS Symbols Application (JSYMS)

- Database Development System (DDS)

     Database Configuration Program (DCP)

     DDS Client User Interface (DDSC)

     Glassfish Version 5.1.0

- 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)

     The current JODA build number is 173.

- Web Services Manager (WSM)

- Web-Hosted Interface Program (WHIP) and its component programs:

     Apache Server (APACHE) Version 2.4.54

     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

- Keyhole Markup Language (KML) Operational Interface (KOI)

- JTLS Transaction Interface Program (JTOI)

- JTLS Interface Network Navigator (JINN)

- JTLS Order of Battle Editor (JOBE)

- JTLS Geographic Information System (GIS) Terrain Building Program

- JTLS Master Integrated Database (MIDB) Tool

- JTLS Version Conversion Program (VCP)

    VCP60 - Converts a JTLS-GO 5.1 database to a JTLS-GO 6.0 formatted database.

    VCP61 - Converts a JTLS-GO 6.0 database to a JTLS-GO 6.1 formatted database.

Instructions for installing JTLS-GO 6.1.7.0 are provided in the *JTLS-GO Installation Manual*. Installing a previous version of JTLS prior to installing JTLS-GO 6.1.7.0 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 that serves as a repository of engineering level data called "repository61". Although not useful as a scenario, it does follow all of the database requirements for a scenario, and should be loaded into your PostgreSQL scenario table-space.

- The scenario "wespac61", which is suitable for training and demonstrations.

1.3 INTERFACE COMPATIBILITY

1.3.1 Support Software

JTLS-GO 6.1.7.0 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 Server (ES) Edition Version 8.4 or higher, 64-bit architecture.

  JTLS-GO 6.1 has been tested with the following versions of Linux 8:

  RedHat Linux 8.6 - this operating system license must be purchased.

  Oracle Linux 8.4 and 8.6 - This operating system is free to download, use, and distribute, and is provided in a variety of installation and deployment methods. It has been approved by DISA for use by U.S. Government Agencies.

  CentOS 8.4 - a free version of Linux 8 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 6.1.7.0 has been tested on the following operating systems:

  Red Hat Linux Enterprise Edition Version 7.9, 8.4, and 8.6

  Oracle Linux 8.4 and 8.6

  CentOS Linux Version 7.9 and 8.4

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

- JTLS-GO 6.1.7.0 is delivered with the AdoptOpenJDK 1.8 Update 345 package, which is equivalent to the current version of OpenJDK.

- JTLS-GO uses IcedTea to provide the Java Web Start capability that implements the web-enabled JTLS-GO functionality. JTLS-GO supports IcedTea version 1.8.8.

- JTLS-GO database tools require a certified PostgreSQL 11.13 database server and the full PostgreSQL installation. A containerized solution, that fulfills this specification, is provided as part of the JTLS-GO download. It is not necessary to use the delivered containerized solution, but it is the easiest method to meet the requirements of JTLS-GO 6.1.7.0. There are several alternative methods available for obtaining the PostgreSQL 11.13 software. Refer to Chapter 6 of the *JTLS-GO Installation Manual* 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 III (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 application uses these open source libraries:

  JFreeChart, licensed under a GNU Lesser General Public License (LGPL) by Object Refinery Limited, http://www.object-refinery.com

  JCommon, licensed under LGPL2.1 (GNU Lesser General Public License version 2.1 or later) by Object Refinery Limited, http://www.object-refinery.com

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

- KML Operational Interface (KOI)

  The Keyhole Markup Language (KML) Operational Interface (KOI) server utility enables the model to feed operational simulation data to any version of Google Earth™. The display capabilities and data transfer features of this terrain viewer are sufficiently robust to be used as a base-level operational interface. Operational Players who may be

restricted from using an operational Command, Control, Communication, Computer Information (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 Cybersecurity Compliance

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

One of the DoD 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. In previous versions of JTLS-GO, Java 8, as delivered by Oracle, fulfilled this mandate by implementing an expiration date for its software. After a certain date, all Java related programs stopped working, whether connected to an open network or not. All JTLS-GO releases were closely linked to the Java expiration date.

OpenJDK^{TM} has not implement an expiration date. In order to fulfill this DoD Cybersecurity requirement, JTLS-GO has moved to AdoptOpenJDK, a full OpenJDK Java environment with licensing alternations allowing an application to deliver the software. The following procedure has been established and approved by the JS/J7 Cybersecurity branch:

- Within days of an Oracle Java security release, AdoptOpenJDK produces an equivalent version using infrastructure, build and test scripts to produce pre-built binaries of the OpenJDK class libraries. All AdoptOpenJDK binaries and scripts are open source licensed and available for free.

- Within two-weeks of the AdoptOpenJDK release, JTLS-GO provides a bug release version (JTLS-GO 6.1.n.0) including a full Version Description Document (VDD) for download to all authorized agencies. All DoD agencies using JTLS-GO will be in full compliance with this specific Cybersecurity mandate as long as they download and use the bug released versions when distributed.

Contact the U.S. Government Program Manager, Mr. James Blank (james.e.blank.civ@mail.mil) to obtain the completed Cybersecurity paperwork and a current Gate completion certificate.

1.3.3 JTLS-GO High Level Architecture Compliance

The JTLS-GO 6.1.7.0 release is fully High Level Architecture (HLA) compliant, and includes all the programs required to run JTLS-GO in an HLA mode. JTLS-GO currently belongs to one federation known as GlobalSim. 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. CAE's GESI constructive simulation system is designed to run complex and comprehensive exercises from the company level up to division level. The 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. JTLS-GO uses the Federation Object Model (FOM) located in the $JGAME/data/hla directory, Federation testing of JTLS-GO with CAE's GESI model have been accomplished. Future plans include expanding the capabilities of the GlobalSim federation.

The HLA RTI (Run Time Infrastructure) executive program (rtiexec) recommended for use with this release is Pitch pRTI Evolved 4.4.2.0. However, this program is not included in the JTLS-GO 6.1.7.0 delivery. Users may obtain a full installation package of the RTI software from Pitch Corporation (www.pitch.se). For information about executing the HLA RTI Executive and other HLA-related software, refer to the appropriate HLA documentation and user guides.

1.4 DATABASE MODIFICATIONS

Significant database structure differences exist between the JTLS-GO 6.1 series of the software and the previous JTLS-GO 6.0 series database structure. There are no database format changes between JTLS-GO 6.1.7.0 and the initial JTLS-GO 6.1.0.0 version of the software.

To upgrade your JTLS-GO 6.0 scenario to JTLS-GO 6.1 compatibility, see instructions listed in the *JTLS-GO DDS User Guide*, Chapter 3.1.

> STR JTLS-2022-15607 Grid Lower-Left Location Not Exact On Restart was included in JTLS-GO 6.1.2.0, released in March 2022. This STR required a change to the ASCII checkpoint format. Any saved checkpoints from JTLS-GO 6.1.0.0 and JTLS-GO 6.1.1.0 will not work with JTLS-GO 6.1.3.0.
>
> STRs JTLS-2022-15810 and JTLS-2022-15839, delivered with this release, required changes to the checkpoint format. Any saved checkpoints from any previous JTLS-GO 6.1.0.0 versions will not work with JTLS-GO 6.1.7.0.

1.4.1 JTLS-GO Using Legacy Default Symbol Set

If a user organization is still using the pre-JTLS-GO 5.0.0.0 legacy default symbol set, prior to unloading your JTLS-GO 6.1.0.0 formatted data from your PostgreSQL database server into the JTLS-GO 6.1.0.0 scenario American Standard Code for Information Interchange (ASCII) text files, you must execute the JSYMS program using the procedure outlined in the *JTLS-GO DDS User Guide*, Appendix B.11. This procedure will reorganize the structure of the <scenario_name>.gs and databases symbol.scf file.

1.4.2 JTLS-GO Using New Default Symbol Set

You should not make any modifications to the Default Symbol Set delivered with JTLS-GO 6.1.7.0, but end-user organizations are free to use the Default Symbol Set in their scenarios and alter the scenario symbol set to meet specific organizational needs. Some new symbols have been created to meet end-user requirements. No previously existing symbols were deleted nor were any of the preexisting symbol names changed.

This means that the user can easily move in this new symbol set. Please follow the steps outlined in the *JTLS-GO DDS Users Guide*, Section B.13, Updating Scenario Symbol Set.

1.4.3 Standard Repository Changes

R&A has continued to improve and expand the unclassified data repository, which has been renamed to "repository61." The DDS comparison and synchronization function can be used to determine if any of the changes delivered are of use to a JTLS-GO user organization.

1.5 INSTALLATION

The *JTLS-GO Installation Manual,* a Portable Document Format (pdf) file available for direct download, is part of this JTLS-GO delivery, It provides detailed instructions for installing the new version of JTLS-GO and the installation of PostgreSQL 11.13 required to operate JTLS-GO 6.1.7.0.

2.0 ENGINEERING CHANGE PROPOSALS

This section describes the new capabilities, known as an Engineering Change Proposal (ECP), that are delivered with this release.

2.1 JTLS-2022-15757 Allow Retrieval of JODA Data As Spreadsheet

Summary of Model Change Request

In order for the Response Cell to better collate and arrange data from a running exercise, it would be useful to be able to retrieve information on various objects directly from the JODA and be able to import that data into a spreadsheet.

Design Summary

The JTLS XML Server (JXSR) is already designed to process object queries and return the information in either binary or XML format, so it was selected as the best place to mine the information and provide the same sort of information in a Character Separated Value (CSV) output.

The Apache JXSR module was modified to expect a retrieval request with a packet type of "csv" in addition to the already existing packet types of "bin" (binary) and "xml" (eXtended Markup Language). When the JXSR retrieves a packet type of "csv" it prepares the response with meta data to indicate a CSV file is being returned. The module then sends the request to the JXSR along with the packet type. A new output class was written for the JXSR that, once the data is retrieved, writes the objects line by line, and for each object separates every output piece of data with a slash (/). Data that is an enumerated value in the response is translated into its equivalent text value on the output.

2.2 JTLS-2022-15758 Apply Side Selection Filters To ICC Initialization

Summary of Model Change Request

When initializing the JTLS Transaction Operational Interface (JTOI) for the NATO Interactive Command and Control (ICC) system, all Aircraft Classes, Ship Unit Prototypes (SUP), and ground units are sent to the ICC, regardless of whether they are used in the scenario or are on a side of interest. This requires the ICC operator to then spend time removing the unused items to reduce the number of listed items and improve the usability of the system for the end user. It is desirable to have a way to only initialize those objects that are on a side of interest to the ICC.

Design Summary

A new side selection dialog has been added to the ICC setup panel. When in ICC OB TOTE mode, this panel can be brought up to limit the sides that are initialized (by default all sides are set to be initialized). The Scenario Initialization Program (SIP), which generates an initialization file for

the JTOI listing all Aircraft Classes, Ship Unit Prototypes, and Tactical Unit Prototypes (TUP) for the JTOI, has been modified to also include which force sides use the objects. The combination of the SIP generated side usage data and the user selected side initialization settings is used to determine which Aircraft Classes, SUPs, and ground units (via their TUP) will be initialized in ICC.

The Theater Battle Management Core System (TBMCS) and the Northern European Command - Command and Control Information System (NEC-CCIS) JTOI code was also updated to read the new format of the JTOI initialization file.

2.3 JTLS-2022-15823 AAR Reporting Improvements

Summary of Model Change Request

When objects are created in the CEP, they are also registered with the AAR. These include Air Missions, Units, Targets, JDPIS, BE Facilities, etc. The registration of the objects includes some information about the object such as side, service, and higher HQ for units. Many of the reports use this information as part of their data collection, but this information can change over the course of a game. Although these changes are registered with the AAR, the various reports were not checking for nor utilizing these changes in the generation of the reports.

In addition to not capturing the complexity of a dynamic game, the reports were also not consistent on available filters. For example, some report panels would allow the user to filter by either all sides, a single side, or a list of sides, whereas another report would only allow a single side. The panels were modified to allow the most robust filtering across all fields.

There has also been a long-standing issue with the Target Damage History report, which was designed to provide damage made against foreign targets but to also list the current perceived strength of those targets. The strength has to come from the SDC tables and when the SDC is not being run the report did not generate.

Finally, a desire for a BDA report to provide all damage within a geographic region exists and with the other changes being made could easily be supported.

Design Summary

Three new classes were added to the report utility library to handle Object Dynamics, Object Hierarchy, and Object Membership:

- The Object Dynamics class collects all the changes made to the base data for objects and arranges it in a time-based format that can be quickly queried for changes.

  For example, if a report requests all Force Side RED units that were damaged, the report code can load the Object Dynamics class and, as it cycles through the damage events, can verify the Force Side of the damaged object at the time of the event and filter it out as

necessary. Besides Force Side, this class also tracks changes to HQ and associated unit, Time Over Target for Air Missions, Mission Type, JDPI Category, Unit Prototype, Target subcategory, and Unit Service.

- The Object Hierarchy class retrieves the higher HQ and associated relationship of all objects from their data tables and all changes to these values from events. It creates a mapping of the data that can be queried for time specific hierarchy. For example, if the user requests a BDA report on a unit and all subordinates, then the victim of each damage event can be checked if it was a subordinate of the unit at the time of the damage.

- The Object Membership class is designed to handle the dynamic membership nature of JDPIs and BE Facilities. Membership of these objects can change over the course of a game via either Controller action or by object movement. The class produces a time-based mapping of membership, so that if a Detection Report of a BE Facility is requested then individual detection records can be checked to determine if the object was a member of the BE Facility at the time of detection. The same concept exists for an Object Damage Report against a JDPI.

With the addition of these classes, all reports were modified to ensure they were capturing the dynamic nature of a JTLS-GO game, and a mechanism was added to allow filtering out or modification of retrieved items before inserting them into temporary tables.

These reports also provided the capability to broaden the information available on many reports. For example, a Collection Report with a unit specified as the detecting object would only list the detections made explicitly by the unit, but not by its targets. The Collection Report has now been modified so the user can specify that they want to include owned and/or associated targets when a unit is specified as the detecting object.

Alternatively, if the unit is a Reconnaissance Squadron, the user can specify that they want to include detections made by owned Air Missions. Or, if the unit represents a Home Guard unit that has dispatched HRU lookouts, the user can specify that owned HRUs should be included as detecting objects.

The Target Damage History report receives most of its data from the AAR tables, but does require the current perceived strength from the SDC tables. The report was modified to allow the retrieval of the damage data, whether or not the current perceived strength could be retrieved. If the perceived strength is retrieved, it will appear in the report. In its absence the report will include question marks for that item of data.

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.

3.1 JTLS-2022-15742 Added New Check To Check-order Script

The check-order script always assumed that an order group with only one option was illegal. This is not the case. There is a specific condition in which a single option group should be allowed when the single option is an auto-select option based on the value of a related field.

A new check was added to the check-order script that checks for and allows that specific condition where a single allowed option for a group is necessary.

3.2 JTLS-2022-15743 Added Geo Region Online Help

There was no Online Help for the new Region capability in the DDS.

The DDS JavaHelp XML pages were modified to add the help pages for the new capability.

3.3 JTLS-2022-15744 NIC Codes Not Generated For Targets

If an object has a Reportable Item Code (RIC), but no National Item Code (NIC), JTLS-GO will generate a NIC for each country that uses the Target Type. This NIC code is composed of the 3 digit NATO-Trigraph for the appropriate country, followed by a unique integer string.

Code exists within the Scenario Initialization Program (SIP) to perform this creation, but it is incorrect when generating a NIC for a Target Type. For Target Types, the automatic NIC was only generated if a NIC already exists, not when one is missing for the Target Type.

A simple check was added for the Target Type NIC generation code that determined whether the NIC was set to NONE. If so, then a NIC should be generated. Otherwise, the existing NIC should be used.

3.4 JTLS-2022-15745 LC2IS Message Service Issues

The LC2IS Message Service (LC2MS) was not generating a field to specify the short name for units.

The XML tags for the Anti-Armour unit symbol did not reflect the tags expected by the LC2IS program, even though it met the LC2IS-documented specification.

The symbols on the LC2MS interface screen to expand and collapse the hierarchy tree are not visible.

The new tag for the unit short name was added to units.

The tags to specify a unit as being Anti-Armour were changed from the documented standard to the actual LC2IS expectation.

The error with the tree collapse and expand buttons was caused by the icons being located in the $JGAME/data/icons directory, but the path specified in the cascading stylesheet expected them to be in the $JGAME/data/images directory.

This was easy to change by changing the path in the cascading stylesheet, but the same stylesheet was being used by the Online Player Manuals (OPM), which would copy the icons into an images directory. It was also necessary to modify the setup script for the OPMs to create and copy the icons into an icons directory, instead of copying the icons into an images directory.

3.5 JTLS-2022-15746 Targetable Weapon Needs Guidance Type

A Targetable weapon continues flying on its bearing, looking for a target.

If the target for a weapon is not within range, and the weapon is launched and has no Guidance Type, it will continue to fly along its bearing, looking for a target that does not exist.

Warning 1361 is now generated for Targetable Weapons that are Precision Guided and have no Guidance Type. The model now only allows Targetable Weapons with guidance type of Radar from flying out along its bearing, looking for a target.

3.6 JTLS-2022-15747 SVP Error 425 Corrections

Corrections for Error 425 need improvement to help the user correct problems with the Combat System No Fuel Efficiency Factor.

The Scenario Verification Program (SVP) corrections are meant to assist the user in correcting Errors and Warnings. New corrective actions were added to display the combat system table enabling the user to review the fuel efficiency values for other similar combat systems and the capability to display just the combat system in question.

3.7 JTLS-2022-15748 SVP Error 210 Corrections

A delete Tactical Unit Prototype (TUP) option must be added to Error 210's corrective actions.

Error 210 identifies TUPs that have a Combat Power Distribution that does not sum to exactly 1.0. This is usually caused when the user fails to use the cascade duplicate copy option of a TUP.

The simplest solution for the problem is to delete the bad TUP and redo the copy using the CASCADE DUPLICATE option. An option was added to delete the TUP when the Error is generated. This option will not work if the user has already assigned the TUP to a unit.

3.8 JTLS-2022-15749 SVP Warning 1713 Corrections Confusing

The corrective options for Warning 1713 must be updated, so the wording or the corrective option matches the action that will be taken. The option to plot the invalid location of ship actual plots a valid location.

Warning 1713 will be generated when the assigned location of a ship in a formation cannot be assigned because the terrain type is wrong or not deep enough. The current option to plot the location of a ship that had been identified as bad was actually plotting the newly-computed location, which would be valid. This was misleading.

The wording and action of each correction were updated accordingly. The user can now plot the current ship location, the desired location, and the location the program has determined as a good location.

New options were also added to set the ship location to the newly-computed point and to update the formation ship data with the updated range data.

3.9 JTLS-2022-15750 LOGFAS Profile Issues

The SIP crashed when generating the output for a LOGFAS Profile that included a SAM/AAA Target that used a Fire Control Sensor Type that did not have a RIC. Because the Target's associated Air Defense Class contained a RIC, that data was written out and the code went to write out the Sensor Type RIC for the Fire Control Sensor without first checking that it existed.

While testing the solution, an additional Fire Control Sensor issue was encountered. If a Fire Control Sensor has a RIC and appears in a profile because of its owning Air Defense target, but does not have an independent target of that type within the profile, then NICs are not generated for it. This causes a crash because the sensor type is marked as being used, and therefore an attempt is made to access the NICs.

A third issue was discovered when a SIP-generated LOGFAS Profile was uploaded into LOGFAS and a number of unit records failed to insert because they were not located within their home country. There is a reference to the unit's home station as part of a unit profile, which exists as a separate GEOLOG record. Within the SIP, if a unit is located within its home country, it is its own home station. If it is not in country then the model finds another airbase, support, or FARP unit that is within country and marks it as the unit's home station. At the beginning of the LOGFAS Profile the SIP writes out all units that are marked as a home station as GEOLOC records, but only if the unit is in a LOGFAS Profile.

This restriction does not exist when selecting a home station, so some valid home station were not included as GEOLOC records, which would then result in the units that referenced them failing insertion into LOGFAS. This was a cascade effect because the failed units might be in a superior command chain, which would result in further insert failures.

The code was modified to verify that the Fire Control Sensor's Sensor Type has an assigned RIC before attempted to write out data about the sensor.

To fix the second issue, the code was modified so that when an Air Defense class is being assigned its NICs, if a Fire Control Sensor is identified and has a RIC, then NICs should also be generated for it.

To fix the third issue, the code was modified to include all GEOLOC units, whether part of a LOGFAS Profile or not, when generating the XML.

3.10 JTLS-2022-15751 HRUs Not Created When Parent Unit Arrived

In a scenario database, an aggregate unit was defined to include several child High Resolution Units (HRU). Each of the HRUs were meant to own a SAM target. When this unit arrived at the start of the game, the HRUs were not being created. It was reported that this was because there were insufficient supplies for the owned targets.

Before the HRUs were created, each of the targets was created from the aggregate unit with suitable supply levels. However, when determining if the HRUs could be created, the calculation did not include the supplies which were already assigned to the targets. The code was changed to include the existing target supplies when attempting to create the HRUs.

3.11 JTLS-2022-15754 Aircraft Type Intercepted Not Displaying

The field "TYPE A/C Intercepted" was not being filled in the IMT screen when an air mission was intercepting.

The wrong class type was being passed when updating the JODA. This was corrected.

3.12 JTLS-2022-15755 KOI Filter UI Does Not Display Side Color

The KML Operational Interface (KOI) Filter tabs do not display the proper color for each Side. The tabs are unreadable.

The KOI was not updated to read the scenario ASCII files as they are now formatted to use PostgreSQL, and therefore could not retrieve the color name for each Side. The KOI was updated to read the new PostgreSQL-formatted scenario ASCII files.

3.13 JTLS-2022-15759 Modify Air Mission Packages Incorrect Messages

If a Player attempted to modify an air mission package, and the order was rejected by the model, the resulting message was wrong. The rejection information was improperly included as part of a compliance message for the order. The Player could easily overlook the errors because of the subject of the messages.

Because the order was rejected, the error information should have been part of a non-compliance message. The code was modified to perform all of the required checks before attempting to implement any ordered modifications to the air mission packages. For errors in the orders, messages were generated to indicate that the model was unable to comply with the requested changes.

3.14 JTLS-2022-15761 Added Force Side Column To Full Target Table

The DDS Target Table does not have a Force Side column.

The Target screen definition XML file was updated to add the new column "Force Side" to the Full Target Table. The view only field is filled using information found in each of the individual target tables.

3.15 JTLS-2022-15762 Transport Unit Convoy Simdebug

A Transport Unit order was sent to a support unit that did not have cargo trucks available. The model acknowledged the order, but immediately entered simdebug mode.

The model's logic incorrectly assumed there would always be at least one truck available for each type (Cargo, Tanker, Heavy Equipment Transporter) in the support unit when calculating how many trucks of each type were required to transport the unit. Because there were no cargo trucks available, the truck capacity was zero, and a division by zero error caused the crash. The same crash would have occurred if there were no tanker trucks or HET trucks available.

This logic was part of the process of generating a Player message explaining why the convoy had to be canceled. To avoid the crash, the logic was corrected to handle the situation where one or more of the cargo, tanker, or HET truck types are not available at the support unit. The Player message was expanded to accommodate the situation.

3.16 JTLS-2022-15764 Clearing Special Mission Flag Does Not Work

There is a special capabilities flag used by NATO to set some special Link 16 designators. Clearing the flag does not work.

The logic to clear the flag was corrected, and the flag can now be set and cleared as needed.

3.17 JTLS-2022-15766 Check Supply Storage Targets For Air Fuel

The SVPR is not checking for fuel in supply storage tanks when it generates Warning 1471 for Airbase Units.

The updated routines now check for fuel in Supply Storage Tanks under the following conditions:

1. The Supply Storage Tank Target is associated with the unit.

    2. The combined radius of the supply storage target and the unit is greater than the total distance between the two.

This check will be performed for a unit's own aircraft, such as UAVs, and for squadrons assigned to airbase and naval units.

3.18 JTLS-2022-15767 Fire Missile Expanded Rejection Message

A user created a Fire Missile order for hitting an empty water location. When the user specified the Targetable Weapon, the order was accepted and the unit fired at the empty location. When the user specified that the model should select the Targetable Weapon, the user received a "Cannot Comply" message stating there was no ammunition, even though the unit did have the weapon supplies.

When the model is selecting a Targetable Weapon for a fire mission, it goes through all the SAM Sites capable of firing a surface-to-surface weapon and all SSM site targets. It checks all of the weapons that can legally fire and the determines the best one. Multiple weapons may be rejected but the message only displayed the final weapon in the list. The message now lists each Targetable Weapon that is checked and lists a rejection reason.

3.19 JTLS-2022-15769 Change Mission Parameter Order Bad Weapon Names

A Change Mission Parameter (CMP) order was submitted to change the weapons on a scheduled air mission. The model generated a player message that listed the quantities of each weapon type, but the weapon names were displayed as zeros. Nevertheless, the mission correctly carried the changed weapons as specified in the order.

The routine that generates the CMP message incorrectly referenced the weapon names as integers and specified an integer format in the write statement. The error was corrected by referencing the text name of the weapon and changing the format type to text in the write statement.

3.20 JTLS-2022-15771 Recalled Incorrect Polygon Order Panel

When the user recalled a polygon from an order to use on a different order, the polygon became small in size and was incorrect.

The polygon was being incorrectly converted from points into radians, instead of degrees, creating an incorrect polygon. This was corrected.

3.21 JTLS-2022-15773 No ATO Viewer Update When Start Time Changed

A Manage Air Mission Tasks order was submitted to change the Start Orbit time for a scheduled Defensive Counter Air (DCA) mission. The ATO Viewer displayed the new estimated launch time (left vertical bar) as calculated by the model, but the horizontal colored bar did not shift to show

the new orbit start and end times (duration). The estimated landing time (right vertical bar) also did not move.

Note: The Air Mission Tasks IMT and the General Air Mission IMT were correctly updated, and the mission flew as expected.

The ATO Viewer requires several air mission attributes from the model to properly display and update the graphics:

- Estimated Takeoff Time and Estimated Landing Time, to draw the vertical bars;

- Actual Takeoff Time and Actual Landing Time, to draw the parentheses;

- Start Task Time and End Task Time, to draw the horizontal colored duration bar.

The Start Task Time, End Task Time, and the Estimated Landing Time were not being sent to the JODA when the Manage Air Mission Tasks order was submitted. Consequently, the ATO Viewer was unable to adjust the colored bar and right vertical bar. The error was corrected by adding logic via two subroutine calls to send the missing mission attributes to the JODA.

While reviewing the code associated with the Manage Air Mission Tasks order, it was noted that when a Player changes the sequence number of an existing non-Move task such that it is placed before (i.e. lower in sequence) than the mission's primary task, there was no logic to make that task a primary task. The missing logic was added so that the mission's time attributes are properly updated.

3.22 JTLS-2022-15775 SVP Crash Lifeboat for Downed Air Crew

The SVP crashed, caused by the High Resolution Unit Prototype (HUP) that was used to represent the survivors of downed aircraft.

A small boat was (optionally) assigned to the downed air crew HUP. This small boat served as a lifeboat if the aircraft went down over water. The SVP crashed because the selected small boat did not have an associated combat system in the user's scenario. In order to serve as a life-raft for a downed air crew, the small boat must have an associated combat system. A new Error 257 was added to the SVP to catch this crash condition.

In addition to this new error, SVP Warnings 1445 and 1462 were reworked to properly check for suitable numbers of lifeboats at squadrons. If a squadron has multiple types of small boats, any of them were usable as life-rafts. If the total number of small boats at a squadron was less than the number of aircraft, then Warning 1462 was generated. It the squadron has no lifeboats, then warning 1464 is generated. Further investigation determined that Warning 1445 was redundant, thus it was removed from the SVP.

3.23 JTLS-2022-15777 Ships In Wrong Mission Recce Report Section

Naval vessels detected by a Reconnaissance air mission appeared in the Ground section of the Mission Reconnaissance (non-DSA) report, and were duplicated in the Naval section of the report.

A logic error in the routine that determines whether a detection should be included in the Ground section failed to ignore naval vessels. As a result, naval vessels appeared in both the Ground and Naval sections of the report. The error was corrected.

Additionally, the names of ships, units, targets, and HRUs in the report were limited to 15 characters. The format width was expanded to 25 characters in the message template. The same correction was made in the Satellite Non DSA Summary Report.

3.24 JTLS-2022-15779 Limit Apache Server-Status Access

The Apache server-status page was accessible to all users. This reveals internal information about the current Apache server status, that could be exploited by insider threats.

Access to the Apache server-status page has been restricted to the host of the Apache process.

3.25 JTLS-2022-15781 Warning 1306 Incorrectly Identifying Weapons

SVPR Warning 1306 is being generated for all Targetable Weapons that have an assigned guidance type. It should only be reported for ARM (Anti-Radiation Missile) Targetable Weapons that do not have Surface Kill Lethality data.

The code was set to look for any guidance types without a Surface Kill Lethality (SKL). The code has been modified to only look for those that have a guidance type of ARM and no SKL.

3.26 JTLS-2022-15782 OTHGold Module Fails To Reconnect

After the OTHGold WHIP module disconnects due to a network timeout, the module is unable to reconnect to the OTHGMS service.

The OTHGold module was fixed to reset the connection parameters when it experiences at network timeout.

3.27 JTLS-2022-15783 OTHGMS - TRITON And MCCIS Support

The OTHGold Message Service (OTHGMS) was modified to support TRITON and MCCIS capabilities. TRITON requires a special header syntax. MMCIS can only display the International Maritime Organization (IMO) identification number and Maritime Mobile Service Identity (MMSI) of a ship if the remarks section of a message is formatted in a specific way.

The OTHGMS was modified to run in a special TRITON mode by passing the -triton flag to the service on startup. This is not intended for use by standard users. The OTHGMS was also modified to format Naval remarks message sections to list the ship IMO and MMSI on the first line, and the ship long name on a following line.

The OTHGMS code base was also refactored and reformatted for better modularity between components and source files.

3.28 JTLS-2022-15786 Incorrect Formation Ship Capacity

The computations and automatic correction for reporting and fixing unavailable ship capacity for embarked assets is not correct.

The logic incorrectly counted the embarked assets twice, and when the computation was accomplished correctly, the value to which the Ship Unit Prototype (SUP) capacity was supposed to be checked was computed incorrectly.

A new argument was added to the routine SHIPS AVAILABLE CAPACITY - depending on the use of the routine, the already embarked assets should or should not have been included.

3.29 JTLS-2022-15788 OTHGMS - Validate Block List Input

The OTHGMS is able to load a block list of unit names. Users can enter the name of the file to be loaded from the OTHGold WHIP module. The user input was not being checked for invalid characters or other values that may lead to vulnerabilities.

The OTHGMS service and WHIP module have been updated to validate user input for the block list file name. This includes checking for invalid characters and path manipulation vulnerabilities.

3.30 JTLS-2022-15790 Naval Unit Not Aircraft Capable With ICAO

Naval units in a scenario were assigned ICAOs, but the ships had no capability for aircraft. This caused problems with the loading of the data, because it violated some database constraints.

An SVP warning was added to alert the user that a ship had an ICAO but no aircraft capability.

The related database trigger check constraint was removed. An explicit database loading error message was added to the load_dds script, if the post_load SQL script fails.

3.31 JTLS-2022-15791 ATOT User Specified Target Type List

The ATOT reports Error 506 for package Orbiting Air Support (OAS) missions that do not have a Target Type List that was derived from the mission's data records of the ATO. Even though the ATOT's Target Alternatives have been configured for the target type used by an OAS mission, the error continues to be reported.

When the ATOT performs a translation, it conducts tests of the data for each mission. The test that can produce Error 506 was searching through the target list derived from the data for the mission in the ATO, but was not using the Target Alternatives mapping the user is able to configure through the ATOT's Target Alternatives page. When no target types are found in the first list, the ATOT was not searching the second list for potential target types and simply reporting the error.

The ATOT was modified to include the Target Alternatives list for OAS mission types whenever this test is performed.

3.32 JTLS-2022-15792 Crash Moving Detached Supplies

The model crashed when a new unit detachment is created and requires supplies that the losing unit does not own.

This is normally caused by detaching a unit using a Tactical Unit Prototype that is inconsistent with the losing unit. In this specific case, the detachment was caused by a diverted squadron, which by definition should have been consistent with the losing unit. The Development Team suspects a database issue caused the problem, but because it could happen under non-database related problems, it had to be fixed.

The detached unit needed to access the losing unit's supplies, to take the required supplies away from the losing unit. Because the losing unit never owned that type of supply, it did not have a supply record, and the model crashed before checking for the existence of the record.

The code was rearranged to always check prior to attempting to access the non-existent record.

3.33 JTLS-2022-15793 Dual Capable SAMs Not Listed in Fire Missile Order

In the Fire Missile order for a naval unit, a player chose the Select Missile option, which provided a drop-down list of missile types to fire. The list included the missile types that could be fired by the ship's SSM launchers. However, the ship also owned SAM launchers that used missiles capable of attacking ground targets. The list did not include these dual-capable missile types.

The CEP only considered missiles fired from SSM targets owned by the unit. New logic was added to also consider missiles capable of surface attacks fired from SAM targets. These dual-purpose missile types are now included in the drop-down list in the Fire Missile order.

3.34 JTLS-2022-15794 Package Escort Mission Egress Routes

An air mission package included escort missions (DCA, SEAD, and RECCE) and a strike mission (OAS), each with a specified egress route. When the escort missions left the package after supporting the strike, they did not fly their specified egress routes home. Instead, they flew directly to their home bases. Only the strike mission (OAS) flew its specified egress route home.

Note: All missions flew their specified ingress routes to the rendezvous location, and the package flew its specified ingress and egress routes to/from the weapon release point as expected.

When the package responsibilities end for an escort mission, the logic invokes the cancel mission routine to send the mission to its return location, among other things. This routine includes an option to establish the best route home for the mission. The logic considers the egress route (specified or reverse ingress) originally assigned to the mission and adds the appropriate MOVE tasks to the pending task list. However, the option was not executed because the calling routine incorrectly passed a NO value for the FOLLOW.EGRESS.ROUTE flag.

The error was corrected by changing the calling routine argument to YES.

3.35 JTLS-2022-15796 Ground Unit Moves Straight Through Minefield

When a ground unit encountered a minefield, the unit moved through it without any delay. In earlier versions of JTLS-GO, a unit would stop and clear the minefield. The behavior was not as expected.

The CEP code did not include any delays in movement when a unit entered a minefield. Modifications were made to give the unit a mine clearing task when it experienced damage from a minefield. The movement is now delayed by the minefield and clearing is performed.

3.36 JTLS-2022-15799 Remove Old ICC Versions

The JavaMenu and JTLS Menu programs allow users to launch multiple versions of the JTOI ICC program. Each executable is compiled against different ICC-supported middle-ware. Versions 282 and 302 of ICC are no longer used.

Options to launch the JTOI for ICC versions 282 and 302 have been removed from the JavaMenu and JTLS Menu programs.

3.37 JTLS-2022-15800 ELS Crash Creating Lifeboats

When a ship sank, the Entity Level Server (ELS) attempted to create lifeboats for the survivors and crashed.

When lifeboats were created in the model, HRUs were used. The personnel entities placed in these HRUs already existed as part of the crew on the ship. The ELS crashed because it incorrectly assumed that the combat systems were new and unused by a dis-aggregated unit. The internal structures did not account for entities which were being transferred from one unit to another. A minor code correction was made, and the crash was resolved.

3.38 JTLS-2022-15801 Document Orbacus Build Process

The ICC JTOI requires the third party Orbacus libraries in order to build and run the executable. Currently these libraries are compiled from source, and this process changes between operating systems. The C4I Interface Manual does not provide any instructions for building these libraries.

The C4I Interface Manual has been updated to include instructions for building the Orbacus libraries required by the ICC JTOI.

3.39 JTLS-2022-15810 Fire Missile Issues With SAM.AAA Targets

A user attempted to fire a missile scheduled for a later time from a SAM.AAA target with a future launch time. The missile will not fire if the SAM.AAA target is turned off. There was no indication to let the user know why the fire mission would not launch. Furthermore, once the SAM.AAA target was turned on, the fire mission still did not launch.

A message is now generated to inform the user that the SAM.AAA target is not turned on or ready to fire. When the user turns on the SAM.AAA target, the model checks if there are any pending fire missions. If there are, the fire mission is launched.

A logic error is no longer generated when the target is SAM.AAA instead of SSM.

3.40 JTLS-2022-15815 Alternative WHIP Naval Menu Added

A user requested a different menu be made available for the WHIP, containing orders and context sensitive information related to naval operations.

A new alternative to the standard naval menus was added to the collection of available menus. The new menu, named "menu_naval_COP.xml", was integrated into the configuration-managed system.

3.41 JTLS-2022-15816 ATOT Unmatched Aircraft Squadrons

The ATOT does not allow a squadron to be assigned to a mission during translation if the aircraft type of the mission does not match the aircraft type of the squadron, regardless of the other parameters of the mission that do match, like home base. This can happen when the mission's aircraft type is a general name for several aircraft types modeled as different aircraft in JTLS-GO. The type name for the aircraft may be close and each one may likely have the same defined load assignments. The user should be able to forego the warning and allow the squadron assignment.

The ATOT was modified to allow a squadron to be selected from the squadron(s) of the Tasking Unit for the mission when the aircraft type is not an exact match. This allows an order for this mission to have a valid squadron while the ATOT gives the user a warning. The warning alerts the user about the mismatched aircraft class between the ATO mission definition and the linked JTLS-GO squadron. If the user believes the aircraft differences are not significant then the order can be used with the squadron as created by the ATOT.

3.42 JTLS-2022-15817 ATOT Transfers Missions

The ATOT may not be able to find a matching squadron in the JTLS-GO scenario data for an ATO mission. This may occur when the user has not mapped a squadron for the mission's Tasking Unit, or the ATO aircraft type for the mission does not match any in the JTLS-GO scenario data.

In this case, the ATOT is unable to establish a link between the home base of the squadron and the RTB base for the mission. The ATOT assumes they are different and includes a return base in the associated order. When a return base is included in the order, the CEP follows logic to split the aircraft from the parent squadron and form a detachment squadron at the landing base.

The ATOT logic was modified to consider an unmapped squadron for each mission when determining if a return base is necessary in the generated order. If the mission's squadron cannot be determined, then any comparison of an arrival ICAO with that of the home base for the mission would not imply the mission is arriving at a base different from its home departure base. The return base field is not written to the order in this case.

3.43 JTLS-2022-15818 Error 402 Unreachable

Error 402 may be unreachable when Warning 1470 is skipped.

In previous versions, if both Warning 1470 and 1471 were skipped in the SVP routine CHECK.AVIATION.FUEL was exited without further action. Warning 1470 was changed to Error 402, but the check that exits the program was not updated properly. Under some circumstances, Error 402 would never be generated.

The routine was corrected. Error 402 will always be generated, and Warning 1471 will only be generated if the flag to skip that check is not selected.

3.44 JTLS-2022-15819 Filter General Range Rings Not Working

When the user attempted to turn on a range ring category, the range rings did not show up on the map.

The issue was caused by a bug in the implementation of a new range ring feature, and was fixed by partially reverting those changes.

3.45 JTLS-2022-15820 Controller Missile Kills Not Reported To AAR

Controller kills of missiles were not being reported to the AAR.

The Controller order to kill an air track (mission or missile) was updated to properly report the loss of missiles to the AAR. Air mission losses were already being reported.

3.46 JTLS-2022-15821 Improve Sorting Capability

Error 308 and Warnings 1318 and 1319 should be sorted by LOAD.NAME

The errors are created by cycling through each aircraft class, then by the target type group with target category and subcategory. This sequence is correct in the code, but creates and unorganized list for the user to work with. By rewording the output messages with the load name first the user may click on the message column enabling them to clearly see all problems with a single load and correct them at the same time.

The rewording of the message text for Error 308 and Warnings 1318 and 1319 has been done. The messages will now sort based on the load name.

3.47 JTLS-2022-15829 Air Mission Weapons Saved Improperly

A user entered 14,000 bullets on an air mission, not knowing that it meant 14000 bursts of 75 rounds of 20mm bullets. A game save could not be used when this happened because the model crashed attempting to read in the checkpoint files.

The problem was that the model save only allowed a maximum of 9,999 weapons of any single type. This was increased to the normal maximum 10 digit integer value.

3.48 JTLS-2022-15831 Crash Cancel Mission Prior To Resourcing Task

If an Air Mission is canceled prior to the execution of its resourcing task, the model crashes.

The model crashed because the mission had not determined the type of fuel it will load. The cancellation logic has been updated to account for this possibility.

3.49 JTLS-2022-15832 Link 16 Unit Working Set Not Cleared

If the user requests a list of all objects assigned to a Link 16 network, and there are currently Air Missions on the network, the Unit Working Set is not cleared. This generated a Logic Error.

The UNIT WORKING SET is now cleared as missions flying from the unit are reported.

3.50 JTLS-2022-15833 Error Damaging Non-Existent Combat System

A logic error was generated during the Lanchester attrition calculation. Damage was computed to a combat system not owned by the unit.

The attrition calculation cycles through all Combat Systems to determine what is killed. The number of susceptible systems is held in an array. The array was not properly cleared under all circumstances, so damage to the previous combat system loop was being computed for the current combat system loop. This led to damage to the non-existent combat systems.

3.51 JTLS-2022-15834 OVT Cannot Send Orders With Apache Password

If the Apache is configured through the Interface Configuration Program (ICP) with a password, and the scenario is password-protected, the Order Verification Tool (OVT) cannot send verified orders.

The OVT code was fixed to handle the case when the Apache is password-protected. The orders are sent with the password the user provides during orders verification. The user only needs to provide the password once when the OVT is started.

3.52 JTLS-2022-15835 OVT Orders Sent Message Disappears

When the OVT sends valid orders, the status of the orders are updated with the "orders sent" message. However, when the user tries to view Valid Orders Only, the "orders sent" message disappears.

The OVT code was fixed so that the "orders sent" messages are retained whenever user changes viewing options.

3.53 JTLS-2022-15837 Link 16 Track Blocks Unclear Message

A user attempted to add Link 16 track blocks to a unit. The assigned blocks were not unique within the specified Link 16 network. An unclear error message was generated.

The error message was unclear because the resulting errors were not properly grouped by type. The critical information was not easily available to the user. The code and message were reorganized for clarity.

3.54 JTLS-2022-15838 Split Formation With One Ship Crash

The model crashed when a player attempted to split a formation made up of only one ship.

Code was added to reject the split formation order when the formation has only one ship. A "cannot comply" message is now generated for this order.

3.55 JTLS-2022-15839 BE History Data Object Name Has Space Character

A checkpoint could not be used to restart the game when a Directed Search Area history record contained a space character within the detected object perceived name.

The space character was legal and was a part of the SUP REAL CLASS NAME attribute. The checkpoint save and read procedure needed to be changed to allow for this possibility. The correction of the STR resulted in a change to the checkpoint save format.

3.56 JTLS-2022-15840 Warning 1615 Does Not Work For SSM

The correction action for opening the SSM category TW Range table for a POT SSM target does not work.

The purpose of the routine is to report when a POT target range is shorter than the MAX range for the Target Category/Subcategory combination. This applies for Communication Centers, Sensors, Air Defense, SSM and Jammers. An SSM is unique in that it may have multiple weapons that it can fire with different ranges. The original code identified only the shortest range weapon. Even then, the SVP code corrections did not function to display the Targetable Weapon so it could be modified.

The code was modified by adding new Warning 1642 for SSMs. The new code will identify all SSM weapons where the POT range is less than the SSM Targetable Weapon range.

Another problem was found in the same routine with Air Defense and different altitude ranges. If an altitude zone record did not exist, it considered the range in that zone to be zero. A POT range could never be less than an altitude range of zero, so no errors were ever generated for POT ranges that were less than positive altitude zones ranges. This was also corrected.

3.57 JTLS-2022-15841 Warning 1145 Corrections Actions Needed

Warning 1145 identifies mismatches between the combat system special capability and the TYPE of the transportation class, such as a combat system having special capability CARGO_TRUCK, but the transportation class data indicates that transportation class is used as a TANKER_TRUCK. The corrective actions for Warning 1145 need to be expanded.

There was only one corrective action for Warning 1145. Options to change the transportation class TYPE for the transportation class, and use the SET option to change the TYPE to CARGO, were added.

Warning 1146 was also updated to add more corrective actions.

3.58 JTLS-2022-15842 Warning 1206 Set Jam Capable Flag

The Set Jam Capable Flag correction for Warning 1206 does not work.

There was a spelling error in the database field that was to be updated. The documentation for Warning 1206 was also lacking and was updated.

3.59 JTLS-2022-15843 OPM Excessive Column Width

In the "Squadron Usage by Aircraft Class" section of the Online Player Manual (OPM), aircraft class names that exceed twenty characters in length extended into the adjacent column. Also, sensor type names greater than twenty characters extended into the adjacent column in the

"Sensor Type Characteristics" section of the OPM. These errors obscured part of the displayed names.

The column widths in the print routines were set to twenty characters, which could not accommodate the aircraft class names and sensor type names which can be up to twenty-five characters in length. To correct this problem, the column widths were set to twenty-six to ensure names of up to twenty-five characters will fit with at least one blank space separating the adjacent columns.

A comprehensive review of every page in the OPM was conducted and many other instances were found where the column widths could not accommodate object names exceeding twenty characters. These errors were also corrected.

3.60 JTLS-2022-15845 OTHGold Missile Object Name Consistency

The Object Summary panel of the OTHGold module was previously updated to change the "CRUISE_MISSILE" row header to read as "MISSILE". The Object Type by Side panel also has a "CRUISE_MISSILE" row, but it was not updated.

For consistency, the "CRUISE_MISSILE" row header of the Object Type by Side panel was updated to read as "MISSILE".

3.61 JTLS-2022-15846 Warning 1448 Corrections Do Not Work

Some of the SVPR corrections for Warning 1448 do not work.

Warning 1448 identifies support structure shortages in supply categories for TUPs and SUPs. The code is set up to either insert a new record for a supply category if one does not exist, or update an existing record. The SVPR corrective options currently available do not always apply to both instances.

In order to correct this, Warning 1433 was added, which will be created if the prototype does not contain a record for the supply category, and all corrective options will be specifically for that case.

The old Warning 1448 will now only update existing records, and all corrective options displayed can be used.

3.62 JTLS-2022-15847 Convoys Prematurely Stopped By Enemy Units

The rules of engagement (ROE) between enemy units allowed for fire at very large distances. This caused convoys to prematurely stop along their routes due to a perceived threat by enemy units. These units were within the allowed firing distance, but well beyond the range of any weapons owned by the units.

While moving, convoys used the ROE distances to determine if there was trouble along the path of movement. The logic was changed to include checks to see if the convoy is within weapons range of any nearby units. If the convoy was beyond the range of weapons, then no trouble was assumed and movement continued.

3.63 JTLS-2022-15848 Stationary Formation Ships Location Update

After a naval formation completed a move, the location of the ships was reported but then never updated. This meant that the ship locations were not updated on the COP as expected. Updates for the ship locations of stationary ships are supposed to be generated according to the timing parameters in the communications prototype.

The model should have scheduled the event to update ship locations when the formation stopped moving. Code changes were made to regularly send these updates. An option was added to the Correct Object Tasks order to allow the Controller to schedule or reschedule these updates. This order is only used for units and HRUs - it is not appropriate for other object types.

3.64 JTLS-2022-15849 WHIP Delete ADA, SSM & Sensor Range Rings

The Range Rings for the ADA, SSM and Sensor filters were not removed from the map after deleting the filter entry.

The WHIP help was updated to document that deleting a displayed ADA, SSM and Sensor Range Ring from the filters requires clicking the Apply button found in the lower right corner of the panel to remove the displayed ring in the map.

3.65 JTLS-2022-15850 Report Browser Message Search Highlight

In the DDS Report Browser, and WHIP/TRIPP AAR Report Browser, did not have a search capability similar to the Message Browser search capability.

This search capability was added to each of the Report Browsers.

3.66 JTLS-2022-15851 Magic Move Rejection Message Too General

A Controller attempted to magic move a rotary-wing squadron to a naval vessel that was not helo-capable. The magic move order was properly rejected, but the message did not specify the reason why. In fact, any magic move order of a squadron to a ship that was rejected for any valid reason always resulted in an identical message lacking specificity. Although not an error, the usefulness of the message was limited.

The logic that checked the validity of a squadron magic moved to a specific naval vessel generated a general rejection message "...no suitable ships...", regardless of the reason. To make the rejection message more useful to the Controller, the logic was enhanced to generate a new message with several sub-messages, each explaining the reason for the rejection of the magic move order.

3.67 JTLS-2022-15853 Crash Giving Target to HRU

If a Player submits a Transfer Target Order to give a target to an HRU, and prior to executing the transfer task decides to change the HRU to which the target should be transfered, the model crashed.

The crash situation was solved.

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 6.1.0.0 represents a major release of new functionality, all outstanding errors have been reviewed. If the error could not be reproduced, it was considered obsolete and no longer relevant to JTLS-GO. These errors have been removed from consideration for correction at this time. This chapter contains the remaining errors that could be reproduced. As development team assets become available, these remaining known issues will be corrected.

In future maintenance releases, newly uncovered outstanding errors related to JTLS-GO will be listed in this chapter, along with information 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 Manage TPFDD Order Recall May Cause Exception

When recalling an Manage TPFDD Order, there can be as many as 17 requests to the JXSR to fill in the various order fields. Some of these requests may fail and cause a WHIP exception. The order can still be used and corrected by fixing any reported errors. The cause of this problem has been identified, but could not be fixed in time to meet the release date requirements. Expect the problem to be solved in the next JTLS-GO 6.1 maintenance release.

APPENDIX A. ABBREVIATIONS AND ACRONYMS

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

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

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

DPICM   Dual Purpose Improved Conventional Munitions

DS   Direct Support

DSA   Directed Search Area

DTG   Date Time Group

EC   Electronic Combat

ECM   Electronic Counter Measure

ECP   Engineering Change Proposal

EEI   Essential Elements of Information

ELINT   Electronic Intelligence

ELS   Entity Level Server

EODA   Entity Level JTLS Object Data Authority

ETA   Estimated Time of Arrival

FARP   Forward Arming and Refueling Point

FLP   Fire Lethality Prototype

FLOT   Forward Location of Troops

FOL   Forward Operating Location

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

GAL   Gallon

GCCS   Global Command and Control System

GRTE   Ground Route

GS   General Support

GSR   General Support Reinforcing

GUI   Graphical User Interface

HARM   High-speed Anti-radiation Missile

HE   High Explosive

HELO   Helicopter

HET   Heavy Equipment Transporter

HMMWV   High Mobility Multipurpose Wheeled Vehicle

HQ   Headquarters

HRU   High Resolution Unit

HTML   Hypertext Markup Language

HTT   High resolution unit Target Type

HUP   High resolution Unit Prototype

ICM   Improved Conventional Munitions

ICP   Interface Configuration Program

ICPLogin   Interface Login Program

ID   Identifier

IFF   Identification Friend or Foe

IIP   Intelligence Information Prototype

IMT   Information Management Tool

INFO   Information

INTEL   Intelligence

JCATS   Joint Conflict And Tactical Simulation

JDA   Japan Defense Agency

JDPI   Joint Desired Point of Impact (formerly DMPI: Desired Mean Point of Impact)

JDS   JTLS Data System

JDSP   JTLS Data System Protocol

JEDI   JODA Entity Data Identifier

JMCIS   Joint Maritime Combat Information System

JMEM   Joint Munitions Effectiveness Manuals

JODA   JTLS Object Distribution Authority

JOI   JTLS Operational Interface

JPL   Jet Propulsion Laboratory

JRSG   Joint Rapid Scenario Generation (formerly JIDPS: Joint Integrated Database Preparation System)

JSDF   Japanese Self-Defense Force

JTLS   Joint Theater Level Simulation

JTLS-GO   Joint Theater Level Simulation - Global Operations

JTOI   JTLS Transaction Operational Interface

JXSR   JTLS XML Serial Repository

KIA   Killed In Action

KM   Kilometer

KNOTS   Nautical miles per hour

LA   Lethal Area

LAN   Local Area Network

LAT   Latitude

LB   Login Build (JTLS order type)

LDAP   Lightweight Directory Access Protocol

LDT   Lanchester coefficient Development Tool

LOG   Logistics

LOGIN   Logistics Input

LOGREP   Logistics Report

LONG   Longitude

LOTS   Logistics Over The Shore

LR   Long Range

M&S   Modeling and Simulation

MAPP   Modern Aids to Planning Program

MB   Megabyte

MCP   Mobility Counter-mobility Prototype

MCR   Model Change Request

MG   Machine Gun

MHE   Material Handling Equipment

MIP   Model Interface Program

MOGAS   Motor Gasoline

MOPP   Mission-Oriented Protective Posture

MOSAIC   NCSA user interface software

MOTIF   X Window System graphical interface

MP   Maneuver Prototype

MPP   Message Processor Program

MSC   Major Subordinate Command

MSG   Message

MTF   Message Text Formats

MUREP   Munitions Report

MUSE   Multiple Unified Simulation Environment

NCSA   National Center for Supercomputing Applications (University of Illinois)

NEO   Noncombatant Evacuation Operations

NFS   Network File Server

NGO   Non-Governmental Organization

NIS   Network Information Service or Network Information System

NM   Nautical Mile

NTSC   Naval Telecommunications System Center

OAS   Offensive Air Support

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

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

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

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

APPENDIX B. VERSION 6.1.0.0 DATABASE CHANGES

No changes were made to the JTLS-GO 6.1 database.

APPENDIX C. VERSION 6.1.0.0 REPOSITORY CHANGES

No significant changes were made to the JTLS-GO 6.1 repository.