

JTLS

Version Description Document

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DEPARTMENT OF DEFENSE
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JOINT THEATER LEVEL SIMULATION
(JTLS 4.1.6.0)

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ABSTRACT

The Joint Theater Level Simulation (JTLS[®]) 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 Version Description Document (VDD)* describes specific features of the Version 4.1.6.0 delivery of the configuration-managed JTLS software suite.

JTLS 4.1.6.0 is a maintenance release of the JTLS 4.1 series that includes code modifications that represent corrections to known Software Trouble Reports (STRs), which 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 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 Version Description Document* (VDD) describes Version 4.1.6.0 of the configuration managed Joint Theater Level Simulation (JTLS[®]) software suite. JTLS 4.1.6.0 is a Maintenance delivery for the JTLS 4.1 series of releases. JTLS 4.1.6.0 includes the entire JTLS suite of software and the SDBKOR41 Standard Database that supports a realistic scenario based on the current Korean Peninsula theater of operations.

Detailed descriptions of Engineering Change Proposals (ECPs) and minor model enhancements implemented for this release are provided in [Chapter 2.0](#). [Chapter 3.0](#) summaries all of the bug fixes made since the previous official release of JTLS. Finally [Chapter 4.0](#) lists all known bugs that have not been fixed. Each of these known issues includes a description of the problem's impact on execution of JTLS and suggestions for avoiding or working around the issue to reduce the impact on the operational use of JTLS.

The format of the database has not changed since the release of JTLS 4.1.5.0, but improvements to the suggested default data, as contained the SDBKOR41 scenario, have been made. These database improvements are summarized in this chapter, as well as [APPENDIX B](#).

JTLS 4.1.6.0 executes on the Red Hat Enterprise Linux Version 5 or 6 64-bit operating systems. The Web-Hosted Interface Program (WHIP[®]) user workstation interface can be executed from any Java-compatible Web browser available on any operating system.

1.2 INVENTORY OF MATERIALS

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

1.2.1 Obsolete/Outdated Documents

No documents have been removed from the JTLS documentation suite for this release.

1.2.2 Unchanged Documents

The following documentation is provided for this release:

- *JTLS Analyst Guide* (JTLS Document 01, Version 4.1.6.0)
- *JTLS ATOT User Guide* (JTLS Document 03, Version 4.1.6.0)
- *JTLS Controller Guide* (JTLS Document 04, Version 4.1.6.0)
- *JTLS Data Requirements Manual* (JTLS Document 05, Version 4.1.6.0)

- *JTLS DDS User Guide* (JTLS Document 06, Version 4.1.6.0)
- *JTLS Director Guide* (JTLS Document 07, Version 4.1.6.0)
- *JTLS Executive Overview* (JTLS Document 08, Version 4.1.6.0)
- *JTLS WHIP Training Manual* (JTLS Document 10, Version 4.1.6.0)
- *JTLS Player Guide* (JTLS Document 12, Version 4.1.6.0)
- *JTLS PPS User Guide* (JTLS Document 13, Version 4.1.6.0)
- *JTLS Standard Database Description* (JTLS Document 14, Version 4.1.6.0)
- *JTLS Software Maintenance Manual* (JTLS Document 15, Version 4.1.6.0)
- *JTLS Technical Coordinator Guide* (JTLS Document 16, Version 4.1.6.0)
- *JTLS Entity Level Server User Guide* (JTLS Document 19, Version 4.1.6.0)
- *JTLS Federation User Guide* (JTLS Document 20, Version 4.1.6.0)
- *JTLS C4I Interface Manual* (JTLS Document 21, Version 4.1.6.0)

1.2.3 Updated Documents

- *JTLS Installation Manual* (JTLS Document 09, Version 4.1.6.0)
- *JTLS Version Description Document* (JTLS Document 17, Version 4.1.6.0)

1.2.4 New Documents

- *JTLS DDS Training Manual* (JTLS Document 23, Version 4.1.6.0)

1.2.5 Delivered Software Components

JTLS 4.1.6.0 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. These 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)
- Lanchester Development Tool (LDT)
- ATO Translator Program (ATOT)
- ATO Retrieval Program (ATORET)
- Convert Location Program (XCONVERT)
- 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:
 - a. Apache Server, version 2.4.7 (APACHE)

The Apache Server version used in this version of JTLS has been upgraded from 2.4.4 to 2.4.7. This will affect JTLS installation - please refer to Chapter 3 of the *JTLS Installation Manual* for updated installation instructions.
 - b. JTLS XML Serial Repository (JXSR)
 - c. Order Management Authority (OMA)
 - d. Synchronized Authentication and Preferences Service (SYNAPSE)
 - e. XML Message Service (XMS)
 - f. Total Recall Interactive Playback Program (TRIPP)

- Entity Level Server (ELS)
- JTLS Operational Interface (JOI)
- KML Operational Interface (KOI)
- TBMCS/ICC Interface Program (JTOI)
- JTLS Interface Network Navigator (JINN)
- JTLS Order of Battle Editor (JOBEB)
- Database Configuration Program (DCP)
- DDS User Interface (DDS)
- Technical Control Tool (TechTool)

Instructions for installing JTLS 4.1.6.0 are provided in the *JTLS Installation Manual*. Installing a previous version of JTLS prior to installing JTLS 4.1.6.0 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.

1.2.6 Released Databases

This release includes these sample unclassified databases:

- The scenario developed as the Korea Standard Database and named SDBKOR41 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 DEMSDBKOR41, which is a reduced version of SDBKOR41, **has** been updated from JTLS 4.1.5.0 for this release and contains the most current engineering level data from the SDBKOR41 scenario.
- The scenario blank40 is the SDBKOR41 database, with all force structure data removed, can be used as a framework for building your customized database. This database has been updated and contains the most current engineering level data from the SDBKOR41 scenario.

1.3 INTERFACE COMPATIBILITY

1.3.1 Support Software

JTLS 4.1.6.0 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 5 or 6 (ES), 64-bit architecture.

Security Enabled (SE) Linux must not be enabled on systems used to execute JTLS 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 is currently not authorized.

When running JTLS on any Version 6 Red Hat Linux Enterprise Edition system, do not run the SYNAPSE and APACHE services on the same machine. This is a known issue, and the development team is continuing to find a solution, so this restriction is not necessary.

The Development Team has started to investigate the impact of Version 7 Red Hat Linux on JTLS. This testing is not complete; therefore, JTLS 4.1.6.0 is not approved for use with Version 7 of Red Hat Linux.

- There are no restrictions on the operating system for client workstations, except that the operating system must have a Java-enabled web browser enabled. JTLS 4.1.6.0 client software has been tested on the following operating systems:

Red Hat Linux Enterprise Edition Version 5 and 6

CentOS Linux Version 5 and 6

JTLS client workstations will not function on a Linux operating system if Java on that system is expired. To ensure that client workstations function properly on Linux systems, update Java to its latest patch.

Windows Vista, Windows 7, or Windows 8 can be used only if the workstation is an external HTTP client of the simulation network.

- Java Version 1.7.0 Update 65 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, 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 7 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 has decided to meet this requirement by linking our JTLS software releases to the Java 7 security updates. This version of JTLS is released using Java 7 Update 65, which expires on 14 October 2014. A new version of JTLS will be released prior to that expiration date.

This version of Java suitable for use on 64-bit Linux systems is part of this delivery. For optimal performance, a user must obtain this version of Java for any non-Linux clients systems that they plan on using.

JTLS has completed the IA program mandates and the JTLS 4.1 series of releases has been granted an Authority To Operate (ATO) on DoD systems.

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

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 *C4I Interface Manual* describes requirements and procedures for using the KOI capabilities.

1.3.2 Special Consideration for the JTLS Air Tasking Order Translator (ATO-T)

The ATO-T executes in two modes:

- In the basic mode, one or more files containing the translated orders is created and the Controller is responsible for submitting an appropriate READ ORDER FILE Order that submits these orders to the model.

- In the advanced mode, the ATO-T connects to the Oracle-based Scenario Database Repository (SDR) and places the translated orders into the appropriate Order Entry Client (OEC) tables. The OEC is responsible for submitting the orders to the model.

The SIMSCRIPT and Oracle libraries needed to support both ATO-T modes are delivered as part of the JTLS software package with the permission of CACI, Inc and Oracle Corporation. The necessary SIMSCRIPT libraries are released in the ~/bin_support/Linux64/simscript directory. The Oracle libraries are released in the ~/bin_support/Linux64/oracle directory.

To run the advanced mode, users must have access to an Oracle server. Users must obtain, install, and configure the most current Oracle Full Client to use the ATO-T in the OEC mode.

1.3.3 JTLS High Level Architecture Compliance

The JTLS 4.1.6.0 release is fully High Level Architecture (HLA) compliant, and includes all the programs required to run JTLS in an HLA mode. JTLS has moved to a new Federation Object Model (FOM) located in the \$JGAME/data/hla directory. Federation testing of JTLS is not complete, but some initial tests with CAE's Gefechts-Simulation system (GESI) have been accomplished. Future plans include expanding the capabilities to fully establish the GlobalSim Federation.

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 4.1.6.0 delivery. Users may obtain a full installation package of the RTI software from either vendor: Raytheon Company (<http://www.raytheon.com>) or Pitch Corporation (www.pitch.se). For information about executing the HLA RTI Executive and other HLA-related software, refer to the appropriate HLA documentation and user guides.

1.4 DATABASE MODIFICATIONS

1.4.1 Database Upgrade to JTLS 4.1 Series

No database structure differences exist between JTLS 4.1.6.0 and any previous 4.1 series database, but due to ECP JTLS-2014-11952, Allow Change to Date Time Group Time Zone, after installing JTLS 4.1.6.0, you must unload and reload any JTLS 4.1 series scenarios that you may have.

To upgrade your previously installed and modified JTLS 4.1.X.0 scenario for JTLS 4.1.6.0, you must unload and reload your scenario. This will recreate the modified stored procedures, database triggers, etc. Failing to do so will cause issues in DDS operations, such as renaming, copying, and deep copying existing records.

If you are upgrading to JTLS 4.1 from JTLS 4.0 or earlier, you must unload and reload your scenario after the modification is completed.

To upgrade your previously installed and modified JTLS 4.1.X.0 scenario for JTLS 4.1.6.0, you must delete the DDS GlassFish directory and recreate it:

- Delete all reports in the DDSC or TRIPP report browser. Select all reports in the report browser. Right-click and select “Delete” from the menu.
- Exit the DDS or the TRIPP.
- For the DDS, enter "cd \$JGAME/web_active/dds_as". For the TRIPP AAR, enter "cd \$JGAME/web_active/aar_as".
- Delete ("rm -rf <scenario_name>") the desired scenario.
- For DDS start the DCP for the scenario. For TRIPP AAR start the ICP for the scenario.
- Change the Glassfish execution host, and then change it back to the desired host and select save. For AAR in the ICP make sure the “active” checkbox is checked.

The JTLS Default Symbol Set has not changed since the initial delivery of JTLS 4.1.0.0, If this version of JTLS is your first JTLS 4.1 series installation, then the Default Symbol set must be propagated to any of your scenarios that originated under JTLS 4.0 or any previous version. Use the procedure that follows. You should not make any modifications to the Default Symbol Set.

Use this procedure to start the JSYMS program to update the Default Symbol Set used by one or more scenarios.

1. Enter the command "jsyms --edit-default" from a command prompt window. Do not use the JTLS Menu > Database Menu for this purpose. This message appears:

"!!! JSYMS Allows Editing and Saving the Default Symbol Set."
2. Select the Default Symbol Set from the drop-down menu and select OK.
3. Select Symbols from the menu bar, and select Save to update all scenarios that use the Default Symbol Set.
4. Close JSYMS.
5. Use the JTLS Menu Option 1 > 1 > 6 (Load Symbols) to load the current Default Symbol Set to your scenario account in the Oracle database.

1.4.2 Database Upgrade from JTLS 4.0 or Earlier

Users who currently possess a JTLS scenario (ASCII file set) compatible with a version earlier than Version 4.1.0.0 can use this recommended modification procedure after installing this new version of JTLS:

1. Create a new Oracle account for the scenario.
2. From the new JTLS account, load the scenario ASCII files to the newly created Oracle account.

This process creates the JTLS schema that matches the previous JTLS version. After all data are loaded to the database tables, the process modifies the schema to match the current JTLS version. For JTLS 4.1, this process supports JTLS 3.0 (or higher) series scenarios only. If your scenario version is older than 3.0, the scenario must be upgraded to Version 3.4 first, by using the JTLS 3.4 version upgrade process. Consult Section 1.5.2 of the *JTLS 3.4.0.0 Version Description Document* for details and procedures.

JTLS users must consider that the automatic modification program inserts default values to the new database fields. Also, a new JTLS version may use previously existing data fields in a different way. Consult the appropriate *JTLS Version Description Document* to identify data fields that must be updated. The Database Modify program is the first process to use to update your databases to the new JTLS version. Changing the values in new or changed data fields is equally important.

The JTLS scenario/database modification process requires a full Oracle Client version 10.2.0.5.4 or higher installation.

1.5 INSTALLATION

1.5.1 Installation Instructions

The *JTLS Installation Manual* included in the documents compressed TAR file that is part of this JTLS delivery provides detailed instructions for installing a new version of JTLS.

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 JTLS applications. The Oracle Instant Client is not sufficient for JTLS applications because Oracle utilities, such as sqldr, 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. For the 64-bit version of JTLS, a 64-bit Oracle Client installation must be used. The JTLS scenario/database modification process also expects 10.2.0.5.4 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. 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 (10.2.0.5.4 or higher - including 11g XE) running on any Oracle-certified database server platform.

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

Refer to Chapter 5 of the *JTLS Installation Manual* for additional details pertaining to the Oracle installation.

1.5.3 Disabling Certificate Authority

Keeping with high security standards, R&A has opted to sign its web-enabled applications with a certificate from the COMODO Certificate Authority (CA). It uses the Public Key Infrastructure (PKI) to validate the digital signature. The PKI attempts to validate the certification on COMODO's servers via the Internet. Because of security issues and the expiration of versions, it is strongly recommended that Web Start technologies be signed by a CA to validate that an application being run comes from a trusted and registered source under the PKI.

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 web enabled applications will experience a significant delay in start up.

The following outlines how 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 and select 'Java'. Both Linux and Windows will display the same configuration panel.

Navigate to the 'Advanced' tab and scroll down to the 'Perform certificate revocation checks on' heading. Select the 'Do not check (not recommended)' radio button and click 'OK'. The image below illustrates the corresponding selection in the Control Panel.

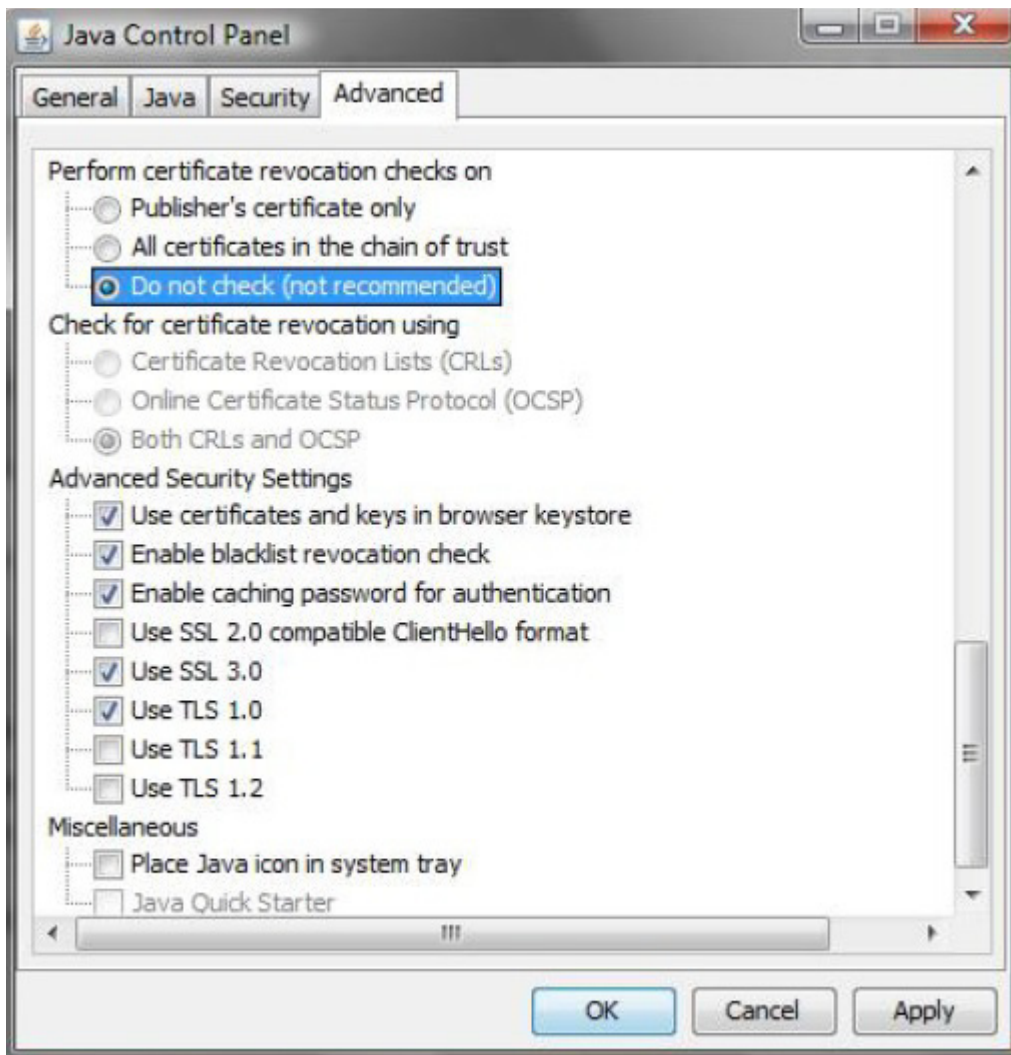


Figure 1.1 Control Panel

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

2.0 MINOR MODEL ENHANCEMENTS

This chapter summarizes model capabilities added to JTLS 4.1.6.0 as a result of implementing minor Engineering Change Proposals (ECPs). No major design related ECPs are delivered with JTLS 4.1.6.0.

2.1 JTLS-2014-12187 Difficulty Mapping Airbase And ICAO Codes

Summary of Model Change Request

It was difficult for the user to identify the correct unit when mapping ICAO codes to the correct JTLS unit on the ATO-T AIRBASE tab.

Design Summary

Many of the records in the ATO use ICAO codes for different types of mission locations. In JTLS we use the JTLS unit name for the same purpose. The AIRBASE tab of the translator allows the user to map the ICAO codes of the ATO with the JTLS unit names, but it is still a difficult task. In order to make this easier, each unit in the list of available units now also shows the corresponding JTLS unit name and ICAO code.

2.2 JTLS-2014-11952 Allow Change to Date Time Group Time Zone

Summary of Model Change Request

In the JTLS model, time is assumed to be Zulu time. This ECP request does not suggest that we alter this assumption; instead, this request is simply a user interface request. The various JTLS user interface programs, such as the DDS and the WHIP, currently have the ability to select, through their Preferences menu, how some data should be displayed. Time is simply another type of data and the user should be able to select how to view the time data that is presented on the user interface.

Design Summary

JTLS already has a fully functioning Unit of Measure (UOM) capability and routinely allows users to view distances, areas, volumes, and weights in any UOM defined in the scenario's database.

A new type of UOM conversion will be created in JTLS. This new type will be called TIME. As part of the JTLS User Preference selection process, the user will be able to select the Time Zone that should be displayed for all visible time parameters. The default Time Zone in JTLS will remain as Zulu time, but each user will be able to indicate the Time Zone that should be displayed on his or her individual workstation.

The user will need to unload and reload their scenario database, which will load the new lookup table and make the new TIME conversion category available when defining UOM conversion

records. The user will then need to manually add a new record to the Unit Conversion table (<scenario_name>.uc). This new record will be the baseline TIME conversion record, and is in the following format:

ZULU Z TIME 1.0 0.0

This baseline record is the only mandatory database UOM conversion record that must exist in the scenario, but to use this ECP, the user will need to specify at least one Time Zone conversion record. For example, if a user wanted to add the Time Zone for Korea and Japan, which is Time Zone India, the user will need to add a record in the following format:

INDIA I TIME 1.0 9.0

This record indicates that Time Zone India is obtained by multiplying the Zulu time by a factor of 1.0 and then adding 9 hours.

2.3 JTLS-2014-12202 Include Mission Call Sign On WHIP SITREP Panel

Summary of Model Change Request

A user requested that an Air Mission's Call Sign be included in the WHIP SITREP panel.

Design Summary

A line was added to the WHIP SITREP panel, just below the Air Mission's name. This new line is titled "Call Sign" and it displays the Call Sign assigned to the mission. If the mission does not have a Call Sign the field is blank.

2.4 JTLS-2014-12203 No Way To Quickly Find End Of Event Sections

Summary of Model Change Request

The Event ASCII file associated with a checkpoint needed to be modified. The specific modification required the Tech Controller to start at a specific event and find the end of the event section. Unfortunately there was no easy way to find the end of an event section when tens of thousands of events were present. At one exercise, the size of the Event ASCII file was growing with every checkpoint. The Tech Controller wanted to identify which specific event was causing the growth. At the beginning of each event section the name of the event and the number of those events is printed out. However, there was no easy way to grab the number for all events.

Design Summary

As stated each event section starts with the name of the event and the number of those types of events. These lines were modified to also include the keyword "EVENTS" so that it is easy to find the beginning of an event section, or to find the number of all events.

2.5 JTLS-2014-20217 Improve Debug Access For Move Order

Summary of Model Change Request

A user reported a possible problem with two move orders given to a specific unit. The problem was that these two orders were in the middle of over 750 move orders entered into the system while the game was in a pause status. There was no easy way to stop the debugger in the proper order so the problem could be investigated.

Design Summary

A debug stop statement was added to the routine that processes Move Orders. It turns out that there were no problems with the orders., but the design team decided to keep the debug stop statement in the code to help if necessary in the future.

2.6 JTLS-2014-12222 Comprehensive Airbase Supply Check

Summary of Model Change Request

In the SVP, Warning 1410 determines if there are some supplies for each aircraft home-based at a particular facility. Although needed, a more comprehensive and stringent warning is desired. The user has requested a warning that computes the supplies needed for every aircraft at the facility to fly at least once, no matter which Weapon Load is selected from the LOAD ASSIGNMENT ARRAY.

Design Summary

Warning 1453 was added to the SVP. The warning determines if the unit has an adequate amount of supplies to support its home based aircraft. Warning 1410 makes sure that the home base has some of every supply category needed to each and every Aircraft Load used by each squadron. This warning is designed to provide a more comprehensive calculation. It makes sure that every aircraft home based at this unit can take off at least once, no matter which load assignment load is selected. If this is not possible the warning indicates how many supplies are needed to pass this warning. The warning does not provide the weapon or the squadron that may be causing the problem.

This computation is accomplished for all Airbases, FARPs, Naval Units with onboard squadrons and independent squadrons.

2.7 JTLS-2014-12233 Pass Multiple Objects to External Control

Summary of Model Change Request

When JTLS was federated with the external model GESI, a request was made to improve the method by which ownership of objects is passes from JTLS to GESI. Normally, control of each individual object was passed one-by-one to the external model using a negotiated transfer. The

goal of passing multiple objects to GESI at the start of the game means that many individual orders must be sent to the model. Passing multiple objects using a single order was a suggested improvement to facilitate this goal.

Design Summary

The PASS OBJECT CONTROL order was modified to incorporate the transfer of multiple objects. The order panel was changed to include a group for "Multiple Objects". The underlying code in the CEP was also modified to support this change. Control of multiple objects can be easily passed to an external model with this improvement.

2.8 JTLS-2014-12252 Add OR Capability To TechTool Search Strings

Summary of Model Change Request

The TechTool program has the capability to search orders and messages for a specific string or a group of strings. When searching for multiple strings, the user specifies an ampersand, "&", within the search field to indicate the junction of strings. No similar capability exists for performing an OR search, i.e. find orders and messages with either string Alpha or string Beta.

Design Summary

The TechTool program was modified to permit the use of the vertical bar, "|", as an OR conjunction. The search string is first broken down between the OR conjunctions, then each of these is broken down between AND conjunctions. There is no use of parenthesis to make more complicated logical conjunctions.

3.0 SOFTWARE TROUBLE REPORTS

Software Trouble Reports (STRs) describe software code errors that have been discovered by JTLS users or developers and have been corrected. The following STRs have been identified for this JTLS Maintenance release.

STRs that remain outstanding from previous JTLS versions are listed and described in [Chapter 4.0](#).

3.1 JTLS-2014-12030 Logic Error - Invalid Perception HUP Command Level

When the Controller changes the Command Level associated with a HUP, the code also changes the Command Level of all HRUs that are derived from that HUP. Once the Command Level is changed for an individual HRU, the code also informs the JODA of the change so that it will be properly reflected on the WHIP and any external interfaces that require it. This update would normally be sent for the owning HRU's side and the Controller.

However, due to a small code error, the update was being sent to side zero and the Controller. This invalid side caused a Logic Error to be written and prevented the HRU's owning side from seeing the new Command Level.

The code was modified to ensure that the HRU's owning side, rather than side zero, was included in the JODA update.

3.2 JTLS-2014-12095 Pause Button For DDSC/WHIP/TRIPP Debug Window

When a large number of exceptions are occurring when troubleshooting an issue, the information scrolls off of the debug screen before it can be analyzed.

A "pause" button was added to the debug screen to allow the user to pause the scrolling of the information.

3.3 JTLS-2014-12097 SVPR Check Terrain And JMRRM Not Saved

In the SVPR, the user can specify in the Preferences window whether to Check Terrain and/or Check JMRRM Data. When one or both of those boxes is checked, the SVP can be run and will use those preferences. However, if you re-open the Preferences window, then the Check Terrain box and/or Check JMRRM Data box are not checked if they were checked for the previous run.

The SVPR code was changed to save the checkbox selections to a preferences file.

3.4 JTLS-2014-12100 DDS SVPR Scroll Bars

Error/Warning and Resolution list entries in the DDS SVPR are often wider than the default size of the SVPR window, causing the scenario developer to have to reformat these entries from the View menu option.

Horizontal scroll bars have been added to the Error/Warning and Resolution list areas.

3.5 JTLS-2014-12105 DDS - Preference Save

DDS preferences are currently saved locally, but they should be saved based on the user and scenario. Moreover, font and text size are not saved as part of user preferences.

Everything specified in the DDS Preference Tool, including font and text size, is now saved as an xml data file under the scenario's GlassFish directory on the server system, with a separate file for each DDS user. When a DDS client is launched, if a preference file pre-exists for that user, the saved preferences file is then loaded.

3.6 JTLS-2014-12109 DDS Report Browser Displayed In Background

If you open a Report Browser from the "New" menu on the DDS, the Report Browser process is started, but it is displayed in the background (minimized) on the DDS. This is inconsistent with how every other process that is opened is displayed.

The DDS code was modified to open the Report Browser in the DDS window, rather than open it as a minimized window.

3.7 JTLS-2014-12111 DDS SVPR Invalid Unload Result

During a DDS session, a scenario developer can have multiple SVPR sessions up at the same time. When a database unload is performed, resulting in a new Error/Warning file being generated, the multiple SVPR sessions would request to be updated, where one could say yes and be updated by the new Error/Warning file, while the second session one could say no and not be updated, causing an anomaly to exist.

Logic has been introduced where only one message is displayed, even though there may be many SVPR sessions up at the same time. Further, what result is given for the one update message, (i.e., to continue with the update, to not update at this time, and to not ask again) will affect all SVPR sessions collectively.

3.8 JTLS-2014-12113 Incorrect Status For Resurrected Equipment Shelters

When a previously destroyed equipment shelter was resurrected, the target status was "Turned On". At the start of the game, equipment shelters normally had a status of "Prepared". This was the expected value for the status, since shelters can not be turned on or off.

During the resurrection process, all targets were processed through code which activates the target. The default status was to set it to "Turned On". This part of the code was modified to set all equipment shelters to "Prepared" when they are resurrected. This also allowed the shelters to be filled when they became active.

3.9 JTLS-2014-12128 Synapse Refresh Times From Config File

The Synapse periodically goes out to see if there is any new information that a WHIP needs to know. For example, if WHIP 1 gives permission to WHIP 2 to load a slide, WHIP 2 needs to know the existence of this slide. This is accomplished by the Synapse periodically sending WHIP 2 the names of the slides it knows about. The time between Synapse updates is hard-coded and is set to a fairly small number. If a very large exercise is being run with hundreds of WHIPs, this update time should be larger to reduce the overall system load on the Synapse. The update time needs to be a part of the configuration file.

Code was introduced to override the Synapse refresh times from a synapse.properties file. This new file is located in the \$GDATA/whip directory and contains the suggested refresh parameter for the Synapse. If a user wants to use a different value for the refresh time, a similar synapse.properties file can be placed in the non-configuration managed, site specific directory \$GDATA/data_site.

3.10 JTLS-2014-12130 DDS Report Browser Column Names Updated

In the DDS Report Browser, the "Player" column should be named "User," and the "Subject" column should be named "Report Title."

The column names were corrected as stated.

3.11 JTLS-2014-12134 DDS SVPR Incorrect Handling Of Invalid Characters

Users can filter SVPR Errors/Warnings by specifying a range of values. If the user enters an illogical filter statement (such as using characters other than ',' '-' or 0-9), an error message is displayed in a pop-up window. This does not match the convention established within the DDS when dealing with invalid characters in an edit field.

Invalid characters are now prevented from being entered, as other DDS components do. Specifically illegal characters are eliminated and cannot be entered into an edit field.

3.12 JTLS-2014-12135 GlassFish Does Not Start Without DCP Changes

When the user does not make any changes in the DCP, GlassFish will not start via the "Save" option.

The DCP code was changed to start GlassFish after saving whether there were any DCP changes made or not.

3.13 JTLS-2014-12138 DDS SVPR Error File Access Interrupted

Error file access, at times, may result in a temporary error condition, where the error file is unreachable momentarily. The SVPR would then cause the user to be in a state requesting an unload of the database, when one is not necessary.

The code has been changed to allow the SVPR to recover after its initial attempt to locate the appropriate error file and re-request it after a thirty second delay. If the file continues to be inaccessible, the user is prompted to perform an unload. If the user performs an unload, all versions of the SVPR will be updated to the new error file. If the user does not perform an upload, all versions of the SVPR will be closed, given the file specified in the scenario `currentErrorFile` is unavailable.

3.14 JTLS-2014-12141 DDS: History Table Added Record Even If Canceled

When a railroad node was selected for editing, with no Interdiction Point or Bridge Target in the same hex, the "Add Target" menu item shows the "Add Target" window, but shows no targets available to be added. This is correct, but when the "Cancel" button was selected, the history table inserted a record that showed a railroad associated Target with a blank value. The new record should not be generated if the user selects "Cancel" from any window.

This issue was resolved after the railroad node menu rework was submitted - see [3.24 JTLS-2014-12159 DDS Railroad Node Menu Rework](#).

3.15 JTLS-2014-12142 DCP/ICP Heap Size Inadequate For Many Clients

The DCP/ICP had the potential to use more memory than intended when more than 50 user clients (WHIPs or DDS clients) are generated, given there were no starting and maximum amount of memory ranges specified.

The code was changed to specify the starting and maximum amounts of memory available for the DCP/ICP, in the script files for each program (`$JHOME/script/dcp` and `$JHOME/script/icp`, respectively), and increase the maximum amount of memory available from 256 MB to 512 MB, easily enough to support 200 or more user clients.

3.16 JTLS-2014-12151 TACELINT Messages Not Sent After New Download

When the JOI was used to generate TACELINT messages, messages were not being sent out when the CEP was restarted and a new download was received from the JODA. The message queue was cleared when the JOI received the `BEGIN_DOWNLOAD` packet, but it did not repopulate the message queue from the emitter objects that were received during and after the download.

The JOI code was modified to add the emitter objects to the queue every time it receives the Create packet of emitter objects.

3.17 JTLS-2014-12152 Emitter Not Removed From JOI When Mission Completed

When the JOI was used to generate TACELINT messages, the messages were generated from the known emitter JODA objects. When an air mission was completed, the emitters on board were removed from the game. The JOI did not process the Delete packet to remove the object from the JOI database.

The JOI code was modified to correct the problem.

3.18 JTLS-2014-12153 Air Mission Attacking HRU Crash On Checkpoint

An Air-Ground Attack mission was instructed to attack an HRU. As the mission was heading home a checkpoint was taken, resulting in a game crash because the checkpoint code had not been updated to consider the air mission could be directed against an HRU.

The code to write the checkpoint and the code to read the checkpoint were modified to handle the case of an air mission attacking an HRU as either the primary or secondary target.

3.19 JTLS-2014-12154 Magic Move Of Unit In Amphibious Assault Causes Crash

A CEP crash occurred when a user attempted to magic move a unit which was part of an amphibious assault. This assault used both helicopter and vehicle landing capabilities. When the unit icon first appeared at the site of the assault, then the controller ordered the magic move. This move placed the unit back onto the formation on which it was previously embarked. The magic move appeared to work correctly, but the model later crashed at the time when the unit was supposed to be done with the assault.

When the magic move took place, the unit was properly removed from the set of objects involved in the amphibious assault. However, there were existing air missions which held portions of the unit which were en route to the site of the assault. Additionally, there were events in the model which were still scheduled to occur later. At the time of the next related event, the model attempted to access an object which was no longer associated with that set of objects. The model crashed because of this data inconsistency.

The code to process the termination of all or part of an amphibious operation was reworked to prevent this crash. This capability allows the controller to safely remove a unit from an amphibious operation by using the magic move order. The associated messages were also improved to report the correct information when these circumstances occur. The messages were associated with the status of the amphibious operation and with the details of a magic move order.

3.20 JTLS-2014-12155 Infinite Durations Cause Message Errors

An amphibious status report was requested for a formation that was en route for an assault but had a sinking ship as part of the formation. The sinking ship had zero speed, so the entire formation had zero speed and, as a result, the time to destination was forever.

The code handles this situation by using a value of 1E+30 to represent forever, and this duration was sent in a message. However, the CEP converts the duration into an XML duration which has the format PTnnDnnHnnMnnS. For durations greater than 2147483647 days (the greatest time that can be put in a XML duration), the code mistakenly wrote out P2147483647DT, mistakenly placing the T at the end of the string instead of just after the leading P. This caused an error when the Message Browser attempted to write the duration out.

The minor code modification to place the terminating T in its proper position was made.

3.21 JTLS-2014-12156 DIS Codes Needed For Weapon Fire Messages

When JTLS was federated with other models, the CEP used special messages to represent weapon fire events. These messages were sent out by the CEP and forwarded by the ELS and the JHIP to the external models MUSE and GESI. These messages contained the location of the event, the type of weapon, number of rounds, and a list of the preferred targets. In these messages, the specific weapon was given as a DIS Code, but the preferred targets were given as JTLS-specific indices for the targeted combat systems. These indices were not useful to the external model.

The CEP code was modified to provide the DIS Codes for the preferred targets in the messages for weapon fire. Using DIS Codes for all object types in the messages gave the external models a more acceptable and well-defined definition of the targeted objects. Minor changes were also made to the ELS code to access the DIS Code information in these messages.

3.22 JTLS-2014-12157 Stabilization Of Read ASCII Checkpoint Code

Throughout the CEP ASCII checkpoint files, memory pointer locations were saved only to flag or indicate the presence of additional information. The pointers in this specific circumstance are not traceable and were never intended to be. This method of flagging made the code more readable to developers. There were no issues in the normal operation of the JTLS software.

However, should the CEP execution be halted for normal debugging procedures, pointer locations saved in checkpoints will cause an unrecoverable error. Because these saved memory locations have expired, the debugger will crash while automatically attempting to trace them.

The CEP source code was modified to read in checkpoint memory pointer locations as integers, rather than pointers, as saved by the write checkpoint code. No information loss occurs - the pointer locations were always managed as flags for the presence of additional subsequent information. This STR enhances the overall stability of the JTLS model by removing the possibility of unrecoverable crashes during CEP (SIMSCRIPT) debugging.

3.23 JTLS-2014-12158 Ship Unit Insert To ICC Failed When Detected

When the JTOI was used to populate the ICC, a detected foreign ship object was not inserted into the ICC database. The JTOI received an error message to indicate that the ship status field was

not provided. The ship status is determined from the strength of the unit and was unknown at the time of detection.

The JTOI code was modified so it always provides the status information. If the strength is unknown, it will provide the default status of FOP (Fully Operational).

3.24 JTLS-2014-12159 DDS Railroad Node Menu Rework

The Railroad Node menu item "Add Target/Remove Target" was not specific, because there are two different associated target types for a railroad node: bridge and interdiction_point.

Though railroad node behavior was changed in JTLS 4.1, the node menu behavior had not been adjusted yet. For instance, after JTLS 4.1, a node could exist on the map/table by itself without connecting to a railroad network. However, it disappeared when an arc or railroad was deleted from the map. It was not allowed to connect to multiple railroad networks, but now it may. Also, there was a bug due to an incorrect name change which occurred when a newly added node was assigned a target, causing the node name to switch to the target name.

The menu item "Add Target/Remove Target" was divided into two menu items: "Assign Bridge target" and "Assign Interdiction PT target", and their interface changed to include a removal function. The code was modified so that a node is capable of multiple railroad network connections. The incorrect node name change bug was fixed and the menu items have been reworked.

3.25 JTLS-2014-12160 JSYMS: Cannot Delete Custom Symbol Within JSYMS

The user can create a new custom symbol by using the JSYMS application. However, the custom symbols cannot be deleted within JSYMS. The "Delete - " button in JSYMS is only available when no scenario is assigned to the symbol set, because deleting the custom symbol from the symbol set and saving would change all of the scenarios that are assigned to the symbol set. Currently, the only way to remove a custom symbol is to manually delete it from the related .scf file, reload the symbol set in JSYMS, and propagate it to the related scenarios.

The JSYMS code was modified to make the "Delete - " button unavailable if the default symbol set is open in JSYMS. Otherwise, when any other symbol set is open in JSYMS, the "Delete - " button is available.

3.26 JTLS-2014-12161 JXSR Crash Deleting Old Alerts

The JXSR crashed numerous times while looping through alert messages in which some alerts might be deleted.

The problem is the deletion of the alert while cycling through all the alerts. The method that was being used to accomplish this task invalidated the cycling operation resulting in the crash. The code was modified to employ a cycle and delete method that is recognized to work correctly.

3.27 JTLS-2014-12162 MDP Used Incorrect Correct Profile For Messages

The Message Delivery Program (MDP) was used to generate messages for more than one type of message format. The user customized the formats in two different profiles. This customization included changes in the languages, the time zones, and numerical formats. The MDP generated messages for both profiles, however the content of the messages was the same for both.

A basic error existed in the MDP code which caused the program to incorrectly re-use the message rendering profile. The program was re-using the data from a previous run when it generated a specific message. If more than one profile was being used, the data were not re-formatted for the different specifications. A correction was made to resolve this issue.

3.28 JTLS-2014-12163 Null Value In ACP Air Information Protocol Crashes SIP

If the value of the Air Information Protocol data field on the Air Control Prototype table is null, the scenario download procedure fails to write "NONE" for the null values. This causes the Scenario Initialization Program (SIP) to crash during download.

The scenario download and load procedure-related control files were modified to properly translate the null values for the "Air Information Protocol" data field of the "Air Control Prototype" table. During the downloading, "NONE" will be written to the .acp ascii file if the data value is null. During the loading process, "NONE" will be converted to null for the related Oracle data field.

3.29 JTLS-2014-12164 DDS - Some Tables' INT Values Showing In Decimals

Some tables in DDS client were showing integer values in decimals, such as the Damage Number and Damage Element values of the JDPI Target Descriptor List table. To avoid confusion, these values should be displayed as they were in the database.

The DDS client receives all numbers from the DDS server as Double values. In the screen definition files, proper float formatters, are used to render the integer fields so that the decimal points are suppressed. However, not all formatters were used correctly, so some integers were shown as decimals. To fix this, all of the screen definition files have been checked and corrected to make sure any of the integer fields is using the proper number formatter.

3.30 JTLS-2014-12165 Logic Error - RESTORE.ROUTE

An orbiting SEAD mission ran low on fuel and was sent toward a tanker that happened to be on the other side of a restricted boundary. The mission flew up to the border and stayed there because it could not find a suitable next air intercept hex toward the tanker. The WHIP alert symbol appeared over the mission icon as well. About 30 minutes later, a Magic Air Ops order was sent to refuel the mission and return to orbit (Re-establish Flight Path = Yes), which triggered a logic error.

The magic refuel amount specified was not adequate, however, and the mission soon ran low on fuel again. This time, the mission chose a different tanker (on the friendly side of the restricted

boundary) and refueled. Afterwards, instead of returning to its orbit location, the SEAD mission flew back to its previous location next to the restricted boundary and loitered for 30 minutes, and then returned to its original orbit location.

Each time an air mission's location is updated in the model, the logic checks the fuel status to determine if the mission needs fuel. If the mission needs fuel and selects a tanker as the source, the logic places an intercepting hex in the mission's route to cause the mission to fly toward the tanker. When the model can't find a suitable intercepting hex because of a restricted boundary (in this case), an air optimizing hex is placed in the mission's route, so that the mission loiters at its current location until a player notices the alert symbol on the WHIP and takes some action.

The problem was that the model was placing both an optimizing hex and an intercepting hex in the route during each move event, which caused many duplicate optimizing hexes to accumulate in the route while loitering. This situation triggered the logic error when the Magic Air Ops order was sent because the model was expecting an intercepting hex to be at the head of the route, but encountered an optimizing hex instead. Later, when the mission finished refueling, it had to return to the loitering location to fly "through" all the duplicate hexes before returning to its original orbit location.

To correct this problem, the code was changed to NOT add an intercepting hex after the optimizing hex is added during the same move air event. Furthermore, the optimizing hex is now changed to an intercepting hex, unless the mission is out of fuel, can't loiter, and must jump home. This change stops the build-up of duplicate hexes in the mission route while the mission is loitering when it can't find a suitable intercepting hex. The change also avoids the logic error and allows the mission to return to its orbit location after refueling, without going back to the loiter point first.

3.31 JTLS-2014-12166 Sipprogram Cleanup

The sipprogram script still contained references to XML and OPM links which are not generated.

The script code was cleaned up.

3.32 JTLS-2014-12167 OPM Checkpoint Generation Always Uses 0000

When OPM pages are re-generated from a checkpoint the code did not use the checkpoint files but the actual game start files. Basically this is just a re-generation from the initial game data instead of from a checkpoint.

Neither the jtlsmenu nor the javamenu were passing the parameter to signify a checkpoint re-generation; instead, the processes always passed the flag indicating the SIP should generate OPMs from the checkpoint 0000 data. The code was modified to consolidate the two types of generation, game start and checkpoint. The SIP now makes this determination by interpreting the specified checkpoint number.

Once this was completed, it was realized that the reading of the target ASCII data, which provides the HRU names that own the targets, was out of date. A new copy of the code was taken from the CEP and modified for SIP usage.

3.33 JTLS-2014-12168 Error 612 Lists Barrier Index Instead Of Barrier Name

Error 612, which reports a bridge on a non-bridgeable barrier, also reports the index of the current barrier value. This should be reporting the name of the current barrier value, not the index.

The code was modified to output the barrier name instead of its index value.

3.34 JTLS-2014-12169 Equipment Shelters May Be Owned By Any Type of Unit

Originally Equipment Shelters were modeled to solely implement the sheltering of aircraft. Thus SVP Warning 1614 checked if a shelter was not owned by a squadron, airbase, or FARP. Now Equipment Shelters may shelter all combat systems and targets. The unit type ownership requirement is obsolete, but the SVP check still exists.

The checking and generating of Warning 1614 have been removed.

3.35 JTLS-2014-12170 JMRM AST Template Table Query Outdated

The user could open the Aircraft Shelter Type Template Table from the DDS Tables Menu, but the table threw exceptions and an error when trying to query the database for data to fill the table, indicating the query was not valid.

This error occurred because the AST Template Table no longer exists in the database - it was replaced by the new Equipment Shelter Type Table. The screen definition file was updated and renamed, and the menu configuration file was fixed accordingly.

3.36 JTLS-2014-12171 Removed Version Information From Splash Screens

The version information on the DDSC, WHIP, and TRIPP splash screens was often incorrect, leading to confusion.

Splash screens are cached by Java Web Start and therefore were prone to being out of date. The version number has been removed from the splash screens. Accurate version information is available on the WHIP's "About" menu option.

3.37 JTLS-2014-12172 DDS Map Flickering During Unload

The DDS Map flickered during an unload.

The DDS unload process was changed to deactivate the DDS map and disconnect the tables from the database while the unload is processing, and then re-establishes those connections when the unload has finished.

3.38 JTLS-2014-12174 DCP/ICP Runs Invalid Scenario In Terminal

When running the DCP or ICP from a terminal, if the user entered an invalid scenario as part of the command, the script would allow the user to choose a valid one, but would still attempt to run the original (invalid) scenario.

The DCP and ICP scripts were modified to run the scenario the user chooses.

3.39 JTLS-2014-12177 DDS Add Air Defense Class Throws Exceptions

In the DDS, when a user filled out the fields in the Add dialog of an Air Defense Class, some non-critical exceptions were thrown before the new air defense class was created when the OK button was selected.

The null pointer exception was generated when the DDS attempted to validate the Targetable Weapon Name field. For this field, there is a validator checking to make sure that the Targetable Weapon Name is not the same as the name specified in the Advanced Targetable Weapon field. Since the Advanced Targetable Weapon field is not present in the Add dialog for an Air Defense Class, the DDS cannot handle this validation.

To fix this, the Advanced Targetable Weapon field is added to the Add dialog. The field can be null.

3.40 JTLS-2014-12178 DDS Default Map Projection Not Based On Preference

When the DDS is launched, the map projection did not respect the specification in the Preference tool - the map always came up in Mercator projection, no matter what the user preference indicated the default projection should be.

The DDS client code was modified so that the map will come up in the default projection the user indicated.

3.41 JTLS-2014-12179 Amplification Of Naval SITREP Report Message

The Situation Report message for naval units only included current speed and "maximum speed", or the maximum speed allowed by the naval unit Ship Unit Prototype (SUP). An additional maximum speed under current strength was not provided in the Sitrep message for naval units.

A line to the Situation Report message for naval units was added which provided the naval unit's maximum speed under current strength. Current speed and maximum speed for the SUP were already provided.

3.42 JTLS-2014-12180 WHIP Orders Allowed Paste Of Illegal Characters

It was possible to paste illegal characters into an order text field. When a user pasted a text string containing illegal characters, the order appeared to pass the order verification, but failed to send to the model.

The order text field entries were not set to be checked for illegal characters when a paste was performed on the field, just as it checks when the text is keyed in. Now text fields will check the input on the paste action, and remove any illegal characters from the pasted text, preventing an order from being submitted with illegal characters.

3.43 JTLS-2014-12181 Problems When Removing Multiple JODA Peers

When the JODA went down for an unrelated reason, any existing connections to the HIP or the JOI were lost. When the JODA was restarted, the CEP crashed while trying to re-initialize the HIP and/or JOI connection.

This crash occurred because the CEP never cleared out the object data for the HIP and/or JOI connection. The code was modified to properly clean out the object links for these connections. When a re-connection was made, these changes allowed the link to be established without any conflicts with the existing objects.

3.44 JTLS-2014-12182 Movement Reflection For Externally Controlled Units

When JTLS is connected to the external model GESI and that model owns one or more units on the ground, then JTLS must reflect the location and movement of those units. When such a unit was moving in the external model, the course and speed was not always correct as viewed by JTLS. If an external unit stopped moving, then the position of the unit stopped moving in JTLS but the speed and course continued to show the unit as moving. This problem also applied to HRUs.

As a unit or HRU moved in an external model, the ELS computed the effective speed of the entire unit based on the movement of the individual entities. The location of the unit was always properly updated and shared with the CEP. When the unit stopped moving, no additional location updates were received from the external model which meant that the ELS never stopped the movement for the units. Code was added to assess the movement state of external entities. This allowed the ELS to reflect the zero speed for stationary entities. Depending on the movement state, the ELS was modified to also set to posture to MOVING or DEFEND for the external unit. Some additional attributes were also included in the ELS checkpoint files to support these changes.

3.45 JTLS-2014-12183 Entering Text On Slide Causes Null Exception

When creating a WHIP Graphics Slide, it is possible for a user to add or edit a slide graphics object, but prior to finishing that process, attempt to add or edit a different object. For example, assume the user starts to add a polygon to a slide and while the white polygon vertices are still

showing, the user decides to add a slide text box. Since the polygon creation process was not completed, the WHIP would throw an exception because the user had attempted to edit or manipulate two different Graphics Slide objects simultaneously.

To solve this problem, the Drawing Tool graphics editing buttons are now deactivated once an editing function is activated. The buttons will become active again after the currently selected object editing function is complete.

3.46 JTLS-2014-12184 Open Large Report In External Browser

When trying to display a full Object Detection Report, the TRIPP uses the maximum amount of memory and becomes non-responsive. Similar problems were found for other large AAR/DDS reports.

Large AAR/DDS reports can require more memory to render than can be allocated, causing the client to hang or crash. It was found that rendering the same large reports in an external browser, rather than the TRIPP, requires less memory.

Because the generated report size is unpredictable, the problem was resolved by conditionally redirecting large reports to an external browser. Reports larger than a predetermined maximum file size will be rendered by an external browser. The returned message will contain a hyperlink to the large message. Clicking on this hyperlink will result in the Report being displayed in the default browser. Smaller reports continue to be rendered by the ReportBrowser.

The default definition of a large report is set to 4 megabytes, but it is user-configurable by altering the `$<scenario_name>_properties` file located in the `$JGAME/web_active/dds_as/<scenario_name>` directory.

3.47 JTLS-2014-12185 ReportBrowser Continues To Show Busy Sign

After selecting a report from the ReportBrowser, the hourglass busy sign keeps running while the report pane did not show anything.

The problem was that, when the GlassFish servlet received the request from the DDSC or TRIPP, after the user selected a report from the ReportBrowser, the GlassFish servlet threw an exception, but failed to send a response back to the client informing the client that an exception had occurred and to turn off the hourglass busy sign. This problem has been corrected, so that the GlassFish servlet will send a response to the client instructing it to turn off the hourglass whenever an exception is logged.

The reader should note that there are currently no known DDS Reports or TRIPP reports which cause a server side exception. This means that testing this STR will be difficult, because it requires that a user generate a report with an error. The development team has corrected all known report errors, but if any errors are uncovered in the future, the error sequence of events resulting in the turning-off of the processing hourglass symbol will work correctly.

3.48 JTLS-2014-12186 Ensure SVP Template Has Proper Argument Lists

A stylesheet exists to check that the Configuration Managed SVP-Template.xml file is properly formatted. Within the format of the file an error action can have a column and select attribute which are comma separated lists of items. These attributes instruct the DDS to bring up a specific entry within a table, which may have multiple primary key columns, with the comma separated list identifying a unique entry. The number of items in these two comma separated lists should always match. Previously we had an error were some entries did not have matching numbers of items, but we had no way to consistently find such errors.

The verification stylesheet was expanded so that if both the column and select attributes are present the number of items in both attributes are counted and compared. If these two values are not equal, an error message is now printed.

Once this functionality was implemented two cases of a mis-match in the number of items in the two comma separated lists were found and fixed. The verification stylesheet is for use by configuration management personnel and therefore the issue that this STR is fixing would not be visible to the users.

3.49 JTLS-2014-12188 Programming Standards Review

The ATO-T code did not follow published programming standards.

A cursory review of the ATO-T code revealed several common errors in programming standards throughout the program. It is necessary to enforce the standards to make it easier for all programmers to understand the code. The ATO-T was modified to incorporate the coding standards without changing the logic within them.

3.50 JTLS-2014-12189 Incorrect Decimal Location Computation

The ATO-T was incorrectly computing the decimal portion of a location.

A error was found in the use of integer versus real variable types, and a minor correction was made to the actual computation to improve the accuracy of the computed location

3.51 JTLS-2014-12190 Incorrect Field Format

The ATO-T was incorrectly converting a Version 2004 formatted location field.

The ATO-T was recently upgraded to use the new 2004 formats for ATO and ACO text messages. Programming for the new formats was done using the help text and examples provided by the USMTF and ICC message generation programs. The actual output formats are different from the published output formats. The ATO-T was modified to match the actual message format instead of the published format.

3.52 JTLS-2014-12191 Mission Location Information Needed

ATO-T warning messages for certain mission types were missing location information for all but the primary location.

The current ATO-T can only schedule mission location changes when using the OEC client, and when not using the OEC client, the ATO-T adjusts the return time to reflect the extension in off-station time, and will provide a warning message to remind the user to input the location changes manually. However, this message did not provide the user with sufficient information on the missing locations.

The ATO-T does provide the capability to produce a detailed mission report. This report was modified to provide all of the information the user needs to input mission locations into the simulation after the ATO has been read into the game.

3.53 JTLS-2014-12192 TRCPLOT Record Format Change

The ATO-T was incorrectly interpreting a TRCPLOT record.

A new field was added to the TRCPLOT record in the Version 2004 format. This change in format was not previously identified and caused errors in the read process. The ATO-T code was modified to account for the new field and was tested.

3.54 JTLS-2014-12193 Miscalculation Of Flight Time

Air missions were not arriving at the target location at the correct time.

An error was found in the code that computes the mission time based on the ingress route and refuel locations. The formula used was double-counting the distance to any ingress refuel locations. The process and calculation has been corrected and tested.

3.55 JTLS-2014-12194 Duplicate ICAO Codes Detected

During a code review of the SVP code, it was noted that a significant amount of duplicate code was used to determine if two or more game objects on the same side shared the same ICAO code. This duplicate code was inefficient and could potentially cause code maintenance issues.

The ICAO code check was centralized into its own subroutine, which in turn was called for all appropriate game objects. This made the program logically easier to follow.

3.56 JTLS-2014-12196 Crash Generating IIR Message

The JTLS shadow game crashed on restart, and the crash was traced to data held by the Initial Intelligence Report (IIR) reporting object for a previously detected air mission on the ground.

The routine `geniirmes.sim` was attempting to use a pointer to access the number of aircraft in the old mission for the message. The number of aircraft is available in another data item without using the pointer entity. The code was rewritten and tested to use the existing number of aircraft data, eliminating the use of a pointer which was no longer accurate.

3.57 JTLS-2014-12197 ATO-T Mission Type Corrections

User mission code types in the ATO were being mapped incorrectly to JTLS mission types in the simulation.

Two ATO mission types (WAS, "War at Sea Strike", and MPA, "Maritime Air Patrol") were changed to the JTLS mission type "Patrol" in the `constraints.ato` file.

3.58 JTLS-2014-12198 Game Crash HRU Moving In Chemical Hex

An HRU moving into a hex with chemical contamination resulted in a game crash, because the model accessed a variable that had not yet been assigned.

The problem was that the code instructed the model to access a variable that would not be assigned until later. The code was rearranged to assign the variable before attempting to access it, thus correcting the problem.

3.59 JTLS-2014-12199 Timing Jumps During ELS Execution

When the ELS was used in a federated mode, the advancement of time was not smooth. Time appeared to jump over large spans of 20-30 seconds. The corresponding object updates from the ELS were not properly reflecting a stable rate of time.

Normal game time for the ELS is regulated by the time reported to the JODA by the CEP. The ELS only advanced in time when the CEP published a time update. Large jumps in the CEP time occurred when the CEP did not have any pending events. This happened when there was very little combat activity within the aggregate model. These gaps cause the ELS to advance in a very choppy, inconsistent manner.

Code changes were made to force more regular time updates to the JODA. When the ELS connected to the JODA, it sent an order to set the frequency at which time synchronization was done. The ELS sets it to a value which corresponds to the shortest update cycle for its entity-level objects. Updating the CEP time in this manner insured that the ELS maintained a consistent pace with the aggregate game time.

3.60 JTLS-2014-12200 Can Not Set TUP Organic Intel Report Time Air

The order to change the parameters of a Tactical Unit Prototype allow the Controller to specify a new duration value for the database variable "TUP Organic Intel Report Time Air". However, changing this database parameter, using the Controller Order, did not work.

There was a mismatch between the order and the CEP code so that the value was not actually being set. The code properly checked if the value was on the order or not, but when the assignment was done, the code incorrectly assigned the value provided for "TUP Threshold Incapable" instead of the value provided for "TUP Organic Intel Report Time Air". In reported situation, the Controller order did not provide a new value for "TUP Threshold Incapable" so it was zero, which is what was assigned to "TUP Organic Intel Report Time Air".

This was a simple mix up where the code checked for the existence of a new value on the order, but instead assigned the incorrect value. By properly assigning the correct value, the problem was solved.

However, while investigating this problem it was noted that the frequency of intel collection can be 0 minutes, indicating that the prototype has no organic capability to collect intel via airborne assets. This means that units that do not have the capability will not have an event scheduled to perform the collection, and just changing the value will not cause an event to be scheduled.

Similarly, if the unit does have a non-zero frequency then an event to gather the data will exist, and changing the frequency to zero minutes will not cancel the existing event, or if the previous frequency was 99 days changing it to 1 hour will not reschedule the existing event and the model will still wait 99 days before starting the collection cycle. These issues were also addressed and fixed while making the change for this STR.

3.61 JTLS-2014-12201 WHIP Alerts Showing Up At Zero Degrees Lat/Lon

After a large number of air missions, WHIP Alerts begin to show up at zero degrees latitude and zero degrees longitude.

The Alert Message had not been defined to represent the owning object's ID as a JODA Entity Data Identifier (JEDI) value, which is used to identify every JTLS object. Instead the ID was defined to be a signed integer, and after a large number of air missions, the available number of signed integers was reached, and as a result the index value was truncated and the WHIP could no longer determine the owning object from the Alert ID, placing those Alerts at zero degrees latitude and zero degrees longitude.

Therefore Alert Messages were changed to represent IDs as JEDIs. This correction also required changing the JXSR to treat the ID on Alerts as a JEDI, and the originating Alert JEDI was changed to use an unsigned index to be able to represent a larger and consistent number of JTLS objects.

While correcting this issue, it was found that the generated object code to handle Alerts was incorrectly generated. This was also corrected.

3.62 JTLS-2014-12204 Stop Sending Logic Error Messages To Controller

When the CEP encountered a logic error, it wrote a trace of the condition to a file and it sent a notification message to the Controller. These messages caused unneeded congestion in the

message browser for the Controller. Users recommended that the model stop sending these messages to eliminate this clutter.

The model continued to generate logic errors when it encountered a condition which did not make sense, but could be automatically corrected. Each logic error is saved in a file, but the code no longer sends a corresponding message to the Controller.

3.63 JTLS-2014-12205 Limits On Errors And Warnings During Verification

The SVP had a strict limit on the number of errors and warnings that were reported for a scenario. When this limit was reached, the verification procedure stopped abruptly. To a new user, this stoppage appeared to be a crash rather than a deliberate halt.

The SVP code was modified to provide a complete count of the number of errors and warnings in a scenario. The total counts are given, but limits are imposed on the number of errors and warnings that are reported in the output data file. When the number of errors or warnings exceeds the limiting number, a notification is boldly displayed on the screen for the user to view.

3.64 JTLS-2014-12206 HRU With Jammer Rejoin Parent Crash

A jammer target owned by an HRU was turned on. When the HRU was ordered to rejoin the parent, the model crashed with a run-time error.

When an HRU rejoins its parent unit, the targets are transferred to the parent. During the transfer of ownership process, the model starts to generate an HRU Spot Report to notify the players the HRU is terminated. In this case, before the Spot Report was sent, a PSYOP Report was also started for the active jammer. The model crashed because a new message (the PSYOP Report) cannot be generated while another message (the Spot Report) is in-progress.

To avoid this message input/output conflict, the logic was changed to delay the re-deployment of jammer targets in the parent unit until immediately after the HRU Spot Report is completed and sent to the players. The PSYOP Report for the jammer is then generated after the Spot Report, thereby avoiding the crash.

3.65 JTLS-2014-12207 Message Browser Text Pane Right-Click Malfunction

Right-clicking in the message text pane of the WHIP Message Browser produces the following errors:

- *When the cursor is between spaces, right-clicking throws a Null-Pointer exception.*
- *When an empty text string (with no characters) is selected, right-clicking opens a context sensitive menu, and if an option is selected from the menu (i.e., "Find on Map"), the map moves to (0,0).*

- *When a Lat-Lon coordinate ends with "." or ":", right-clicking does not open the context sensitive menu, while it does when right-clicking on a Unit on the map.*

The first two errors were corrected by adding checks for null and empty strings when text is selected. The third error was corrected to ensure that any following punctuation for Lat-Lon coordinates is excluded.

3.66 JTLS-2014-12208 DSA Submitted With No Time Between Look Time

A DSA can be specified to collect intelligence for a period of time. If a period of time is specified, the user should also specify the "Time Between Looks" value. The order panel does not ensure that this rule is followed.

A new constraint was added to the DSA order panel. If the user specified the DSA to collect for a period of time, the user must now fill out the "Time Between Look" field. In addition, the minimum value of the "Time Between Look" field was increased from 1 minute to 15 minutes. At 1 minute, the Message Browser filled up too quickly and overloaded the model.

3.67 JTLS-2014-12210 Runway Delay Missions Show Altitude On Restart

On a game restart, an air mission that was in runway delay had an altitude shown on the IMT.

Investigation of the problem showed the problem existed under the following set of circumstances:

1. The mission must have previously flown.
2. The mission must currently be on the ground and in either Runway Delay, Weather Delay or currently in some type of holding mode on the ground.

Under these circumstances, the model was holding the desired altitude for the mission once it took off. This desired altitude was improperly being sent to the IMT on a game restart or any JDS Download. The issue was fixed.

3.68 JTLS-2014-12211 Changing Ship Perception Not Reflected In WHIP

It is possible for the Controller to alter the perceived course and speed information held by a Side for a specific ship. When the Controller changed these two perceived data elements, the changes were not reflected on the Force Side WHIP's perceived view.

This capability is designed to allow the Controller to implement Master Scenario Event List (MSEL) or Major Event List / Major Incident List (MEL/MIL) events during an exercise. The problem was discovered when the Controller was to implement a C4I security breach MEL/MIL issue. The concept was to alter the course and speed of several ships. When implemented the Force Side's perception would change in the model, which would then be displayed on the WHIP, and on the real-world C4I system that JTLS was feeding.

The problem was that the JTLS Object Data Authority (JODA) was not being properly informed of the perceived change. Since the JODA was not informed, the WHIP could not be informed and the C4I system could not be updated. The problem was solved and the JODA is now being updated properly. The WHIP and any C4I systems are now informed of the perceived change.

Note that changing the perceived location of a specific ship always worked. This was only an issue when the perceived course and speed of a specific ship was altered by the Controller.

3.69 JTLS-2014-12212 Unrealistic SITREP-Estimated Ship Sinking Time

A user received a SITREP stating that a ship starting sinking at 1100, and it was expected to sink at 0800 on the same date.

The Situation Report is designed to give the user an estimate of when a ship is going to sink. This estimate should get better the longer the ship has been sinking and the closer to the actual sinking time. The design properly accounted for these two desires, but the algorithm was simply not implemented properly. The algorithm was changed to work as designed.

3.70 JTLS-2014-12213 Air Mission Perceived Blank Name

A user reported several Perceived Air Mission blank names.

The following situation causes the problem:

1. A force side needs to be Link-16 capable.
2. A force side needs to detect some foreign missions using some legal Link-16 sensors in which proper track numbers and source JU numbers are assigned.
3. A force side needs to then stop the Link-16 assets from detecting the foreign air mission. In the specific situation found, the Link-16 detecting asset moved out of range and could no longer detect the foreign air mission.
4. No other Link-16 assets are available to pickup the detection, but there is at least one non-Link 16 asset that can detect the air mission.

The code was corrected so this very specific situation was properly identified and the foreign air mission was given a model-generated track name.

3.71 JTLS-2014-12214 Crash Generating Convoy Report

The model crashed when a user requested a Convoy Report for a multi-delivery point convoy that was between a transit point and its next destination.

The model crashed while attempting to determine the unit from which the convoy was coming. The problem was that it was not coming from a unit, but was simply moving from a Transit Point. The situation is not checked and the report now states the convoy is coming from a Transit Point.

3.72 JTLS-2014-12215 Transfer Aircraft Order With No Receiving Unit

The model crashed while attempting to process an Aircraft Transfer Order, in which no Receiving Unit was specified.

The error was confusing because the Order Management Authority (OMA) insures that all orders are properly formatted and have all mandatory data. An internally model-generated Transfer Air Mission Order, which does not pass through the OMA, was not properly formatted. The following circumstance causes the model to generate the improperly formatted Transfer Air Mission Order:

1. The user needs to submit a Detach Unit order for a squadron.
2. The squadron must not have enough aircraft available for the detachment. The needed aircraft must be in maintenance.
3. This situation causes the model to submit a Transfer Aircraft order, which will properly take the needed number of aircraft when they come out of maintenance and send them to the newly detached squadron.

The order formatting error was corrected and the order now properly results in maintenance aircraft being moved from their current squadron to the newly detached squadron.

3.73 JTLS-2014-12216 HRU Overwatch Dead HRU Issue

The model crashed restarting the shadow game when attempting to download a future HRU overwatch order.

HRU 1 was given an order to overwatch HRU 2. HRU 2 was then told to rejoin its parent unit. HRU 2 rejoined its parent and was removed from the game. The order held by HRU 1 was not removed from the game, as per design. It is possible that the user had HRU 2 rejoin its parent temporarily to correct a problem and fully intends to recreate the HRU prior to executing the overwatch order. The design specified that all orders referencing HRU 2 should stay in effect. The existence of HRU 2 should be checked immediately prior to executing the order. All of this was implemented and worked correctly.

The issue occurred on a restart of the game when the JODA download process was attempting to compute the estimated time to reach HRU 2 so an estimated order start execution time could be computed. Since HRU 2 did not exist this computation crashed. The download code now recognizes this possibility and indicates that an estimate start time could not be computed.

After fixing the problem, the shadow game continued properly. When it came time for HRU 1 to overwatch HRU 2, the model properly determined that HRU 2 did not exist and the order was

canceled. That being said, no message was generated to indicate why the overwatch order was canceled. This problem was also corrected.

3.74 JTLS-2014-12218 Crash Requested Lift Report For Aircraft Delay Mission

An Air Transport Supply mission was in aircraft delay, and the user submitted a request for a Supply Lift Report. The model crashed.

The model crashed because the air delay mission had absolutely no aircraft assigned, and the model was attempting to compute the number of necessary round trips. Since there were no aircraft currently assigned to the mission, this computation could not be done. The logic was corrected to skip this portion of the report and the user is informed in the report that the computation could not be accomplished.

3.75 JTLS-2014-12219 Restart Has Too Many HRU Intel Updates

The shadow game could not be started because the number of intelligence updates held by a patrolling HRU was not saved correctly.

The statement that writes out the number of HRU Intelligence updates that are currently being held by the HRU allowed for a maximum of 9,999 updates per HRU. One HRU, on the very last day of a large exercise, had more than this number. The write statement was changed to allow up to 9,999,999,999, which the design team feels is more than could ever be created.

The above fix definitely solves the problem, but the code was also reviewed to determine if something was wrong that the HRU was saving more information than it should save. This review could find no issues.

3.76 JTLS-2014-12220 Cannot Set Lanchester SP Modifier Large Enough

During a recent exercise, users wanted to change the Survivability Prototype (SP) Lanchester tuning parameters. The order panel only allowed the Controller to enter up to a maximum of 1.0. As a multiplier, the database parameter can take on any value greater than zero and up to 100.0.

The order panel file was changed to allow the Controller to enter a value up to 100.0.

A check of the equivalent tuning Fire Lethality Prototype parameter order was also checked. It too incorrectly limited the FLP multiplier to 1.0. This was changed to 100.0. In addition two other issues were found in the Controller's SET FLP parameter order:

- The FLP Lanchester tuning parameter only allowed four decimal places, while the SP parameter allowed 6 decimal places. The FLP was change to 6 decimal places.

- The SET FLP order could not simply be sent with only the Lanchester tuning parameter set. This order panel constraint check was corrected to allow the Controller to only set the Lanchester tuning parameter before sending the order.

3.77 JTLS-2014-12221 Detach By Pro-Rated TUP Error

A Detach order specified a pro-rated TUP that had TOE values greater than the parent Unit's TOE values. The newly detached Unit acquired all of the parent Unit's combat systems, plus extra combat systems to equal the TUP's TOE values.

The logic that calculates the number of combat systems to transfer from the parent Unit to the detachment in a pro-rated case failed to consider that the specified TUP could have greater TOEs than the parent. This flaw caused the detachment to gain all the combat systems necessary to match its TUP TOE. The calculation was modified to limit the gain to the combat systems the parent Unit could provide.

3.78 JTLS-2014-12223 Cannot Submit OEC Orders

Whenever an order is entered into the OEC tables and marked as ready for submission, the OEC changes its state to either Warning or Error, depending on the send time, and inserts an error that says the Submitting Client Name is invalid.

This issue has appeared because the OVT code was reworked to read the order XML files instead of the old orders.def file. As part of that conversion, a check was added to verify that the submitting client is on the proper side and is a recognized player interface. However, the CEP only sent those interfaces that had registered as a WHIP peer class to the JODA, and thus to the OVT. Therefore the OVT did not know about the OEC clients, which the OEC registers as peer class OTHER. We therefore changed the CEP to inform the JODA of clients that are either peer class WHIP or are peer class OTHER with a valid Message Processor specified.

3.79 JTLS-2014-12224 Data Parameter CSP.UP.AMMUNITION.MODIFIER Not Used

The CSP.UP.AMMUNITION.MODIFIER, designed to modify the baseline amount of ammunition used by a unit during Lanchestrian combat depending on the posture of the unit, was not used by the model.

The computation for the amount of ammunition used by a unit participating in a Lanchestrian battle was corrected. The amount of ammunition required was previously calculated by multiplying the database parameter CSP.CS.AMMUNITION.SUPPLY.USAGE by the number of systems being used. The new algorithm multiplies the number of system days by the CSP.CS.AMMUNITION.SUPPLY.USAGE by the CSP.UP.AMMUNITION.MODIFIER database parameter for the current posture of the unit participating in the fight.

To demonstrate why this database parameter is important, consider the differences between a unit that is withdrawing and a unit that is attacking. A withdrawing unit is probably portrayed by

its assigned Lanchester Coefficient data case as not being able to kill as much as an attacking unit. This reduction is not only based on the inability of a withdrawing unit to fire as often or as accurately as an attacking unit. That the withdrawing unit cannot fire as often implies that it cannot use as much ammunition as an attacking unit. The CSP.UP.AMMUNITION.MODIFIER is designed to represent this difference, and by not considering the parameter in the computation, non-base case unit posture situations were not accurately portrayed.

3.80 JTLS-2014-12226 Incorrect Page Level UOM Selection Buttons

If an Online Player Manual (OPM) page has a Unit of Measure (UOM) button available on the page, then that same page should have a page-level UOM button available at the top of the page. This page-level button allows the user to set the UOM in a single location and propagate the results to all the buttons on the page. Some OPM pages had page-level UOM buttons that were inconsistent with the individual field UOM buttons on the page.

Six individual target (not target category) pages were modified:

- The Runway Targets page had both page-level Airdistance and Distance buttons. However there is no Distance item level button on the page. The Distance page-level button was removed.
- The Supply Storage Targets page did not have a page-level UOM buttons for Wet and Dry supplies. These were added.
- The SSM Targets page had both page-level Airdistance and Distance buttons. However there is no Airdistance item level button on the page. The Airdistance page-level button was removed.
- The Jammer Targets page had both page-level Airdistance and Distance buttons. However there is no Airdistance item level button on the page. The Airdistance page-level button was removed.
- The SAM AAA Targets page had both page-level Airdistance and Distance buttons. However there is no Airdistance item level button on the page. The Airdistance page-level button was removed.
- The Minefield Targets page had both page-level Airdistance and Distance buttons. However neither had an item level button on the page. They were removed.

3.81 JTLS-2014-12227 Sinking Ship Damage Messages Contradictory

A ship was heavily damaged and began sinking. The Situation Report listed damage descriptions that were contradictory. For example, it listed both "Down by the Stern" and also "Listing Forward". Additionally, its topside damage could indicate "Smoke Only" and at the same time "Medium Fires."

The resolution to this issue required consideration of the impact on the MUSE federation. Three CEP code changes were made:

- The first was a change to how ship compartment damage is processed. When a compartment is damaged, the model randomly changes the Unit "Riding Low" status (such as "Down by the Stern") based on the damage. The change ensures that a new "Riding Low" attribute will never contradict the Ship's "Listing Position" attribute (such as "Listing Forward").
- The second change involved the attributes that report the size and types of Fire and/or Smoke observed on the damaged ship. A code error allowed the "Fire Type" attribute to be set to "Smoke Only" at the same time the "Fire Size" attribute was set to "Small (Medium or Large) Fires".
- The last change was the addition of the Unit "Riding Low" attribute to those that are reset to NONE values when a ship's sinking process is halted.

3.82 JTLS-2014-12229 JINN Sluggish After New Organization Name Entered

When a new organization name was entered in the organization component list, the JINN performed sluggishly. CPU usage was monitored and showed 100%. It is suspected that the JINN has a memory leak or fell into a infinite loop to use up all the CPU.

The JINN was constantly redrawing the organization component list. The code was modified to redraw the organization component list when a new name is entered.

3.83 JTLS-2014-12230 Attack Order Incorrectly Changes Screen With Value

A user was trying to load a checkpoint into the DDS database. All Units that had been given an Attack order had "Screen With" values greater than 1.0, which should not be allowed.

All Attack orders incorrectly changed a Unit's "Screen With" value, no matter whether the user specified a new "Screen With" value or not. The "Screen With" value was changed to the latitude of the Attack destination. The problem was caused by a coding typographical error, which was corrected.

While debugging the problem, the following problem was also discovered. There are three fields associated with where the Unit should travel as part of the attack. These three fields are the "Attack Location", the "Attack Unit", and the "Attack Route" that should be followed. The order constraint incorrectly allowed the user to enter both an "Attack Unit" and an "Attack Location" when these two values could be contradictory. A new constraint was added to the order. The user may now only enter either the "Attack Location" or the "Attack Unit", but not both.

3.84 JTLS-2014-12232 Inefficient Constraints For Fill Only Once

Several JTLS orders required several constraints, where only one constraint was necessary.

The Change Mission Parameter and External Update orders were updated to remove some unnecessary constraints:

- The Change Mission Parameter Order had several constraint checks where only one was needed to ensure the user entered only one new orbit location.
- The External Update Order had constraints stating that if the Operational Aircraft field is filled, do not fill the Number of Aircraft Lost field, and vice versa. Only one constraint is needed under this circumstance, indicating that only one field should be filled.
- The External Update Order had constraints stating that if the Victim Cruise Track field is filled, do not fill the Victim Missile Track field, and vice versa. Only one constraint is needed under this circumstance, indicating that only one field should be filled.

3.85 JTLS-2014-12234 JXSR Overflowing Its Data Communication Buffer

The JXSR frequently crashed due to a buffer overflow.

The JXSR code was modified to allow a running JXSR to automatically expand its buffer to a size that will accommodate the required data. While making this change, modifications were also required to the log entries that occur during the detection of an insufficient buffer size. The entries now more appropriately log the detections as warnings and errors, with standardized timestamps.

3.86 JTLS-2014-12243 JINN Needs To Enhance Upload Method

The JINN application has allowed users to upload to the database repeatedly, while also keeping track of all downloaded tables within the JINN repository during a session. However, the JINN separated the download and upload processes, since the JINN downloads only once during a session. The JINN generated its own SQL statements to upload the data to the database in its own way, and the JINN repository was not updated.

The JINN code was modified in order to track downloaded and uploaded object data and store it in the JINN repository, while ensuring the upload process is functioning correctly.

3.87 JTLS-2014-12244 JTOI Failed To Send Sensor Target Updates To NEC CCIS

When the JTOI was used to update the Northern Command - Command and Control Information System (NEC CCIS), not all sensor targets were created or updated when the JTOI was running in update mode.

The Sensor Type database attribute ST.BUILD.IN.DSS is used to indicate whether the data for the specified sensor type and sensor targets are made available to NEC CCIS (or ICC). When a player changed the ST.BUILD.IN.DSS value from "No" to "Yes," the JTOI did not provide the sensor target data for the specified sensor type to NEC CCIS.

The code was modified so that the JTOI processes the SENSOR_TARGET_SUBTYPE object class when running with the ICC or NEC CCIS. If the ST.BUILD.IN.DSS value for a specific sensor type is set to "Yes," the JTOI will provide necessary updates to create a record in the radar_type table. The JTOI will also send updates for the sensor targets of the specified sensor type. These updates are done during the initialization process and also when running in update mode.

The format of the JTOI initialization file was changed to include the initial parameter data for all the air defense types and sensor types. If the ST.BUILD.IN.DSS value is changed to "Yes" by a player order, the JTOI will use the initial parameter data provided the initialization file to create a new radar_type record. Updates for the sensor targets of the specified sensor type will be sent.

The same problem was corrected for the Air Defense Class (AD) Target Category and Air Defense target updates. This modification will affect ICC updates if the JTOI is used to feed information to the ICC.

3.88 JTLS-2014-12245 Dynamic XML Containing Zero Units Crashed JOBE

After a user entered an organization name in the organization component of the JINN, the JINN made an "Export" menu item available for the organization, regardless if the organization contained a unit or not. Consequently, a dynamic.xml file containing zero units was created and caused the JOBE to crash.

The code was modified, so that the JINN checks whether the lock file, which keeps track of organization activities, contains any units before the organization is exported to the JOBE.

3.89 JTLS-2014-12246 CEP Crash During HRU Extract Mission

The CEP crashed during an HRU Insert/Extract Air Mission, during the jettison of excess supplies by the HRU prior to boarding aircraft.

The variable JETTISON.HRU.SUPPLIES, which holds the supply category of supplies dumped by the HRU prior to boarding the aircraft was not properly set up. This was corrected.

3.90 JTLS-2014-12247 Checkmenu Script Did Not Check Data_Site Menus

The checkmenu script did not have an option to verify menu files in the \$JGAME/data_site/menus directory.

The checkmenu script was modified to be able to check all menus, or a single menu, within the \$JGAME/data/menus and \$JGAME/data_site/menus directories.

3.91 JTLS-2014-12248 JINN: Target Category Not Included In OPM

When the JINN makes a package for the JOBE, it also makes a copy of a previously generated OPM. However, in order to keep the OPM's size compact, only the selected units of the

organization from the JINN are packed in this OPM. The Owned/Associated Targets were included as well, but not the Target class type.

The JINN code was modified to include Target class types in the generated OPM copy.

3.92 JTLS-2014-12249 Speed Up Sonar Detections When Ships Move

The CEP was barely maintaining a 1:1 game speed during periods with a lot of naval movement. An analysis of the situation discovered that the CEP was expending a lot of processing power looking at passive sonar detections.

Within JTLS the noise algorithm for sonar detection limits itself to the hex that the sonar is in, and the hex that the object to be detected is in. Whenever the noise within a hex changes, due to a ship changing speed, a ship leaving the hex, or a ship arriving in the hex the model evaluates sonar detections for all sonars within the affected hex and for all sonars that cover the affected hex (in other words we check detections by objects within the hex and of objects within the hex).

No way was observed to speed up the sonar detection logic itself, but a code review identified three areas to reduce the number of calls to the sonar detection logic:

- A lot of the movement was being conducted by formations where many of the ships were in the same hex. The evaluation of sonar detections was being performed each time a formation ship was removed from the old hex and placed in the new hex.*
- The logic that determined which identified sonars that covered a particular hex would then process detections for that sonar in all hexes, not just the hex where the noise had changed.*
- During formation and individual ship movement each ship was checking for an adjustment to speed for the new hex it was placed in. The speed of the ships are directly related to the amount of noise they make to either hinder detections of other objects or aide in their own detection. Therefore the sonar detection algorithm was being called, even though it was called for the placement of the ship in the hex.*

To help track hexes affected by formation moves we introduced a Set Owner Working Set, in which we file every hex that a ship is departing from and every hex that a ship is being placed in. We defer processing the hex sonar detections until all ships have moved, at which time the model goes through the Set Owner Working Set and processes the sonar detections for those hexes.

In order to limit the number of hexes that were searched by sonars to only the hex for which noise had changed, numerous routines were modified to identify the specific object performing the detection and pass it to the more detailed algorithms. To reduce redundant calls to the sonar detection algorithm during movement events, two variables were introduced for formation and ship movement that identify the exact ship or formation that is moving.

Now, when adjusting a ship's speed, the model checks if that ship is involved in a movement event, either individually or as part of a formation, and if it is the model does not carry out the sonar detection algorithm. That algorithm will be carried out when the movement event is complete.

3.93 JTLS-2014-12250 OPM Unit Screen Does Not Have Air Distance UOM

The OPM pages that show a specific unit for an airbase also list the owned runways for the airbase. As part of the runway data, the runway length is displayed, in feet. This UOM can be changed for the data item, but can not be changed from the top of the page. Any UOM type that appears on an OPM page should be changeable from the top of that page.

The code was modified to add the UOM Air Distance (which is used for runways) to the top of the individual unit page. This applies to aircraft OPM pages, and the UOM Air Distance has been added and works as stated above.

3.94 JTLS-2014-12251 OVT Crash Read Order File With Invalid Order Number

An interface to JTLS, which is under development, attempted to send an invalid order number to the OMA. This caused the OMA to crash. Though the OVT library code, which is used by the OMA for order verification, does check to ensure that an order is within the range of valid order numbers it did not check that the specific order number was valid.

The OVT library code was modified to ensure that data about the specific order number had been read and assigned. If not, an error is generated and the OVT/OMA continues to the next order to process.

3.95 JTLS-2014-12253 Can Send Orders Without Authority In Context Menus

For a WHIP that has not been given any command authority, it can send orders using the context popup menus.

The context menus now verify that the executing WHIP has command authority over the selected unit and will not display the "Orders" sub-menu if the WHIP has no command authority over the unit.

3.96 JTLS-2014-12257 JINN Packager Added To Return Scripts

After a JOBE manipulation was finished, the JOBE user needed to go to the \$JGAME/<scenario_name> directory to find three modified xml files and return them to administrator control. However, that directory was different from the location where the JOBE starts.

A packager program was added to generate return scripts, which are located in the same location as the JOBE, for Linux and Windows users. After the user closes the JOBE, he can execute the script at the same location, which creates the three xml files in the same location.

3.97 JTLS-2014-12258 Improved Help For JODA Find Command

The find command for the JODA console has often been confusing for users. Consulting the help that is also part of the JODA console can be incomplete and ambiguous as well. The help needs to be more clear about the arguments available to the user and how the find command works. Additionally the find command will not accept strings having spaces, such as the long name for a unit. The user has no way of entering a unit's long name as an argument to the find command.

The JODA help display for the find command was improved. Each option is now more clear, with a short description of the options and the process that occurs for each option. Also, two new routines were added to the JDSP Application Program Interface. These routines allow Web Service programs, such as the JODA, to accept quoted strings for input. Within the find command for the JODA users are now able to delimit a long name using quotes when finding a specific unit.

3.98 JTLS-2014-12259 CEP Crash - Controller Alter Terrain Depth

When the Controller attempted to change the depth of a hex, that had no objects located in it, the model crashed.

The CEP code did not properly check for this situation. This problem was corrected.

3.99 JTLS-2014-12260 Synapse File Command Crashes For Directories

If the "file" command is entered in a Synapse console using a directory name rather than a file name, the Synapse will crash.

The Synapse has several console commands available for interrogating the server file system on which it is running. The "file" command takes one file name argument and returns information on the file, such as the type of file contents.

The Synapse routine that handles the "file" request was crashing when the user entered the name of a directory rather than the name of a file. A directory does not have the same data description as a file so the routine crashed while attempting to access the data of a directory in the same manor as a file. This routine was modified to simply report back to the user that the specified argument is a directory if the name of a directory was entered.

3.100 JTLS-2014-12261 DDS Logistic Hierarchy Incorrect After Renaming Unit

When changing the name of a unit, that had a number of subordinate units, while the Logistic Hierarchy is displayed, an unexpected number of subordinates were moved into the root of the Logistic Hierarchy.

This occurred because the Logistic Hierarchy received and processed the update event for the unit whose Regular Support Unit or Initial Support Unit changed before it received and processed the update event for the unit whose name has changed.

To fix this, need to make sure not to re-parent a node if its Regular Support Unit/Initial Support Unit have a new name.

3.101 JTLS-2014-12262 DDS Flight Path Did Not Activate Location Banner

When the DDS Flight Path Edit Mode button was selected, the location banner that is at the top of the map was not activated as it should be.

In order to activate the location banner for the Flight Path editor layer, the mouse mode of Flight Path needs to be registered in the location status layer list, which will display the location by mouse movement.

3.102 JTLS-2014-12263 Shared Order Groups Panel Had No Scroll

In the WHIP Order Group Editor, the Shared Order Groups panel, used for importing a group, had no scrolling ability. When the order groups filled up the panel, they were not all visible and accessible.

A scroll pane was added to the Shared Order Groups panel that makes a scroll bar available when the order groups fill the panel size.

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.

Correction of the remaining STRs, however, must be postponed to a later version due to time and resource constraints. These problems may be corrected prior to the next release of JTLS. If an immediate need arises for code corrections to remedy any of these outstanding STRs, such as an exercise planned to occur before the next release, contact the JTLS Development Team Leader. Refer to the Abstract of this document for the current address.

Code errors described in this chapter should be noted specifically because they affect the basic functionality of JTLS. Information is provided regarding the extent of the error, as well as suggestions to avoid or minimize the effects of the problem.

4.1 JTLS-0942 CEP: Air Transport Cannot Combine Wet And Dry Supplies

When both wet and dry supply categories are included in the same Transport Instructions List for an Air Transport mission, they will not be transported at the same time. The first supply category shipment type will be loaded, but the second will not. If both are included in the same Supply List, the wet category is preferred. The aircraft go through the motions as if loading and delivering the denied category, including MISREP confirmation. No pickup or delivery is made, although an empty storage area may be created. There is no documentation to support this situation, and the user is not notified of the problem.

4.2 JTLS-0956 CEP: MPP Messages For Canceled Missions In Error

If an airbase is magic moved with several squadrons on active missions that need to be canceled or with squadrons in the middle of a self lift, the subsequent message generated for the situation has several errors. The changes required are too risky during the exercise. The problem will not cause a crash, but will cause the MPP to incorrectly display the message contents.

4.3 JTLS-0961 CEP: Group Ground Move Delayed To Lead Unit

There is a problem when a group ground move is sent. The directive is delayed to the lead unit. When the lead unit learns about the move, it immediately tells the units in the follow-on group. This could lead to directives being received out of order. Assume the user sends a directive at 0100 and the CEP determines the lead unit should receive the message at 0200. The lead unit cannot receive any other directives until after 0200. The CEP ensures that directive receipt is in the same order as the user sent the directives. This is not true for the follow-on units. If the user sent an order at 0115 directly to one of the follow-on units, the follow-on unit could receive the 0115 directive prior to the order sent at 0100. If this error is causing problems for upcoming exercises, the Configuration Manager should be contacted for a code fix to solve this problem.

4.4 JTLS-0968 CEP: Inconsistency Between Regular Run And Pusher

There is a major inconsistency between a regular run and a run created using pusher. When an order with ASAP is sent, the READ KEYWORD routine sets the data parameter to TIME.V. When pusher reads in the order, TIME.V is much earlier than it was when the order arrived in the first place. For orbiting missions and alert missions, this alters when they will go off alert by a great deal. This must be fixed and made consistent. It appears that both TIME.V and order receipt time must be saved to the ci1 file to accomplish this task.

4.5 JTLS-0973 CEP: Periodic Report Air Supplies And Fuel Not Correct

The arrays which hold air supply usage are not being maintained correctly given the new MISSION RESOURCE ALLOCATION event.

4.6 JTLS-0974 CEP: Submarine Detection By Ground Sensors

A moving submarine does not get full credit for coverage time by sonars on board other ships or submarines. It gets full coverage time for airborne sensors but not ground based sensors.

4.7 JTLS-1384 Documentation: Area, Target, And Unit Report Documentation

Some users have indicated that the documentation of Area Report, Unit Report, and Target Report similarities and differences are incomplete or inaccurate. A review of this documentation is needed.

4.8 JTLS-2014-12093 CEP - HRU Reports Do Not Include Detected HRUs

Periodically, an HRU will report what it has seen. It reports units moving into and out of the area. The data is collected when it detects HRUs moving into and out of the area, but this information is not included in the generated report. This should be done in the routine GENERATE HRU REPORT.

4.9 JTLS-2014-12094 DDS/SVPR - UOM Flicker

It appears that the UOM periodically changes and then changes back in the SVPR, but it doesn't stay changed long enough to see what it changes to.

4.10 JTLS-2014-12096 APACHE - SYNAPSE Cannot Run On CentOS 6.5

When the Synapse and Apache are run on the same instance of CentOS 6.5 or Red Hat 6.5, the Synapse will back up. Running the Synapse and Apache on separate virtual machines or two difference physical machine works correctly. The JTLS Development Team have continue to consider this a high priority item. The problem appears to go away when using Red Hat Version 7.0.

4.11 JTLS-2014-12098 CEP - Moved Units Do Not Remove CS From Shelters

Units moved out of a hex do not remove combat systems from shelters.

4.12 JTLS-2014-12099 SVPR - Ensure DDS Sending SVP Info To Debug

The SVP crashed while running the SVP from the SVPR, but the only sign there was a problem was that nothing was happening. The output of what was being read by the SIP was hung, without any information in the debug console or other information.

4.13 JTLS-2014-12101 SVPR - Auto-Fix Not Selecting Affected Supply Category

When auto-selecting a TUP/SUP supply category to fix, the SVPR always opens the corresponding column in the first supply category, rather than the affected supply category.

4.14 JTLS-2014-12102 DDS - SVPR Warning 1223 Empty Table

When clicking on the solution for Warning 1223 in the SVPR to bring up the CSP_CS table, an empty table is brought up instead.

4.15 JTLS-2014-12103 DDS - No Change For Default UOM For Basic Categories

Since the CEP is coded to expect a default UOM of the raw data for each basic category. The user should not be able to delete or edit these UOM.

4.16 JTLS-2014-12104 WHIP - Issues On 32 Bit Machines

WHIPs being run on a 32 bit Windows machine were using over 1 gigabyte of memory each. In addition, the WHIPs would often lock up or the Map would not respond to Sitreps, route requests, and so on.

4.17 JTLS-2014-12105 DDS - Preference Save

DDS preferences are currently saved locally, but they should be saved based on the user and scenario.

4.18 JTLS-2014-12106 AAR - Exception When Translating Report

When a report is rendered in the TRIPP, the report is rendered in English even if another language is selected. Two FileNotFoundExceptions are found in the GlassFish log, indicating that the language properties and default language properties are not found.

4.19 JTLS-2014-12107 WSM - Apache Status Fails When Firewall Blocks HTTP

The WSM always uses HTTP to get the Apache status even when running with HTTPS. Both ports are open on the server, so this fails when the firewall blocks HTTP.

4.20 JTLS-2014-12108 CEP - BDA Reports Inaccurate On Sheltered CS Kills

When air missions attacked airbase targets sheltered in barracks shelters and killed combat systems, the BDA Report for the attacking side showed grossly inflated numbers of combat systems killed. The BDA report is much more accurate when killing systems by attacking the unit or a location. The false numbers only happen when killing an occupied shelter.

4.21 JTLS-2014-12110 DDS - Printing Multiple DDS Reports Needs Improvement

One can print multiple DDS Reports with one print command. This is done by selecting the reports individually. With more than one highlighted, a single print command can be used. However, in the resulting print, the reports run together - the second report starts on the next line after the previous report ended. Also, it adds a line of text that looks like the last line of the first report. This added line is actually the title of the second report, left justified and inserted in a smaller font. You see the title of the second report twice, and it looks unprofessional.

4.22 JTLS-2014-12112 DDS - Oracle Error Display Dialog

A dialog currently exists in the DDS that pops up when an error condition happens. This dialog should be used to display Oracle errors as well, given that the user sees nothing happening when a command is executed and it fails for one reason or another and is confusing them. When no action is displayed, the interpretation is that DDS is failing and not the database layer.

4.23 JTLS-2014-12114 DDS - Add New Validator To Check For "NotOffspring"

Current validators for fields like "HHQ" cannot verify that the assigned unit is not an "offspring" of the unit that is being modified. Even though this type of mistake can be caught by SVP eventually, it still can have ill effect to components like Command Hierarchy once the data committed to the database. It needs to be caught and prevented.

4.24 JTLS-2014-12115 SVPR - Generate Unique Error/Warning Numbers

A unique Error/Warning number should be used to identify errors across multiple SVPR developers accessing the same scenario.

4.25 JTLS-2014-12116 DDS - Railroad Name Remains On Map After Deletion

If a user deletes a Railroad Network from the Map, the Name remains displayed. It stays even if Railroad Edit Mode is exited and reentered. Stopping and restarting the DDS is necessary to remove the Railroad Network Name from the Map.

4.26 JTLS-2014-12117 DDS - Map Create Railroad Network Works Deceptively

When you select the "New Railroad" button in the DDS, the cursor becomes a "pointing finger," allowing you to select a location on the map to place the first Railroad node. However, after you place the first node, the cursor reverts to its default appearance. One expects that selecting a

new location will place the next node there, but no matter what location you select, the second node is always created on the hex due east of the first node.

4.27 JTLS-2014-12118 DDS - Map Dogpile Option Not Working

When a user selects several units on the DDS Map as a group and moves them to a new location, the original relative positions of the units were not maintained. Some users were using this as a feature when moving units, rather than a bug.

4.28 JTLS-2014-12119 DDS - Columns Data From Another Table Not Updated

Some tables have columns whose data is retrieved using a "Select" statement that queries data from another database table (e.g. the formation column in the naval unit screen). For these columns, when DDS does a flashback version query for the updates, Oracle does not report any update if the actual update occurs in the other table. Therefore, these columns' data are not updated in the DDS.

4.29 JTLS-2014-12120 DDS - No Object Selection From Map With IADS Filter

When the "IADS Networks" filter is selected on the DDS Map, it is impossible to select any game object from the Map. In other words, clicking on a unit or target has no effect - no Sitrep or context sensitive menu. One should be able to display IADS Networks and still get Sitreps and access tables by clicking on a unit/target on the Map.

4.30 JTLS-2014-12121 DDS - Drag/Drop Problems Modifying Rail Networks

When clicking and dragging a Node or an Arc, one has to be careful to make sure the correct item is selected. One can, for example, drag an arc completely away from its endpoint nodes. In addition, Java exceptions can occur when the correct item is not selected.

4.31 JTLS-2014-12122 DDS - No Spaces in Long Name After Hierarchy DeepCopy

A user cannot enter spaces in the long name replacement string after a Hierarchy Deep Copy, although spaces are allowed in long names.

4.32 JTLS-2014-12123 DDS - Add UIC Replacement Option In Hierarchy DeepCopy

The short name replacement string should be added to the UIC, so that hand-editing UICs after a Hierarchy DeepCopy is not necessary.

4.33 JTLS-2014-12124 DDS - Table Special Reference Cell Editor, Units/Targets

Not all locations fields in the DDS have the ability to select a location off of the map. All locations should have the same options for entering data into the field.

4.34 JTLS-2014-12125 DDS - Editing Location Fields XX-60-60.ON Can Be Entered

It is possible to enter a location such as 10-60-60.ON in a location field in the DDS, The location field text formatting functions needs to be improved.

4.35 JTLS-2014-12126 AAR - Aircraft Kill Summary Report Time Format

AAR reports can contain times, but these are currently being generated using the url time format, which is difficult to read by the end user. These times need to be output in a more user friendly format.

4.36 JTLS-2014-12127 DDS - In IADS Edit Mode, Link Targets On Different Sides

In the DDS IADS Edit Mode, a user is able to link a target (comm site, sensor site, or SAM/AAA) to a target on a different side. Linkage should be allowed only between targets on the same side. SVP Error 628 catches this problem, but the DDS should be able to catch the situation.

4.37 JTLS-2014-12129 DDS/WHIP - New Lines In TextFieldPanel

A new line is currently a valid character in a Text Field on a Report Request Panel as part of the DDS and AAR, but causes the order string to be truncated, making the order invalid.

4.38 JTLS-2014-12131 DDS - Add Report Title To Report

All DDS Reports should have titles. If a user prints out several reports, it is difficult to know what each report contains. The title should help with this.

4.39 JTLS-2014-12132 DDS - Confusing Report Popup Menu Item

The bottom of the report browser popup menu has part of the stylesheet name (e.g., 01-dcr). This is confusing.

4.40 JTLS-2014-12133 DDS - Reports Order Help Text Needs Improvement

DDS report orders help text needs improvement.

4.41 JTLS-2014-12136 DDS - TMU Different Algorithms For Polygons, Areas

The DDS TMU Map Polygon algorithm is different from the TMU Area algorithm. In other words, drawing a rectangular Polygon does not result in the same area having its attributes changed as does drawing a rectangular Area of exactly the same size.

4.42 JTLS-2014-12137 WHIP - MSEND With Increment In Seconds Not Realizable

When sending game time to the model, a time using Date Time Group format is sent to the CEP. This time can only specify order execution time in minutes. Incrementing the order execution time by seconds is not properly handled. This situation needs to be solved.

4.43 JTLS-2014-12139 OVP - Checkorder Script Needs Update

The checkorder script is obsolete. For example, CONVOY is a valid JDSP class, but is treated as an error by checkorder script. This is nothing that will usually be seen or used by an end user.

4.44 JTLS-2014-12140 DDS - Flight Paths Difficult To See

Flight Paths are difficult to see because the default color is white. The color should be changed to Cyan. Cyan is currently the color used to display OPAREAs, so the default OPAREA color should be changed to Orange. This change should be made in both the DDS and the WHIP for consistency.

4.45 JTLS-2014-12143 DDS - REPORTS - Rename the MUSE report to DIS.

The MUSE Report should be renamed to the DIS (Distributed Interactive Simulation) Report. The report is no longer just used for MUSE. There are several other models that need to know the current set of DIS codes in a specific scenario.

4.46 JTLS-2014-12144 DDS - Exception While Opening TUP From SVPR

An exception occurs when opening a TUP from the SVPR. The exact circumstances have still not been identified, and so a correction could not be implemented.

4.47 JTLS-2014-12145 DDS - Exception Logged With No Stack Trace

A ClassCastException in the DDS was logged, but no Stack Trace was saved. The exact circumstances have still not been identified, and so a correction could not be implemented.

4.48 JTLS-2014-12146 DDS - Cannot Delete Illogical Pipeline Arc From Map

You cannot add an illogical Pipeline arc from the Map. An illogical Arc is one that would create an illogical flow. An example of an illogical flow would be one connecting nodes: A to B to C to A. The Map will not let you create Arc C to A. But you can create that illogical arc in the Pipeline Arc table. IF you do so, the arc will show up on the Map and exist in the arc table, and you cannot delete it from the Map. You must use the table to delete it.

4.49 JTLS-2014-12147 DDS - Flight Path With Min Altitude Higher Than Max

When you create a Flight Path between two Nodes, you are asked to assign a Minimum and a Maximum altitude along the path. You can assign a Minimum that is greater than the Maximum. You cannot do this in the Table, but the Map allows it.

4.50 JTLS-2014-12148 DDS History Table Missing Record Identifier

The DDS keeps track of when data is changed in a table history table. If an attribute of a child table is changed, the history table does not list exactly what is changed. For example, assume you change the quantity of a CL.V supply category with which an SSA Target. This supply information is in a child table for the SSA target type table. The problem is that this one change generates a single history record which properly indicates the old value and the new value, but does not list what SSA SC category record was changed.

4.51 JTLS-2014-12264 CEP - Naval Mine Damage Documentation Obsolete

The discussion of Naval Mine Damage in the Analyst Guide is obsolete. It does not address the use of lanes nor the current variables used in the determination of encounter and damage.

4.52 JTLS-2014-12265 DDS - Need "Not In" Validator For Composite Unique Key

Currently, the "not in" validator has limited capability, meaning it can only check for single column. But many database tables have composite unique keys, which can take up to N number of columns. Therefore to check their uniqueness, the current "notin" validator is not sufficient. It needs to be expanded or a new validator needs to be introduced that can check uniqueness for multiple columns.

4.53 JTLS-2014-12266 WSM - Reloading Database While Starting Service Lockup

If the ICP database is reloaded while a service is starting, the WSM appears to freeze for a period of time.

4.54 JTLS-2014-12267 WHIP - Illegal Character In Order Appears To Validate

If an illegal character like "/" is sent as part of an order, the reply from the OMA has a line that starts with "\$", which causes an Exception when parsing the response.

4.55 JTLS-2014-12268 WHIP - Exceptions While Processing Network Objects

When the WHIP was started, multiple null pointer exceptions were thrown, dealing with various network objects - the network ID's appear to be null.

4.56 JTLS-2014-12269 DDS - Moving Unit On Top Of Another Hides Unit

Moving unit A on top of another unit B, and then moving unit A leaves unit B hidden until "Move Units/Objects" mode is exited.

4.57 JTLS-2014-12270 WHIP - Message Browser Moves With New Message

If the user selects a message and then scrolls down, the Message Browser jumps to the selected message when the next message arrives.

4.58 JTLS-2014-12271 JOBE - Runway Should Not Be Created Under Unit

After a new runway object is created in the JOBE, it uploads to the runway table in the JINN. At the same time, the ab_runway table is uploaded with the new runway CCFNumber and the parent unit short-name (which is supposed to be the Airbase). An Oracle error occurs if a Unit's short-name is not found in the Airbase table.

4.59 JTLS-2014-12272 WHIP - Incorrect Behavior Selecting Multiple Messages

If a number of messages are selected using the shift key in the WHIP Message Browser, and an attempt is made to select more, the second batch begins with the last message selected in the first batch, thus excluding many messages from the first batch.

4.60 JTLS-2014-12273 WHIP - Contamination Displayed If Elevation Displayed

In the WHIP Map, hex contamination is always displayed if the elevation is also displayed.

4.61 JTLS-2014-12274 WHIP - Flight Path And Airmission Location Inconsistent

An airmission composed of helicopters was tasked for an orbiting OAS. The helicopters were assigned to a squadron, which was assigned to a FARP. The airmission was shown either taking off from the FARP or from the squadron enroute to the second orbit point, while the route shows that it took off from the squadron location enroute to the first orbit point.

4.62 JTLS-2014-12275 DDS - Mouse Panning Documentation Needed

New documentation on how to use the Mouse Panning map mode needs to be added to the DDS User Guide.

4.63 JTLS-2014-12276 WHIP - Map Back Button Nonfunctional In Orthographic

The WHIP Map's "back" button throws an exception when trying to return to an Orthographic projection.

4.64 JTLS-2014-12277 DDS - NB Map Filter Does Not Turn NB On/Off

National Boundaries and hex barriers are not displayed on the DDS map.

4.65 JTLS-2014-12278 DDS - Targets Gone When Parent Unit's Name Changed

On the DDS Command Tree, when a Unit name changed on the 'Reset Tree' mode, all or a part of Targets under the Unit disappeared.

4.66 JTLS-2014-12279 DDS - Remove Reference Field From Report Orders

The reference field for report orders appears to be unused, but is required to be filled in. It should be removed.

4.67 JTLS-2014-12280 JTLSConsole - Needs Recall Command Similar To Xterm

The JTLSConsole needs a library for managing command history.

4.68 JTLS-2014-12281 SVPR - Error Corrective Action Finds Target, not JDPI

The corrective action for Error 634 centers the map on a target of the same name as the JDPI, rather than the intended JDPI.

4.69 JTLS-2014-12282 WHIP - On Demand Range Ring Remained After Deletion

An on-demand weapon range ring was added and then deleted, but remained visible until the next screen update.

4.70 JTLS-2014-12283 CEP - SimDebug Issues Reading In Checkpoints

Numerous places within the ASCII write code we use the pointer for a variable to indicate if data exists to be read back in. For instance, we write out AM.ORIG.ORDER.POINTER in WRITE.AIR.MISSION.ASCII and if it is not NONE we also write out the Player Order data. During read, if the old pointer is not .NONE we know there is additional data to be read. The problem is that we read the old pointer into a pointer variable, but it is not a valid pointer. If after reading/assigning this invalid pointer we go into SimDebug and attempt to perform a trace we get a Segmentation Violation because the SimDebugger is attempting to determine the type of object at this invalid memory address. This problem only manifests when in the SimDebugger. The solution is that during read we should define the old pointers as integer variables and compare them against I.ZERO (and obviously name them something so no one thinks they are mis-defined).

4.71 JTLS-2014-12284 SVPR - Various Error/Warning Issues

A number of issues have been noted in the format of the SVPR Errors and Warnings, including Warnings 2000-2008 being documented but not implemented anywhere, a number of Error and Warning numbers not currently being used, and many Errors and Warnings requiring a minor correction or clarification.

4.72 JTLS-2014-12285 AAR/DDS Reports - User Added Reports Documentation

New documentation on how to create custom AAR and DDS reports needs to be added.

4.73 JTLS-2014-12286 CEP - Improper Calculation Manifest Processing Time

The routine MANIFEST.PROCESSING.TIME specifies that all manifests take one hour to load or offload. This routine needs to be made more robust, and examine the contents of the manifest, the A/C load/offload time, and the possibility of using MHE. Additionally, the 4th argument within the calls to this routine, which specifies whether it is a loading or offloading event, need to be standardized.

4.74 JTLS-2014-12287 DDS - Oracle Error Windows When DDS Reconnects

With DDS sessions up at two separate workstations, the primary DDS user shut down and restarted GlassFish for the scenario. The DDS at the second workstation lost, and then attempted to re-establish connection (as it should have). However, at the DDS that was up during the GlassFish stop and restart, a pop-up "Oracle Error" window was displayed.

The problem was that NUMEROUS versions of this error window are present, and clicking to close each window simply reveals more error windows, even though the DDS is by now reconnected. The error window probably came up every time the DDS tried to update some table. This error window should, if possible, only be displayed once.

4.75 JTLS-2014-12288 AAR - Target Damage History Report Missing Table

The Target Damage History detailed report outputs the data as a block quote, rather than the expected table.

4.76 JTLS-2014-12289 CEP - Amphibious Assault Crash

When two ground units, magic moved onto a naval formation, were ordered to conduct an amphibious assault using vehicles and helicopters (which were magic moved onto the formation after having their Naval Qualified flag changed to YES), the CEP crashed. This problem is related to but separate from JTLS-2014-12154, which has been fixed in this release.

4.77 JTLS-2014-12290 CEP - Amphibious Assault Not Completing

Out of two ground units, magic moved onto a naval formation, and ordered to conduct an amphibious assault using vehicles and helicopters (which were magic moved onto the formation after having their Naval Qualified flag changed to YES), one ground unit completed the assault, while the other (which arrived onto the game board through a port) never assaulted. This problem is related to but separate from JTLS-2014-12154, which has been fixed in this release.

4.78 JTLS-2014-12291 AAR - Add AAR Documentation

New documentation on how to run AAR reports needed to be added to the WHIP Training Manual.

4.79 JTLS-2014-12292 ICP - Saving Caused Connect Request to CEP

The JXSR execution host was changed while the JXSR is running, and then changed back. When the ICP was saved and the WSM was refreshed, the CEP crashed. It appears the JXSR sent a new connection request.

4.80 JTLS-2014-12293 WSM - Add Web Services Documentation

New GlassFish documentation, adding instructions for modifying a game in progress (such as adding new WHIPs or moving web services to a different host) needs to be added to the Technical Controller's Guide.

4.81 JTLS-2014-12294 WHIP Filter/View Saving Problem

After creating filters and views in the Controller WHIP when other Side WHIPs are open, and saving and sharing those filters and views with all Sides, the first filter and view saved do not appear on the other Side's filters and views, but all subsequent filters and views do appear. Closing and reopening the other Side WHIPs makes all saved filters and views available to all Sides, and saving the filters and views in the Controller WHIP while other Side WHIPs are closed also makes all saved filters and views available to all Side WHIPs.

4.82 JTLS-2014-12295 DDS - SQLException With Copied TUP

When copying a TUP and attempting to fill in the number of location transponders on the copy, an error message pops up, saying that "this feature is still in development. This is an error expected by the development team. It is not necessary to report this error." This error is caused by attempting to insert a null value in a non-nullable field.

4.83 JTLS-2014-12296 SVPR - Warning To Find CEP Crash, Never Generated

Warning 1137 states: Database Entity ENTITY.NAME, index INDEX, should have at least one record. The absence of at least one record for a permanent entities causes a CEP Crash during start. It happens, for example, when the CEP tries to reserve certain arrays using a zero length. There is SIP code to generate this Warning, but the Warning will never be generated. The SIP first crashes during Read, for the same reason the CEP would crash during its Read.

The resolution to this problem involves four actions:

- The DDS should prevent removal of the last remaining record for selected tables holding Permanent Entity data.
- The DDS should perform checks for selected tables being empty whenever a Download is generated from the DDS. Tables could have been emptied by direct sql statements.
- The SIP read code should, when reading the record count file, cease execution if any zeros are found. It will generate a message to the execution window saying why.

- Warning 1137 should be removed.

4.84 JTLS-2014-12297 WHIP - Coordinate Converter Cannot Find Lat/Lon

As with the WHIP IMT windows, the Coordinate Converter tool should allow users to locate a Lat/Log point on the Map, but it currently does not.

4.85 JTLS-2014-12298 DDS - History Table Field Not Updated For POT Targets

The DDS History Table "Record Identifier" field was not updated for SUP/TUP POT targets.

4.86 JTLS-2014-12299 DDS - Strange Behavior In Hierarchy DeepCopy

A ground unit had 10 ground subordinates and 1 depot subordinate (Hierarchy A). When Hierarchy Copy was performed (from the Command Hierarchy window) it only copied the top unit and the subordinate depot. After using this copy as Hierarchy B, and just copying the individual subordinate units and re-parenting them under Hierarchy B, a successful Hierarchy Copy of Hierarchy B in its entirety was able to be performed.

4.87 JTLS-2014-12300 SVPR - Auto-Fix Terrain Problems Nonfunctional

The SVPR was unable to auto-fix mismatched barriers.

4.88 JTLS-2014-12301 CEP - No Divert When Friendly Air Refuel Flag Changes

Commented out code exists in the routine CHANGE.REFUEL.FLAG when the Friendly Refuel Flag for a tanker mission is switched to NO. The code appears to have been commented out because it was causing an infinite loop, but there may be a problem with foreign missions that are heading for the tanker when the flag changes not diverting elsewhere.

4.89 JTLS-2014-12302 DCP - Scenario Map Changes

The scenario map sometimes changes to "Afghanistan." This problem is not reliably repeatable.

4.90 JTLS-2014-12303 WHIP - TRIPP Running With Shut Down Web Services Lock

The TRIPP will sometimes freeze when running with web services shut down.

4.91 JTLS-2014-12304 WHIP - New WHIP Pushed When Running Security Exception

A security exception is thrown when a WHIP component is used for the first time after a new WHIP is pushed while the WHIP is running.

4.92 JTLS-2014-12305 WHIP - Route Deselected Using Context Menu Stays

A route that was deselected using the context-sensitive menu stayed on the map. The route could be removed using the routes filter panel for demand routes.

4.93 JTLS-2014-12306 WHIP - Deadlock While Saving Map Filters

The WHIP froze while trying to save map filters.

4.94 JTLS-2014-12307 DDSC - Raw Data Shows Decimal Place For Integers

When displaying with the user preference "raw data", integers have 1 decimal place. For instance 1 is displayed as 1.0. When raw data is not selected, they are correct.

APPENDIX A. ABBREVIATIONS AND ACRONYMS

Terms are included in this Appendix to define their usage in JTLS 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
EI	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

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
JTOI	JTLS Transaction Operational Interface
JXSR	JTLS XML Serial Repository
KIA	Killed In Action
KM	Kilometer
KNOTS	Nautical miles per hour
LA	Lethal Area
LAN	Local Area Network
LAT	Latitude
LB	Login Build (JTLS order type)
LDAP	Lightweight Directory Access Protocol
LDT	Lanchester coefficient Development Tool
LOG	Logistics
LOGIN	Logistics Input

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

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

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

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

APPENDIX B. Version 4.1.6.0 STANDARD DATABASE CHANGES

B.1 Added New Sensor Types.

Continued changing SUPs sensors from generic Air (SAA), Surface (SGN) and Navigation (VGN) to actual sensors names (TYPE-994_SAA, TYPE-994_SGN and SPN-753_VGN etc).

B.2 SUP Sensor Names (Changed)

98% of all SUP Air (SAA) sensors have been updated. All SUP radars changes for the United States (US), South Korea (KR) and North Korea (KP) have been completed. Between 45-55% of all SUP Surface (SGN) and Navigation (VGN) sensors have been updated for all other SUPs.

B.3 Updated TTG Names (Changed)

- AMPHIB_VEH_TTG changed to VEH.AMPHIB_TTG
- DBLHULL_SUB_TTG changed to SUB.DBLHULL_TTG
- FIRE_CNTRL_SNSR changed to SENSORS_FC_TTG
- HARD_BRIDGE_TTG changed to BRIDGE.HARD_TTG
- HARD_FACILITY_TTG changed to FACILITY.HARD_TTG
- HARD_RWY_TTG changed to RWY.HARD_TTG
- HEAVY_TANK_TTG changed to TANK.HEAVY_TTG
- HVY_ARM_VEH_TTG changed to VEH.HVY_ARM_TTG
- LAND_MINEFIELD changed to MINEFIELD.LAND
- LARGE.SHIP_TTG changed to SHIP.LARGE_TTG
- LT_ARM_VEH_TTG changed to VEH.LT_ARM_TTG
- MEDIUM.SHIP_TTG changed to SHIP.MEDIUM_TTG
- MEDIUM_TANK_TTG changed to TANK.MEDIUM_TTG
- MLARGE.SHIP_TTG changed to SHIP.MLARGE_TTG
- MSMALL.SHIP_TTG changed to SHIP.MSMALL_TTG
- NO_HIT_FACILITY changed to FACILITY.NO.HIT

- NON_RDR_SENSORS changed to SENSORS.NON.RDR
- RAIL_INTRDCT_TG changed to INTRDCT.RAIL_TTG
- ROAD_INTRDCT_TG changed to INTRDCT.ROAD_TTG
- RUBBER_BOAT_TTG changed to BOAT.RUBBER_TTG
- SMALL.SHIP_TTG changed to SHIP.SMALL_TTG
- SMALL_BOAT_TTG changed to BOAT.SMALL_TTG
- SOFT_BRIDGE_TTG changed to BRIDGE.SOFT_TTG
- SOFT_RWY_TTG changed to RWY.SOFT_TTG
- SURFACE_SENSORS changed to SENSORS.SURFACE
- UNDRGND_FAC_TTG changed to FAC.UNDRGND_TTG
- VLARGE.SHIP_TTG changed to SHIP.VLARGE_TTG
- VSMALL.SHIP_TTG changed to SHIP.VSMALL_TTG
- WATER_MINEFIELD changed to MINEFIELD.WATER
- XSMALL.SHIP_TTG changed to SHIP.XSMALL_TTG

B.4 New Aircraft Weapons Loads (Added/Changed)

- 10G10X12GBU38
- 12A158X8A86C
- 12G31V3X24G38
- 12GBU31V3X12GBU38
- 1A130AX4AX2
- 4A2WX2
- 4A2WX2.FA18
- 4A2WX3.FA18
- 6AX2WMX3

- 8G12X4AX2
- CDO.SOLO
- CF18.DEF
- COMPS.CALL
- Renamed A/C Load EC130.DEF to EC130J.CDO.SOLO.DEF

B.5 Aircraft Class Table (Updated)

- Set EA18G LINK16 CAPABLE FLAG to Yes
- Deep Copied FA18C.HORNET_US and named CF18_CA

B.6 Sensor Table Update (Changed)

- Made Sensor APS-145_AAA Link 16 Capable
- Renamed Sensor AS.MRR3D_SAA to MRR-3D_SAA

B.7 New SUPs

- Deep Copied SUP - NAT.SEC.CUTR_US and renamed it LEGEND_US
- Deep Copied SUP P100_GR and renamed PYRPOLITIS_GR
- Deep Copied SUP O.H.PERRY_TR and renamed MOD.OH.PERRY_TR
- Added POT Subcategory RIM162(MK41)MOD to SUP MOD.OH.PERRY_TR
- Added Supply Category CL.V.AA-SR-2 to SUP MOD.OH.PERRY_TR

B.8 New Targetable Weapons

- Deep Copied MLRS-DPICM.X1 and renamed GMLRS-DPICM
 - GMLRS-DPICM changed range to 70km
 - GMLRS-DPICM checked GPS Route Capable
- Deep Copied ATACMS-BLK4A.HE and renamed GMLRS-UNITARY
 - GMLRS-UNITARY changed range to 70km
 - GMLRS-UNITARY checked GPS Route Capable

- Deep Copied 155MM.1RAP and renamed 155MM-EXCALIBUR
 - 155MM-EXCALIBUR changed range to 70km
 - 155MM-EXCALIBUR checked GPS Route Capable
- Deep Copied EGBU12PWY2.MK82 and renamed GBU49.MK82
- Deep Copied GBU38V5.JDAM and renamed GBU52.BLU126
- Deep Copied GBU29.JDAM.MK81 and renamed GBU58.MK81

B.9 New Supply Category (Added)

- Created CL.V.GMLRS-DPIC, Deep Copied from CL.V.ARTY-RKTS
- Created CL.V.GMLRS-UNIT, Deep Copied from CL.V.SS-MR
- Created CL.V.EXCALIBUR, Deep Copied from CL.V.ARTY-HEAVY
- Created CL.V.AS-GBU49, Deep Copied from CL.V.AS-EGBU12
- Created CL.V.AS-GBU52, Deep Copied from CL.V.AS-GBU38V5
- Created CL.V.AS-GBU58, Deep Copied from CL.V.AS-GBU29

B.10 Aircraft Load Assignments (Changed)

- Changed A-10 A/C Load Assignments
- Changed B-1 A/C Load Assignments
- Changed B-52H A/C Load Assignments
- Changed F-15E A/C Load Assignments
- Changed F-16CG A/C Load Assignments
- Changed F-16CJ A/C Load Assignments
- Changed F-16CM A/C Load Assignments
- Changed FA-18D A/C Load Assignments
- Changed FA-18E A/C Load Assignments
- Changed FA-18F A/C Load Assignments

B.11 Surface Kill Lethality

- Added a New Surface Kill Lethality (SKL) GBU49.MK82_SKL
- Added a New Surface Kill Lethality (SKL) GBU52_SKL
- Added a New Surface Kill Lethality (SKL) GBU58.MK81_SKL

B.12 Sensors Table Changes

- Built new Sensor named 3RM-20_VGN Deep Copied from NAVIGAT.RDR_VGN and changed range to 74km
- Built new Sensor named ANRITSU-723_VGN Deep Copied from NAVIGAT.RDR_VGN and changed range to 46km
- Built new Sensor named APAR_SAA Deep Copied from AS.RDR.SR_SAA and changed range to 148km
- Built new Sensor named APAR_SGN Deep Copied from SS.RDR.LR_SGN and changed range to 74km
- Built new Sensor named ARIES_VGN Deep Copied from NAVIGAT.RDR_VGN and changed range to 92km
- Built new Sensor named ATLAS-9600_VGN Deep Copied from NAVIGAT.RDR_VGN and changed range to 46km
- Built new Sensor named AWS-2_SAA Deep Copied from AS.RDR.SR_SAA and changed range to 185km
- Built new Sensor named AWS-2_SGN Deep Copied from SS.RDR.LR_SGN and changed range to 87km
- Built new Sensor named AWS-6_SAA Deep Copied from AS.RDR.SR_SAA and changed range to 240km
- Built new Sensor named AWS-6_SGN Deep Copied from SS.RDR.LR_SGN and changed range to 55km
- Built new Sensor named BHARAT-1245_VGN Deep Copied from NAVIGAT.RDR_VGN and changed range to 64km
- Built new Sensor named BPS-15H_VGN Deep Copied from NAVIGAT.RDR_VGN and changed range to 64km

- Built new Sensor named BPS-16_VGN Deep Copied from NAVIGAT.RDR_VGN and changed range to 64km
- Built new Sensor named CS-UPS60_VGN Deep Copied from NAVIGAT.RDR_VGN and changed range to 46km
- Built new Sensor named DA-05_SAA Deep Copied from AS.RDR.SR_SAA and changed range to 268km
- Built new Sensor named DA-05_SGN Deep Copied from SS.RDR.LR_SGN and changed range to 44km
- Built new Sensor named DA-08_SAA Deep Copied from AS.RDR.SR_SAA and changed range to 268km
- Built new Sensor named DA-08_SGN Deep Copied from SS.RDR.SR_SGN and changed range to 44km
- Built new Sensor named DBR_SAA Deep Copied from AS.RDR.LR_SGN and changed range to 509km
- Built new Sensor named DBR_SGN Deep Copied from SS.RDR.LR_SGN and changed range to 148km
- Built new Sensor named DECCA-1006_VGN Deep Copied from NAVIGAT.RDR_VGN and changed range to 46km
- Built new Sensor named DECCA-1007_VGN Deep Copied from NAVIGAT.RDR_VGN and changed range to 179km
- Built new Sensor named DECCA-1008_VGN Deep Copied from NAVIGAT.RDR_VGN and changed range to 46km
- Built new Sensor named DECCA-1229_VGN Deep Copied from NAVIGAT.RDR_VGN and changed range to 46km
- Built new Sensor named DECCA-1230_VGN Deep Copied from NAVIGAT.RDR_VGN and changed range to 46km
- Built new Sensor named DECCA-1690_VGN Deep Copied from NAVIGAT.RDR_VGN and changed range to 37km
- Built new Sensor named DECCA-2690_VGN Deep Copied from NAVIGAT.RDR_VGN and changed range to 46km

- Built new Sensor named DECCA-626_VGN Deep Copied from NAVIGAT.RDR_VGN and changed range to 37km
- Built new Sensor named DECCA-BRIDG_VGN Deep Copied from NAVIGAT.RDR_VGN and changed range to 88km
- Built new Sensor named DRBI-10_SAA Deep Copied from AS.RDR.SR_SAA and changed range to 277km
- Built new Sensor named DRBI-23_SAA Deep Copied from AS.RDR.SR_SAA and changed range to 277km
- Built new Sensor named DRBN-34A_VGN Deep Copied from NAVIGAT.RDR_VGN and changed range to 88km
- Built new Sensor named DRBN-35_VGN Deep Copied from NAVIGAT.RDR_VGN and changed range to 46km
- Built new Sensor named DRBV-15C_SAA Deep Copied from AS.RDR.SR_SAA and changed range to 168km
- Built new Sensor named DRBV-15C_SGN Deep Copied from SS.RDR.LR_SGN and changed range to 74km
- Built new Sensor named DRBV-21A_SAA Deep Copied from AS.RDR.SR_SAA and changed range to 109km
- Built new Sensor named DRBV-21A_SGN Deep Copied from SS.RDR.LR_SGN and changed range to 79km
- Built new Sensor named DRBV-22A_SAA Deep Copied from AS.RDR.SR_SAA and changed range to 129km
- Built new Sensor named DRBV-22D_SAA Deep Copied from AS.RDR.SR_SAA and changed range to 129km
- Built new Sensor named DRBV-23_SAA Deep Copied from AS.RDR.SR_SAA and changed range to 296km
- Built new Sensor named DRBV-23_SAA Deep Copied from AS.RDR.SR_SAA and changed range to 296km
- Built new Sensor named DRBV-26A_SAA Deep Copied from AS.RDR.SR_SAA and changed range to 359km

- Built new Sensor named DRBV-26C_SAA Deep Copied from AS.RDR.SR_SAA and changed range to 359km
- Built new Sensor named DRBV-26D_SAA Deep Copied from AS.RDR.SR_SAA and changed range to 296km
- Built new Sensor named ELM-2208_SAA Deep Copied from AS.RDR.SR_SAA and changed range to 100km
- Built new Sensor named ELM-2208_SGN Deep Copied from SS.RDR.LR_SGN and changed range to 55km
- Built new Sensor named ELM-2238_SAA Deep Copied from AS.RDR.SR_SAA and changed range to 351km
- Built new Sensor named ELM-2238_SGN Deep Copied from SS.RDR.LR_SGN and changed range to 150km
- Built new Sensor named FCS-3A_SAA Deep Copied from AS.RDR.SR_SAA and changed range to 222km
- Built new Sensor named FR-1830D_VGN Deep Copied from NAVIGAT.RDR_VGN and changed range to 37km
- Built new Sensor named FURUNO.8251_VGN Deep Copied from NAVIGAT.RDR_VGN and changed range to 50km
- Built new Sensor named FURUNO.900_VGN Deep Copied from NAVIGAT.RDR_VGN and changed range to 88km
- Built new Sensor named GIRAF.150HC_SAA Deep Copied from AS.RDR.SR_SAA and changed range to 133km
- Built new Sensor named GIRAF.150HC_SGN Deep Copied from SS.RDR.LR_SGN and changed range to 74km
- Built new Sensor named GIRAFF.50HC_SAA Deep Copied from AS.RDR.SR_SAA and changed range to 88km
- Built new Sensor named GIRAFF.50HC_SGN Deep Copied from SS.RDR.LR_SGN and changed range to 55km
- Built new Sensor named HC-75_SGN Deep Copied from SS.RDR.LR_SGN and changed range to 46km

- Built new Sensor named HERAKLES_SAA Deep Copied from AS.RDR.SR_SAA and changed range to 203km
- Built new Sensor named HERAKLES_SGN Deep Copied from SS.RDR.LR_SGN and changed range to 80km
- Built new Sensor named JMA-8303_SGN Deep Copied from SS.RDR.LR_SGN and changed range to 88km
- Built new Sensor named JMS-1596_VGN Deep Copied from NAVIGAT.RDR_VGN and changed range to 46km
- Built new Sensor named K-SPS-95K_VGN Deep Copied from NAVIGAT.RDR_VGN and changed range to 200km
- Built new Sensor named LANZA_SAA Deep Copied from AS.RDR.SR_SAA and changed range to 333km
- Built new Sensor named LW-04_SAA Deep Copied from AS.RDR.SR_SAA and changed range to 268km
- Built new Sensor named LW-08_SAA Deep Copied from AS.RDR.SR_SAA and changed range to 268km
- Built new Sensor named LW-08_SGN Deep Copied from SS.RDR.SR_SGN and changed range to 44km
- Built new Sensor named MARCO.S1810_SAA Deep Copied from AS.RDR.SR_SAA and changed range to 46km
- Built new Sensor named MARCO.S1810_SGN Deep Copied from SS.RDR.LR_SGN and changed range to 46km
- Built new Sensor named MARCON.S810_SAA Deep Copied from AS.RDR.SR_SAA and changed range to 46km
- Built new Sensor named MARCON.S820_SAA Deep Copied from AS.RDR.SR_SAA and changed range to 74km
- Built new Sensor named MARCON.S820_SGN Deep Copied from SS.RDR.LR_SGN and changed range to 46km
- Built new Sensor named MK-340_VGN Deep Copied from NAVIGAT.RDR_VGN and changed range to 37km

- Built new Sensor named MRR-3D_SGN Deep Copied from SS.RDR.LR_SGN and changed range to 79km
- Built new Sensor named MW-08_SAA Deep Copied from AS.RDR.SR_SAA and changed range to 105km
- Built new Sensor named MW-08_SGN Deep Copied from SS.RDR.LR_SGN and changed range to 44km
- Built new Sensor named NEPTUNE_SAA Deep Copied from AS.RDR.SR_SAA and changed range to 55km
- Built new Sensor named NEPTUNE_SGN Deep Copied from SS.RDR.LR_SGN and changed range to 55km
- Built new Sensor named OPN-11_VGN Deep Copied from NAVIGAT.RDR_VGN and changed range to 177km
- Built new Sensor named OPS-11A-C_SAA Deep Copied from AS.RDR.LR_SAA and changed range to 390km
- Built new Sensor named OPS-12_SAA Deep Copied from AS.RDR.LR_SAA and changed range to 407km
- Built new Sensor named OPS-14A-C_SAA Deep Copied from AS.RDR.SR_SAA and changed range to 268km
- Built new Sensor named OPS-16A-C_VGN Deep Copied from NAVIGAT.RDR_VGN and changed range to 87km
- Built new Sensor named OPS-17_SGN Deep Copied from SS.RDR.LR_SGN and changed range to 88km
- Built new Sensor named OPS-18_SGN Deep Copied from SS.RDR.LR_SGN and changed range to 88km
- Built new Sensor named OPS-18-1_SAA Deep Copied from AS.RDR.SR_SAA and changed range to 77km
- Built new Sensor named OPS-18-1_SGN Deep Copied from SS.RDR.LR_SGN and changed range to 88km
- Built new Sensor named OPS-19_VGN Deep Copied from NAVIGAT.RDR_VGN and changed range to 46km

- Built new Sensor named OPS-20C_VGN Deep Copied from NAVIGAT.RDR_VGN and changed range to 46km
- Built new Sensor named OPS-24_SAA Deep Copied from AS.RDR.LR_SAA and changed range to 444km
- Built new Sensor named OPS-28D_SAA Deep Copied from AS.RDR.SR_SAA and changed range to 116km
- Built new Sensor named OPS-28D_SGN Deep Copied from SS.RDR.LR_SGN and changed range to 74km
- Built new Sensor named OPS-50_SAA Deep Copied from AS.RDR.SR_SAA and changed range to 222km
- Built new Sensor named PN-612_VGN Deep Copied from NAVIGAT.RDR_VGN and changed range to 46km
- Built new Sensor named RAN-10S_SGN Deep Copied from SS.RDR.LR_SGN and changed range to 72km
- Built new Sensor named RAN-21S_SAA Deep Copied from AS.RDR.SR_SAA and changed range to 120km
- Built new Sensor named RAN-21S_SGN Deep Copied from SS.RDR.LR_SGN and changed range to 88km
- Built new Sensor named RAN-3L_SAA Deep Copied from AS.RDR.SR_SAA and changed range to 277km
- Built new Sensor named RAN-40S_SAA Deep Copied from AS.RDR.LR_SAA and changed range to 398km
- Built new Sensor named RAYPATH_VGN Deep Copied from NAVIGAT.RDR_VGN and changed range to 64km
- Built new Sensor named RAYTH-1500_VGN Deep Copied from NAVIGAT.RDR_VGN and changed range to 37km
- Built new Sensor named RAYTH-1645_VGN Deep Copied from NAVIGAT.RDR_VGN and changed range to 37km
- Built new Sensor named RAYTH-1660_VGN Deep Copied from NAVIGAT.RDR_VGN and changed range to 37km

- Built new Sensor named RAYTHEON-ST_VGN Deep Copied from NAVIGAT.RDR_VGN and changed range to 66km
- Built new Sensor named REVATHI_SAA Deep Copied from RAS.RDR.SR_SAA and changed range to 180km
- Built new Sensor named REVATHI_SGN Deep Copied from RSS.RDR.LR_SGN and changed range to 80km
- Built new Sensor named SAAB.PILOT_SGN Deep Copied from SS.RDR.LR_SGN and changed range to 88km
- Built new Sensor named SAMPSON_SAA Deep Copied from AS.RDR.SR_SAA and changed range to 179km
- Built new Sensor named SCANTER.09_VGN Deep Copied from NAVIGAT.RDR_VGN and changed range to 55km
- Built new Sensor named SCANTER2001_SGN Deep Copied from RSS.RDR.LR_SGN and changed range to 74km
- Built new Sensor named SEASPRAY.30_SAA Deep Copied from AS.RDR.SR_SAA and changed range to 185km
- Built new Sensor named SEASTAR_SGN Deep Copied from SS.RDR.LR_SGN and changed range to 74km
- Built new Sensor named SGR-103_VGN Deep Copied from NAVIGAT.RDR_VGN and changed range to 46km
- Built new Sensor named SGR-105_SAA Deep Copied from AS.RDR.SR_SAA and changed range to 237km
- Built new Sensor named SIGMA-40XP_VGN Deep Copied from NAVIGAT.RDR_VGN and changed range to 37km
- Built new Sensor named SKIN.HEAD_SAA Deep Copied from AS.RDR.SR_SAA and changed range to 25km
- Built new Sensor named SKIN.HEAD_SGN Deep Copied from RSS.RDR.SR_SGN and changed range to 25km
- Built new Sensor named SMART-L_SAA Deep Copied from AS.RDR.LR_SAA and changed range to 400km

- Built new Sensor named SMART-L_SGN Deep Copied from SS.RDR.LR_SGN and changed range to 59km
- Built new Sensor named SMART-S_SAA Deep Copied from AS.RDR.SR_SAA and changed range to 120km
- Built new Sensor named SMART-S_SGN Deep Copied from SS.RDR.LR_SGN and changed range to 59km
- Built new Sensor named SPER-RASCAR_VGN Deep Copied from NAVIGAT.RDR_VGN and changed range to 46km
- Built new Sensor named SPHINX-D_VGN Deep Copied from NAVIGAT.RDR_VGN and changed range to 37km
- Built new Sensor named SPN-728_VGN Deep Copied from NAVIGAT.RDR_VGN and changed range to 74km
- Built new Sensor named SPN-748_VGN Deep Copied from NAVIGAT.RDR_VGN and changed range to 74km
- Built new Sensor named SPN-749_VGN Deep Copied from NAVIGAT.RDR_VGN and changed range to 74km
- Built new Sensor named SPN-753_VGN Deep Copied from NAVIGAT.RDR_VGN and changed range to 74km
- Built new Sensor named SPQ-2D_SAA Deep Copied from AS.RDR.SR_SAA and changed range to 137km
- Built new Sensor named SPQ-501_SAA Deep Copied from AS.RDR.SR_SAA and changed range to 185km
- Built new Sensor named SPQ-501_SGN Deep Copied from SS.RDR.LR_SGN and changed range to 44km
- Built new Sensor named SPQ-502_SAA Deep Copied from AS.RDR.SR_SAA and changed range to 333km
- Built new Sensor named SPQ-9A_SGN Deep Copied from SS.RDR.LR_SGN and changed range to 37km
- Built new Sensor named SPQ-9B_SGN Deep Copied from SS.RDR.LR_SGN and changed range to 55km

- Built new Sensor named SPS-12_SAA Deep Copied from AS.RDR.LR_SAA and changed range to 390km
- Built new Sensor named SPS-21_VGN Deep Copied from NAVIGAT.RDR_VGN and changed range to 70km
- Built new Sensor named SPS-40A-B_SAA Deep Copied from AS.RDR.LR_SAA and changed range to 416km
- Built new Sensor named SPS-40C-D_SAA Deep Copied from AS.RDR.LR_SAA and changed range to 416km
- Built new Sensor named SPS-40E_SAA Deep Copied from AS.RDR.LR_SAA and changed range to 416km
- Built new Sensor named SPS-48C_SAA Deep Copied from AS.RDR.LR_SAA and changed range to 407km
- Built new Sensor named SPS-48E_SAA Deep Copied from AS.RDR.LR_SAA and changed range to 407km
- Built new Sensor named SPS-49V1-8_SAA Deep Copied from AS.RDR.LR_SAA and changed range to 525km
- Built new Sensor named SPS-52B-C_SAA Deep Copied from AS.RDR.LR_SAA and changed range to 455km
- Built new Sensor named SPS-53_VGN Deep Copied from NAVIGAT.RDR_VGN and changed range to 59km
- Built new Sensor named SPS-58A-C_SAA Deep Copied from AS.RDR.LR_SAA and changed range to 231km
- Built new Sensor named SPS-58A-C_SGN Deep Copied from SS.RDR.SR_SGN and changed range to 23km
- Built new Sensor named SPS-5D_SGN Deep Copied from SS.RDR.LR_SGN and changed range to 88km
- Built new Sensor named SPS-64_VGN Deep Copied from NAVIGAT.RDR_VGN and changed range to 105km
- Built new Sensor named SPS-66_VGN Deep Copied from NAVIGAT.RDR_VGN and changed range to 59km

- Built new Sensor named SPS-67_SGN Deep Copied from SS.RDR.LR_SGN and changed range to 116km
- Built new Sensor named SPS-69_VGN Deep Copied from NAVIGAT.RDR_VGN and changed range to 81km
- Built new Sensor named SPS-702_SGN Deep Copied from SS.RDR.LR_SGN and changed range to 64km
- Built new Sensor named SPS-73_VGN Deep Copied from NAVIGAT.RDR_VGN and changed range to 178km
- Built new Sensor named SPS-774_SAA Deep Copied from AS.RDR.SR_SAA and changed range to 157km
- Built new Sensor named SPY-1B_SAA Deep Copied from AS.RDR.LR_SAA and changed range to 463km
- Built new Sensor named SPY-1B_SGN Deep Copied from SS.RDR.LR_SGN and changed range to 92km
- Built new Sensor named SPY-1D_SAA Deep Copied from AS.RDR.LR_SAA and changed range to 463km
- Built new Sensor named SPY-1D_SGN Deep Copied from SS.RDR.LR_SGN and changed range to 92km
- Built new Sensor named SPY-3_SAA Deep Copied from AS.RDR.SR_SGN and changed range to 324km
- Built new Sensor named SPY-3_SGN Deep Copied from SS.RDR.LR_SGN and changed range to 92km
- Built new Sensor named THALE.SCOUT_VGN Deep Copied from NAVIGAT.RDR_VGN and changed range to 44km
- Built new Sensor named TRITON.G_SAA Deep Copied from AS.RDR.SR_SAA and changed range to 46km
- Built new Sensor named TRITON.G_SGN Deep Copied from SS.RDR.LR_SGN and changed range to 83km
- Built new Sensor named TRITON.II_SAA Deep Copied from AS.RDR.SR_SAA and changed range to 83km

- Built new Sensor named TRITON.II_SGN Deep Copied from SS.RDR.LR_SGN and changed range to 83km
- Built new Sensor named TRITON.V_SAA Deep Copied from AS.RDR.SR_SAA and changed range to 55km
- Built new Sensor named TRITON.V_SGN Deep Copied from SS.RDR.LR_SGN and changed range to 55km
- Built new Sensor named TRITON_SAA Deep Copied from AS.RDR.SR_SAA and changed range to 55km
- Built new Sensor named TRITON_SGN Deep Copied from SS.RDR.LR_SGN and changed range to 55km
- Built new Sensor named TRS-3D-16_SAA Deep Copied from AS.RDR.SR_SAA and changed range to 125km
- Built new Sensor named TRS-3D-16_SGN Deep Copied from SS.RDR.LR_SGN and changed range to 92km
- Built new Sensor named TRS-3D-32_SAA Deep Copied from AS.RDR.SR_SAA and changed range to 157km
- Built new Sensor named TRS-3D-32_SGN Deep Copied from SS.RDR.LR_SGN and changed range to 92km
- Built new Sensor named TRS-5204_SAA Deep Copied from AS.RDR.SR_SAA and changed range to 70km
- Built new Sensor named TRS-5204_SGN Deep Copied from SS.RDR.LR_SGN and changed range to 46km
- Built new Sensor named TYPE.996_SAA Deep Copied from AS.RDR.SR_SAA and changed range to 177km
- Built new Sensor named TYPE-1006_VGN Deep Copied from NAVIGAT.RDR_VGN and changed range to 40km
- Built new Sensor named TYPE-1007_VGN Deep Copied from NAVIGAT.RDR_VGN and changed range to 177km
- Built new Sensor named TYPE-1008_VGN Deep Copied from NAVIGAT.RDR_VGN and changed range to 88km

- Built new Sensor named TYPE-1022_SAA Deep Copied from AS.RDR.LR_SAA and changed range to 372km
- Built new Sensor named TYPE-1046_SAA Deep Copied from AS.RDR.LR_SAA and changed range to 398km
- Built new Sensor named TYPE-1047_SGN Deep Copied from SS.RDR.LR_SGN and changed range to 88km
- Built new Sensor named TYPE-344_SGN Deep Copied from RSS.RDR.SR_SGN and changed range to 27km
- Built new Sensor named TYPE-362_SAA Deep Copied from AS.RDR.SR_SAA and changed range to 61km
- Built new Sensor named TYPE-362_SGN Deep Copied from SS.RDR.LR_SGN and changed range to 74km
- Built new Sensor named TYPE-968_SAA Deep Copied from AS.RDR.SR_SAA and changed range to 196km
- Built new Sensor named TYPE-968_SGN Deep Copied from SS.RDR.LR_SGN and changed range to 92km
- Built new Sensor named TYPE-994_SAA Deep Copied from AS.RDR.SR_SAA and changed range to 175km
- Built new Sensor named TYPE-994_SGN Deep Copied from SS.RDR.LR_SGN and changed range to 87km
- Built new Sensor named TYPE-996_SGN Deep Copied from SS.RDR.LR_SGN and changed range to 105km
- Built new Sensor named TYPE-997_SAA Deep Copied from AS.RDR.SR_SAA and changed range to 203km
- Built new Sensor named TYPE-997_SGN Deep Copied from SS.RDR.LR_SGN and changed range to 105km
- Built new Sensor named VARIANT_SAA Deep Copied from AS.RDR.SR_SAA and changed range to 70km
- Built new Sensor named VARIANT_SGN Deep Copied from SS.RDR.LR_SGN and changed range to 70km

- Built new Sensor named ZW-06_SAA Deep Copied from AS.RDR.SR_SAA and changed range to 63km
- Built new Sensor named ZW-06_SGN Deep Copied from SS.RDR.LR_SGN and changed range to 74km