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Mensuration Services Program (MSP)

Release Notes / Version Description Document for

MSP Geographic Translator (GEOTRANS) Version 3.3

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1. SCOPE

1.1 IDENTIFICATION

This document is the Release Notes for Version 3.3 of the MSP Geographic Translator (GEOTRANS).

1.2 SYSTEM OVERVIEW

GEOTRANS is an application that allows you to convert geographic coordinates among a wide variety of coordinate systems, map projections, grids, and datums. GEOTRANS runs in Microsoft Windows, LINUX and UNIX environments.

The user interface of GEOTRANS consists primarily of a single window. To convert coordinates, select the coordinate reference frame and datum in which your coordinates are defined, enter any associated parameters, and enter the coordinates in the upper half of the window. Then select the coordinate reference frame and datum to which you want the coordinates to be converted, and enter any associated parameters, in the lower half of the window. Click on the Convert Upper-to-Lower button, and the resulting coordinates will be displayed in the lower half of the window. You can convert additional coordinate sets from the same source by just entering the new coordinates and clicking on the Convert Upper-to-Lower button. You can change any of the coordinate reference frame, datum, or parameter selections at any time. Also, you can reverse the roles of input and output by using the Convert Lower-to-Upper button. Currently, thirty-five different types of coordinate systems, map projections, grids, and coding schemes are supported, as well as more than two hundred different horizontal datums.

GEOTRANS can also be used to efficiently convert large numbers of coordinates contained in text files. The file format is very simple. A multi-line file header defines the coordinate reference frame and datum of the coordinates contained in the file, including any associated parameter values. Following the header, each line contains a single set of coordinates, separated by commas followed by at least one space. Using the GEOTRANS file processing interface, you can select an existing file of coordinates to be converted. You can then define the coordinate reference frame and datum to which you want to convert the coordinates, along with any associated parameter values. Finally, you can specify the name and location of the output file that is to be created. GEOTRANS then converts all of the coordinates in the input file and creates the output file as a single operation.

1.3 DOCUMENT OVERVIEW

The MSP GEOTRANS 3.3 Release Notes describes what has changed between the MSP GEOTRANS 3.2 release and the 3.3 release. It also describes the installation process.

GEOTRANS software is provided via the WWW, SIPRNet, and JWICS networks. It can also be requested via CD-ROM or DVD media. Users can download the executable software only or the executable software and the source code. Executable software is provided as built for five Operating Systems: Windows XP 32-bit, Windows 7 64-bit, Sun Solaris 10 SPARC 32-bit, Red Hat Enterprise Linux (RHEL) v5 32-bit and 64-bit. It should also work on all later versions of these operating systems.

The GEOTRANS software consists of the Coordinate Conversion Service (CCS) libraries and the GEOTRANS application. The GEOTRANS CCS libraries are written in C++. The Windows version was built using MS Visual Studio 2008 (32-bit) and MS Visual Studio 2010 (64-bit). The Solaris version was built using Sun Studio12 C++ v5.10. The Linux version was built using GCC v4.1.2. The GEOTRANS application GUI is written in Java and requires the Java Runtime Environment (JRE) version 1.5 or later to execute. We recommend using JRE version 1.6 update 35 or later that addresses all known vulnerability issues in the earlier versions of JRE.

Software Integrators should refer to the Programmer's Guide for information regarding the GEOTRANS software structure, the programming environment in which it was developed, the Application Programming Interface (API) and the process for building and modifying the GEOTRANS software.

Users should refer to the User's Guide for information regarding the capabilities and use of the GEOTRANS GUI for interactive coordinate conversion.

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2. REFERENCES

For the list of referenced documents, see the MSP GEOTRANS Programmer's Guide or the User's Guide.

3. RELEASE NOTES DESCRIPTION

3.1 INVENTORY OF MATERIAL

The unclassified MSP GEOTRANS 3.3 release provides executables and libraries built for five operating systems and compiler combinations: Windows XP 32-bit, Windows 7 64-bit, Sun Solaris 10 SPARC 32-bit, Red Hat Enterprise Linux (RHEL) v5 32-bit and 64-bit. MSP GEOTRANS 3.3 is also available for all nine MSP supported platforms in the classified MSP releases. Both dynamic link libraries (.so for Unix and .dll for Windows) and static link libraries (.a for Unix and .lib for Windows) are provided in this release.

The GEOTRANS software was designed to reduce as much as possible any operating system dependencies and therefore should work on all later versions of these operating systems (e.g., Windows 7, Solaris 10, RHEL v5). If not, the source code is provided for rebuilding on the user's platform or choice. For information regarding the GEOTRANS software structure and building the software from the source code, refer to the Programmer's Guide.

3.2 SYSTEM REQUIREMENTS

The hardware requirements of the GEOTRANS software are minimal. It is designed to run on any 32-bit or 64-bit processor with 512MB or more of memory and 300MB or more of available disk space.

GEOTRANS software operates on Solaris, Windows, and Red Hat Linux operating systems.

Platform	OS and Version	Compiler and Version
Sun	Solaris 10 SPARC 32-bit multi-thread	Sun Studio 12 C++ 5.10
PC	Red Hat Enterprise Linux 5 32-bit multi-thread	GCC 4.1.2
PC	Red Hat Enterprise Linux 5 64-bit multi-thread	GCC 4.1.2
PC	Windows XP SP2 32-bit multi-thread	Visual Studio 2008
PC	Windows 7 64-bit multi-thread	Visual Studio 2010

Table 1 – Supported Operating Systems and Compilers

3.3 ADDITIONAL SOFTWARE REQUIRED

3.3.1 JAVA RUNTIME ENVIRONMENT

The GEOTRANS application GUI is written in Java and requires the JRE to execute. JRE version 1.6.0.35 resolves all known vulnerabilities and was used for testing MSP GEOTRANS 3.3. It is recommended that the GEOTRANS users also use 1.6.0.35 or later. JRE 1.6.0.35 or the latest JRE can be downloaded from the Oracle website:

<http://www.oracle.com/technetwork/indexes/downloads/index.html>.

3.3.2 VISUAL STUDIO REDISTRIBUTABLE PACKAGE

The GEOTRANS Windows libraries are compiled using Microsoft Visual Studio C++ compilers and they required the runtime components of Visual C++ libraries to run. If the system does not have the required runtime components of Visual C++ libraries, GEOTRANS users will need to install the Microsoft Visual C++ Redistributable Package.

Microsoft Visual C++ Redistributable Package can be downloaded from the following websites:

For Windows XP 32-bit GEOTRANS download the Microsoft Visual C++ 2008 Service Pack 1 Redistributable Package:

<http://www.microsoft.com/en-us/download/details.aspx?id=11895>

For Windows 7 64-bit GEOTRANS download the Microsoft Visual C++ 2010 Service Pack 1 Redistributable Package:

<http://www.microsoft.com/en-us/download/details.aspx?id=13523>

3.4 SUMMARY OF SOFTWARE CHANGES

MSP GEOTRANS 3.3 is the third release of the re-architected GEOTRANS application under the MSP program. **This release repairs several issues discovered in operations. There is no change to the look and feel of the GUI, therefore user transition from GEOTRANS 3.2 to 3.3 should be seamless. There is no change to the API, therefore integrators should easily upgrade from GEOTRANS 3.2 to 3.3 libraries.**

NOTE: In GEOTRANS 3.2 and 3.3 an iterative algorithm is used in the Geocentric to Geodetic conversion to achieve better accuracy. If a user needs to revert back to the legacy non-iterative GEOTRANS algorithm, then an environment variable MSPCCS_USE_LEGACY_GEOTRANS needs to be defined before starting GEOTRANS.

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The following tables describe the resolved Discrepancy Reports (DRs) and Enhancement Requests (ERs) included in the MSP GEOTRANS 3.3 release (Table 1), the Open Discrepancy Reports remaining in the MSP GEOTRANS 3.3 release (Table 2) for implementation in a future release and the Open Enhancement Requests (Table 3) for consideration in a future release.

Table 1. MSP GEOTRANS 3.3 Resolved DRs and ERs

ID	Title	Pri	Impact	Resolution/Workaround
28146	Geotrans conversion from Geocentric to Geodetic with precision set to .001m displays some results in Scientific Notation	4	Inconsistent display of results and cannot do round-trip conversions between Geodetic and Geocentric with Precision set to .001m and format set to dms.s or dm.m.	Java automatically converts small decimal numbers to scientific notation. Modify code to stop this automatic conversion.
29174	MSP GeoTrans does not output batch coordinates in range 0-360	4	One format option is to report lat/lon results in the range of 0 to 360 degrees. This works on the GUI display, but is ignored when doing file processing. Coordinates are valid, but may not be displayed as desired.	Get the longitude range format option from the menu and format the longitude string correctly before writing to the output file. Also set the separator format and leading zeros format option correctly.
29500	GEOTRANS reco should be EGM08 not EGM96	4	NGA requests putting EGM 2008 at the top of the height model list.	Moved EGM 2008 to top of height model list on GUI.
29544	GEOTRANS 3.2 fails to create new datum	3	GEOTRANS 3.2 fails to create new datum and displays "Invalid datum code" error message.	Remove unneeded datumIndex calls from create datum methods.
29550	GEOTRANS giving Java error for incorrectly entered data	4	A user that was attempting to convert from UTM to geodetic coordinates entered the hemisphere designator in the zone box instead of using the radio button and received a Java error.	Updated the exception handling logic in the GUI code to display error message to the screen.
29561	GEOTRANS: Java error when deleting user created datums	4	Cannot delete user created datum from GEOTRANS GUI.	Fix the code that handles datum deletion.
29570	Support silent installation for GEOTRANS	9	NGA requests silent installation support for GEOTRANS 3.3.	Enable silent installation in InstallAnywhere script.
29572	Improve validation of MGRS string	3	If the input MGRS string contains spaces, for example, 16SCG 12345 67890, function breakMGRSString returns 16SCG0000000000 instead of throwing an error.	Removed all spaces in MGRS string before parsing.

Table 2. MSP GEOTRANS 3.3 Open DRs

ID	Title	Pri	Impact	Resolution/Workaround
25204	GEOTRANS vs MSP – Quit vs Exit on closing windows	4	None. A different convention is used on the GEOTRANS GUI and MSP GUI to close the application (“Quit” vs “Exit”). Consistency would be nice.	The resolution is to change GEOTRANS to use “Quit” on the File dropdown menu.
27158	GEOTRANS in the Java, Look and Feel mode, Enter does not remove the “Help, About” GUI	4	Minor. User cannot close the “Help About” GUI using the Enter key from the keyboard when Java Look and Feel mode selected.	The workaround is to select the OK button to remove the window. The resolution is to allow Enter to close the window when in the Java Look and Feel mode, as is the case for the Solaris and Windows Look and Feel modes.
29600	GEOTRANS does not accept latitude of origin at 90 degrees	4	The Belgium Lamber 1972 projection specifies a latitude of origin of 90 degrees. MSP does not allow latitudes of origin above 89:59:59.	None.
29645	Update GEOTRANS Lat/Lon Error Message	4	None. When user enters an improperly formatted latitude or longitude, an “out of range” message is displayed, which does not indicate improper format.	None

Table 3. MSP GEOTRANS 3.3 Open ERs

ID	Title	Pri	Impact	Resolution/Workaround
25411	GEOTRANS GUI File -> Load Setting returns an error	9	Users of GEOTRANS installed as a shared application on a network cannot Save and Load personal settings.	The resolution is to provide the capability to save and restore settings to/from a User's Home directory, instead of to/from the installed directory.
26200	MSP should allow for third party coordinate conversions	9	Users are limited to the coordinate conversions provided by GEOTRANS.	The resolution is to design the capability for a "plug-in" coordinate conversion.
26551	Add UTM units option of US Survey Feet	9	Surveyors in the US who use units of US Survey Feet with UTM coordinates cannot use GEOTRANS to/from UTM coordinates.	The resolution is to add the US Survey Feet as a selectable unit for UTM Easting and Northing values.
26987	MSP GEOTRANS should add new transformation model	9	GEOTRANS users cannot use the seven parameter model described in NATO STANAG 2211.	The resolution is to add the transformation to the CCS and to the GEOTRANS GUI as described in NATO STANAG 2211.
27339	Add an "administrative rules" button to the UTM coordinate option	9	Related to DR 27181: Users cannot convert to True UTM coordinates in the special regions over Southern Norway and Svalgard, without specifying a zone override.	The resolution is to add an "Administrative Rules" button to the GEOTRANS GUI to control whether True UTM coordinates are returned or the special rules for UTM zones are returned.

3.5. INSTALLATION INSTRUCTIONS

The unclassified MSP GEOTRANS 3.3 release can be downloaded from the WWW, SIPRNet or JWICS networks—or can be delivered via CD-ROM or DVD media by request. The unclassified MSP GEOTRANS 3.3 release is provided in zip format for Windows platforms and tgz format for Unix platforms and does not require a registration key or a license key to install and run. The MSP GEOTRANS web page addresses are as follows:

WWW – <http://earth-info.nga.mil/GandG/geotrans/>

SIPRNet – <http://www.geoint.nga.smil.mil/products/gandg/geotrans>

JWICS – <http://www.geoint.nga.ic.gov/products/gandg/geotrans/>

The GEOTRANS 3.3 application requires the JRE to operate. JRE version 1.6.0 update 35 or later is recommended. The startup script may need to be modified to set the correct version of the JRE.

The startup script for Solaris systems is found in:

```
<install dir>/geotrans3.3/GEOTRANS3/solaris/runGeotrans.csh,
```

For Linux systems, it is found in:

```
<install dir>/geotrans3.3/GEOTRANS3/linux/runGeotrans.csh
```

For Windows systems, it is found in:

```
<install dir>\geotrans3.3\GEOTRANS3\win\runGeotrans.bat.
```

For Unix systems, using an editor of your choice, open the runGeotrans.csh start up script and modify the following line so that the parameter JAVA_HOME is set to Java's home directory.

For example :

```
setenv JAVA_HOME /usr/jdk1.6.0_35
```

For Windows systems, using an editor of your choice, open the runGeotrans.bat startup script and modify the following line so that the path to the JRE is set correctly. For example change:

```
@java -Xss1024k -jar MSPCCS.jar
```

to

```
@"C:\Program Files\java\jre1.6.0_35\bin\java.exe" -Xss1024k -jar MSPCCS.jar
```

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GEOTRANS 3.3 for Windows users is also available in self installation InstallAnywhere package. After downloading the installation file from the web-site, double click on install.exe and follow on screen instructions to complete the installation.

GEOTRANS 3.3 InstallAnywhere package supports silent installation. To perform silent installation:

1. Create the properties file installer.properties in C:\Temp directory

```
C:\> install.exe -r c:\Temp
```

2. Specify the installation directory by modifying C:\Temp\installer.properties.

3. Perform silent installation

```
C:\> install.exe -i silent -f C:\Temp\installer.properties
```

3.6 MSP HELP DESK SUPPORT

For help with the installation, to request a delivery on CD-ROM or DVD media, to report an issue, or for general help of any kind, contact the MSP Help Line at 858-592-5677 (5MSP) or msphelp@baesystems.com.

GEOTRANS Enhancement Requests can also be reported to the MSP Help Line or to the NGA Coordinate Systems Analysis Team (CSAT) at (314) 676-9124, DSN 846-9124 or coordsys@nga.mil.

APPENDIX A – ACRONYMS

API	Application Programming Interface
CCS	Coordinate Conversion Service
CD-ROM	Compact Disk – Read Only Memory
CSAT	Coordinate Systems Analysis Team
DR	Discrepancy Report
DVD	Digital Versatile/Video Disk
EGM	Earth Gravity Model
ER	Enhancement Request
GCC	Gnu Compiler Collection
GEOTRANS	Geographic Translator
GUI	Graphical User Interface
JRE	Java Runtime Environment
MB	MegaByte
MS	Microsoft
MSL	Mean Sea Level
MSP	Mensuration Services Program
NGA	National Geospatial-Intelligence Agency
RHEL	Red Hat Enterprise Linux
WWW	World Wide Web