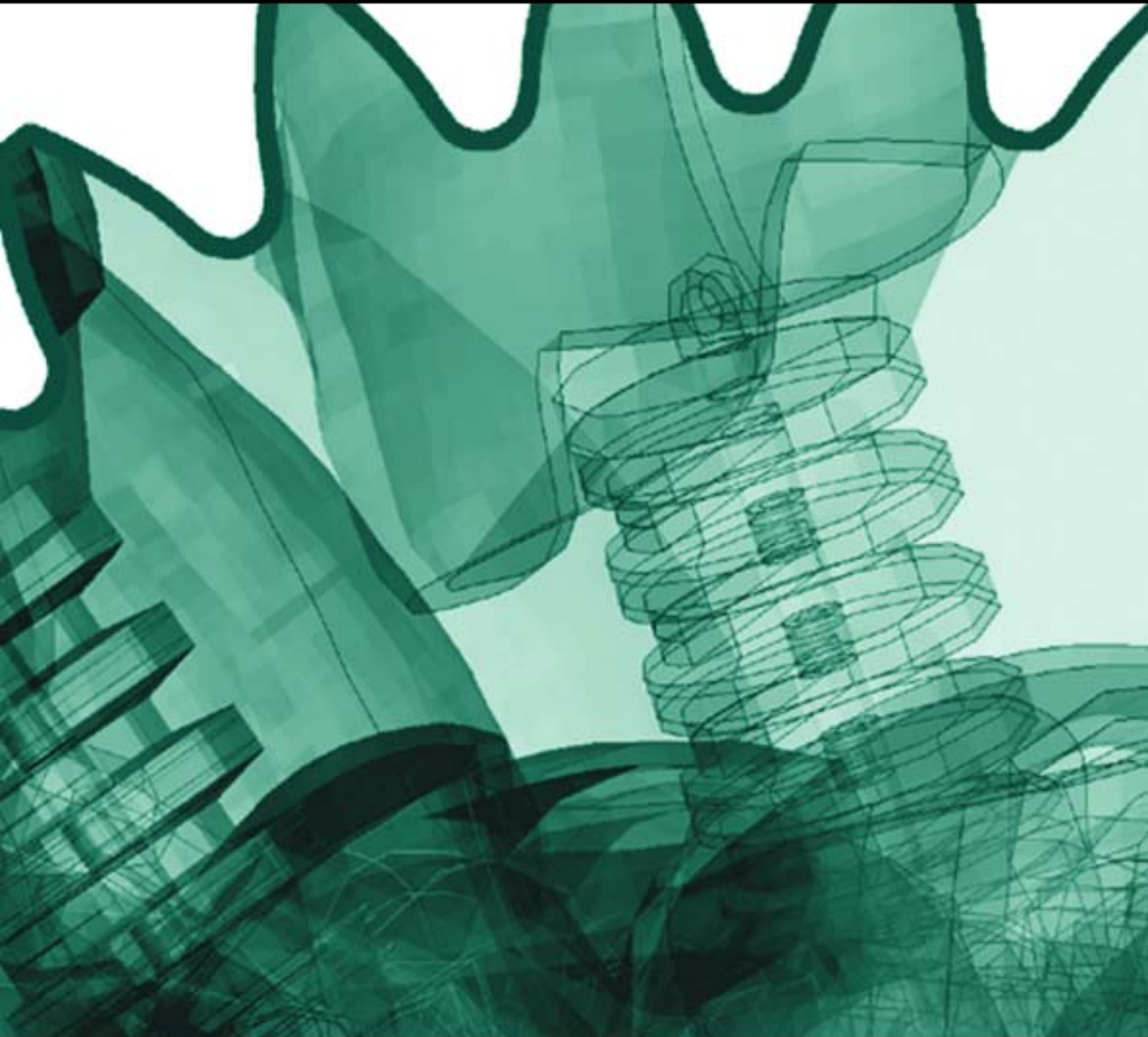


# Oasys LS-DYNA Environment Software

Oasys T/HIS Version 9.3 RC2  
Update and Release Notes



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# 1 Introduction

This document covers the enhancements made and the bugs fixed in Oasys T/HIS 9.3 RC1 and 9.3 RC2.

## 2 Enhancements to Oasys T/HIS 9.3 RC2

This is a summary of the enhancements that have been added to T/HIS 9.3 RC2 since the release of T/HIS 9.3 RC1.

- **Case 10996**

A new curve Correlation function has been added to the automotive menu in T/HIS 9.3 RC2. This Correlation function provides a measure of the degree to which two curves match. When comparing curves by eye, the quality of correlation may be judged on the basis of how well matched are the patterns of peaks, the overall shapes of the curves, etc, and can allow for differences of timing as well as magnitude. Thus a simple function based on the difference of Y-values (such as T/HIS ERR function) does not measure correlation in the same way as the human eye. The new T/HIS correlation function attempts to include and quantify the more subtle ways in which the correlation of two curves may be judged.
- **Case 10994**

T/HIS now support an unlimited number of curve groups. Each group can contain any of the curves within T/HIS and is referenced by a unique user defined name. Curve groups can be created interactively with T/HIS or from within a FAST-TCF script.  
In an interactive T/HIS session curve groups can be used for the following

  - i) Selecting curves for operations
  - ii) Blanking / Unblanking curves
  - iii) Deleting curves
  - iv) Setting curve styles
  - v) Selecting curves for output to T/HIS curve files or CSV files.

Curve groups can currently be used within FAST-TCF for all of these functions except setting curve styles.
- **Case 10992**

In THIS 9.3 RC2 the output from the "tab" command in FAST-TCF has been modified so that the description printed before the value is now a minimum of 50 characters (left justified). If the string is longer than 50 characters then the complete string is printed.
- **Case 7883**

The style menu has been modified so that curve styles can now be applied to either individual curves, curve groups or all the curves belonging to the same model.
- **Case 10932**

In T/HIS 9.3 RC1 and earlier the FAST-TCF command used to output curves to a T/HIS curve file only accepted a single curve as input. If multiple curves were to be output to the same file the first curve was written to the file with the 'copy' command and all the other curves were appended to the file using the 'append' command, this could be very slow if a large number of curves were selected. In T/HIS 9.3 RC2 the 'copy' and 'append' commands have been modified so that multiple curves can be specified and written to the file in one go. As well as being able to specify a list of curve tags in a single command the list can also now contain curve tags containing wildcards or curve groups.

- Case 10889

In T/HIS 9.3 RC2 support for the following Shell and Thick Shell data components from the LSDA (binout) file has been added.

```
SMX - Max Principal Stress
SMN - Min Principal Stress
SMS - Max Shear Stress
SVM - Von Mises Stress
AV - Average Stress (Pressure)
```

These components are available for top, middle and bottom surfaces only as LS-DYNA only writes these values for the top and bottom surfaces (the middle surface values are averaged).

- Case 10888

In T/HIS 9.3 RC2 support for the following Shell and Thick Shell data components from the LSDA (binout) file has been added.

```
EXX - Strain in XX          EXY - Strain in XY
EYY - Strain in YY          EYZ - Strain in YZ
EZZ - Strain in ZZ          EZX - Strain in ZX
EMX - Max Principal Strain  EMN - Min Principal Strain
EMX - Max Shear Strain     EVM - Von Mises Strain
EAV - Average Strain
```

These components are available for top, middle and bottom surfaces only as LS-DYNA only writes these values for the top and bottom surfaces (the middle surface values are averaged).

NOTE : In the LSDA file the strain tensor values are written out using the element local coordinate system, in the THF file they are in the global coordinate system.

- Case 10880

In T/HIS 9.3 RC2 support for the following data components from the THF, LSDA and NODOUT files has been added.

```
Current X Coordinate      Basic X Coordinate
Current Y Coordinate      Basic Y Coordinate
Current Z Coordinate      Basic Z Coordinate
Current Vector            Basic Vector
```

All of these will be available in the THF file. These components will only appear in the LSDA and NODOUT files from 970 onwards as the nodal coordinate data was only added to these files in 970 onwards.

- Cases 9489 and 9060

In T/HIS 9.3 RC2 the mouse no longer has to be moved into HELP, INFORMATION, CONFIRM and ERROR boxes that popup in front of graphics windows to apply the default action by pressing ENTER. When any of these boxes are displayed keyboard input is automatically redirected to the box regardless of where the cursor is.

- **Case 8699**  
In T/HIS 9.3 RC2 a range of models/curves can be selected/deselected when searching directories recursively by clicking on the first one and then holding down shift to and clicking on the last one in the range.

- **Case 8148**  
T/HIS 9.3RC2 contains 2 new FAST-TCF functions

<pre>'delete tag1 tag2 tag3 .... 'condense'</pre>	<pre>'Deletes curves by tag Condenses curve ID so there are no gaps in the curve numbering. Curve tags are not altered.</pre>
---	---

- **Case 8041**  
In T/HIS 9.3 RC2 up to 100 curve files can be opened using the command line. Multiple curve files can be specified by either using multiple -curve (or -cur ) options

```
-curve=file1.cur -curve=file2.cur -cur=file3.cur
```

or by a comma separated list of files

```
-curve=file1.cur,file2.cur,file3.cur
```

or by a combination of both.

- **Cases 7851 and 7848**  
In T/HIS 9.3 multiple curve can be selected on the command line to be written out to a T/HIS curve file

<pre>#nnn #nn1:#nn2 (#nn1, #nn2, #nn3:#nn4) *</pre>	<pre>a single curve id a single range of curve ids a compound string of the above all curves</pre>
---	--

### 3 Enhancements to Oasys T/HIS 9.3 RC1

This is a summary of the enhancements that have been added to T/HIS 9.3 RC1 since the release of T/HIS 9.2.3.

- **Case 10065**  
In version 9.2 of T/HIS the \$RUN\_NAME and \$RUN\_TITLE variables in FAST-TCF were always set to those of the 1st model if T/HIS had opened multiple models from a model list file. In version 9.3 \$RUN\_NAME and \$RUN\_TITLE still contain the information from the first model but the variables \$RUN\_NAME<sub>n</sub> and \$RUN\_TITLE<sub>n</sub> are also created for each model where (n) is the model number.
- **Case 8895**  
In version 9.3 RC1 of T/HIS the curves in the style menu are now displayed using the same sort order as the curves in the curve manager. The model prefix is also now displayed in the style menu.
- **Cases 8779 and 8685**  
In T/HIS 9.3 RC1 onwards the curve manager panel can be undocked and re-docked. When the panel is undocked the menu width can be altered to allow more of the curve labels to be displayed.
- **Case 8598**  
Axis values can now be displayed using 3 different formats.

Automatic :	12.25E+03	(only uses E-3, E0, E3, E6 etc)
Scientific :	1.225E+04	
General :	12250.0	

In addition to the 3 different formats the number of decimal places displayed can also be controlled.

- **Case 8595**  
In T/HIS 9.3 RC1 the following options to specify a T/HIS curve file on the command line have been added

-curve_list=filename	where 'filename' is a file containing a list of T/HIS curve files to be read
-curve=filename	'filename' is a single file containing a T/HIS format curve
-bdf=filename	'filename' is a single T/HIS BDF format file

You can also specify a T/HIS command file by giving the filename as the last item on the command line. If the filename at the end of the command line has a '.cur' extension it is assumed to be a T/HIS curve file, '.bdf' is assumed to be a BDF file and anything else is used as the name of a model file to open.

- **Case 8573**  
In version 9.3 RC1 of T/HIS the curve information popup now displays which file a curve has come been read from. If the curve has come from a LS-DYNA results file then either THF,

XTF, LSDA or the ASCII file name (e.d DEFORC) is displayed. If the curve has been read from a different file type then the name of the file is displayed.

**Other enhancements include the following:**

- T/HIS 9.3 now supports multiple graphs. A maximum of 32 graphs can be created and positioned on up to 32 “pages”.
- Curves can be blanked/unblanked for each graph separately using either the “Curve Manager” window or a new “Curve Table” option.
- Graphs can be positioned on each page using a number or preset formats or each page can have a user defined layout.
- A “Quick-pick” menu similar to that in Oasys PRIMER and Oasys D3PLOT has been added to T/HIS. This menu can be used to blank/unblank curves and to modify the styles of curves.
- The new quick-pick menu can be used to apply options to either single curves by clicking on them or to multiple curves by dragging out an area using the mouse.
- All curve functions that require a single curve as input (i.e. C180 filter) can be accessed via the quick-pick menu. Output options are available to either overwrite the input curve or to generate a new curve.
- The position of a graphs left, right, top and bottom axes can now be modified by interactively dragging them to the required position.
- The graph legend area can be positioned anywhere within the graph.
- In menus that allow curves to be picked interactively curve picking is now enabled by default. As each curve is picked in it highlighted in all of the graphs it is currently displayed in. If a function requires 2 curve groups as input then the active curve group for picking can be toggled using the shortcut key V.
- Curves can now edited interactively by dragging points on the screen as well as by typing in new curve values. Both the original and edited curves are displayed in any graphs that the original curve is currently displayed in.
- New interactive curve editing options also include the capability to add new points, split curve segments and to delete points.
- Support for new LS971 output options has been added to both the ASCII and LSDA file readers.
- Static images can now be generated using GIF and PNG formats.
- The Postscript driver has been rewritten so that it now reproduces the contents of each graph exactly using screen dumps. A PDF output option has also been added.
- All output images (including Postscript and PDF) can be generated at either the default screen resolution or at 2 and 4 times the screen resolution.
- All output images can now contain a single graph, all graphs or a “page”.
- Images can now be read in and displayed as the background in graphs. Each graph can have its own background image or all graphs can use the same background image.
- By combining the background image option, the capability to reposition curve axes and the new interactive curve editor it is possible to digitise curves by reading the curve in as a background image.

- The range of predefined colours in T/HIS has been increased from 14 to 30. In addition to the 30 predefined colours a further 6 user defined colours can be defined via the preference file.
- New preference options & command-line
- FAST-TCF has been enhanced with new commands for creating and positioning multiple graphs and pages. Other enhancements include options for specifying the new colours, axis formats and image output options.

## 4 Bugs Fixed in Oasys T/HIS 9.3 RC2

- Case 10936  
In T/HIS 9.3 RC1 the entity selection menu could disappear if the options to display common IDs was selected with multiple models and an entity type with no common IDs was selected. This has been fixed in T/HIS 9.3 RC2 so that the entity menu is now displayed with nothing listed in it.

- Case 10912  
T/HIS 9.3 RC1 could crash if a FAST-TCF script contained the old pre 9.3 image output options and the curve styles were specified as part of the image command.

```
jpeg test.jpg curve_1 curve_2 title ....
```

would be fine but

```
jpeg test.jpg curve_1 curve_2 style XXXXX title ....
```

could cause a crash. This has been fixed in 9.3 RC2.

- Case 10905  
In versions of T/HIS prior to 9.3RC2 FAST-TCF scripts written out by T/HIS that contained commands to read stress or strain values for Shells or Thick Shells from the 'top', 'middle' or 'bottom' surface would not be written correctly. Instead of the command to set the required surface to 'top', 'middle' or 'bottom' the surface would be set to '-1', '-2', or '-3'. This has been fixed in 9.3 RC2.

If a script with this error is edited and -1 replaced with top, -2 with middle and -3 with bottom then the script will play back correctly.

- Case 10809  
In T/HIS 9.3 RC1 if the min/max values were displayed on curves then they were always drawn in white. If the background colour was changed to white then they would disappear. In T/HIS 9.3 RC2 the display of min/max values has been changed so the 'Foreground' colour by default. In addition to this change the FAST-TCF syntax to display the min/max values has been modified as previously it was impossible to highlight the min/max point without displaying the values at that point. The new FAST-TCF options are

```
setup show min on      - To highlight the minimum value
setup show max on      - To highlight the maximum value
setup show xmax on     - Display X value at maximum
setup show xmin on     - Display X value at maximum
setup show ymax on     - Display Y value at minimum
setup show ymin on     - Display Y value at minimum
```

Another option to set the colour used for values has also been added

```
setup min_max colour
```

The colour can be any of the standard colours, Foreground, Background or Curve. If Curve is used then the min/max values for each curve are drawn using the colour of the curve.

- **Case 10792**  
In versions of T/HIS prior to 9.3 RC2 the maths functions TAN and ATAN were written incorrectly to FAST-TCF scripts generated by T/HIS as TAB and ATAB. If a script with was edited to change these back to TAN and ATAN then it would play back successfully. This has been fixed in 9.3 RC2.
- **Case 10780**  
In T/HIS 9.3 RC1 the Quick Pick undo option would not work for operations using 'Quick Pick Only'. This has been fixed in T/HIS 9.3 RC2.
- **Case 10726**  
In T/HIS 9.3 RC1 FAST-TCF scripts generated by T/HIS would not correctly record curve line styles if the option not to draw lines through curve points was used in the 'Display' menu. In version 9.3 RC2 two new FAST-TCF commands have been added that can be used to control this option

```
setup line on  
setup line off
```

- **Case 10702**  
In T/HIS 9.3 RC1 curves were not highlighted correctly if they were selected as input to a curve MACRO function. This has been fixed in version 9.3 RC2 and the 'Pick Visible' option has been enabled by default.
- **Case 10701**  
In T/HIS 9.3 RC1 it was possible to select pages that didn't contain any graphs. In version 9.3 RC2 only pages containing graphs can be selected.
- **Case 10680**  
T/HIS 9.3 RC1 could crash if the total length of a curve label (including the model prefix) exceeded 100 characters. The crash would typically show up as an error message as a FORTRAN I/O Error with the last format statement being (6a). This has been fixed in 9.3 RC2.
- **Case 10677 and 10440**  
T/HIS 9.3 RC1 could crash after dynamic viewing on HP-UX ITANIUM machines. This problem has been fixed in T/HIS 9.3 RC2.
- **Case 10676**  
If in T/HIS 9.3 RC1 the quick pick menu was used to select multiple curves by dragging out an area with the right mouse button then the selected curves would not be processed by any of the quick-pick Function options (e.g. invert, C180 ...) This has been fixed in T/HIS 9.3 RC2.
- **Case 10637**  
In T/HIS 9.3 RC1 the following error message could be generated in the console window if the Quick Pick menu was used to change the output of a quick pick function from '1st Free' to 'Overwrite'.

```
ERROR in SM_ARM_PICK: Box id out of range 0
```

This has been fixed in version 9.2 RC2.

- **Case 10614**  
In T/HIS 9.3 RC1 the option to change the current page by typing a page number into the text box in the Global Command menu didn't work. This has been fixed in T/HIS 9.3 RC2.
- **Case 10610**  
In versions of T/HIS prior to 9.3 RC2 the option to read data using common ID's for multiple models could cause T/HIS to crash if the data was read from the LSDA (binout) database file. The crash could happen immediately during the read operation or from any time after that due to an internal memory overflow. This problem has been fixed in T/HIS 9.3 RC2.
- **Case 10608**  
In T/HIS 9.3 RC1 the number of columns specified for the legend was not written to FAST-TCF scripts. This has been fixed in version 9.3 RC2.

In T/HIS 9.3 RC1 setting the number of decimal places used to display axis values to 0 resulted in the default (3) being used. This has been fixed in version 9.3 RC2.

- **Case 10606**  
In T/HIS 9.3 RC2 the curve selection menus have been modified so that the 'All Visible' button now has two different options that can be toggled using a popup menu. The 2 options available are

'Visible (Page)'	-	Only select curves visible on the current page
'Visible (All)'	-	Select curves visible on any page.

- **Case 10582**  
In versions of T/HIS prior to 9.3 RC2 it was very easy to overwrite an existing FAST-TCF script by mistake. In version 9.3 RC2 the APPLY button is disabled until the user has selected either 'Overwrite' or 'New File' if the selected file already exists.
- **Case 10554**  
In versions of T/HIS prior to 9.3 RC2 the 'autoscale' command would not work correctly if a curve was either copied or moved to a new curve number using the popup menu in the curve manager and all other curves were then blanked/deleted. This has been fixed in 9.3 RC2.
- **Case 10551**  
In versions of T/HIS prior to 9.3 RC2 the CSV file reader would not read files containing labels with commas in the label. From version 9.3 RC2 onwards T/HIS correctly reads labels containing commas if the label is surrounded with double quotes.
- **Case 10522**  
Versions of T/HIS prior to 9.3 RC2 could crash if a LSDA binary file was converted to ASCII format and the LSDA file did not contain any GLSTAT data. This has been fixed in version 9.3 RC2.
- **Case 10493**  
In versions of T/HIS prior to 9.3 RC2 FASTTCF scripts generated by T/HIS containing the Automotive EXC command would incorrectly generate a command referencing a curve number instead of curve tag. This has been fixed in 9.3 RC2

e.g.                    operation exc 12 auto tag curve\_13  
should be            operation exc curve\_12 auto tag curve\_13

- **Case 10466**  
In T/HIS 9.3 RC2 the SWFORC ASCII file reader could error when reading SWFORC ASCII files generated from the LSDA (binout) file using either the free L2A program supplied by LSTC or the conversion option in T/HIS. The error would occur when spotwelds failed and was caused by the file being generated using a format that was different to that produced directly by the SMP version of LS-DYNA. In T/HIS 9.3 RC2 the SWFORC reader has been modified to cope with the additional formats.
- **Case 10465**  
In T/HIS 9.3 RC1 the ASCII file reader for RCFORC would fail if contact ID's greater than 9999 were used and the RCFORC file was generated using the 'l2a' program supplied by LSTC to convert an LSDA file into ASCII files. This has been fixed in version 9.3 RC2
- **Case 10439**  
In T/HIS 9.3 RC1 selecting curves for quick pick operations by area using the mouse could lead to the program getting stuck into a mode where all mouse movements resulted in spurious rectangles being drawn. This often occurred if the mouse button was released outside the graphics window that the area selection was started in. This problem has been resolved in 9.3 RC2.
- **Case 10436**  
In versions of T/HIS prior to 9.3 RC2 T/HIS could read data incorrectly from the LSDA (binout) file for elements if some of the elements selected for output to the ELOUT file were deleted during the analysis.  
T/HIS would correctly detect that the data for some elements no longer existed and correctly read the data from the file but it would write the data to the wrong curve ID if output for multiple elements was read at the same time. If results for only one element were read at a time then T/HIS would generate the correct curve. This has been fixed in T/HIS 9.3 RC2.
- **Case 10411**  
In versions of T/HIS prior to 9.3 RC2 the curve menu that is used by any of the automotive functions like ASI where multiple curves have to be picked as input to a function did not display model prefixes and wasn't sorted into the same order as the Curve manager window. This has been fixed in T/HIS 9.3 RC2 and screen picking curves has also been enabled in this menu.
- **Case 10354**  
In T/HIS 9.3 RC1 the new colour definitions added to T/HIS 9.3 are not correctly processed in FAST-TCF scripts. This had been fixed in 9.3 RC2.
- **Case 10289**  
T/HIS 9.3 RC1 would not read \*DEFINE\_CURVE cards correctly from KEYWORD files if the curve data was formatted using the comma separated input instead of the standard keyword format column widths. T/HIS 9.3 RC2 will read both input formats correctly.
- **Case 10221**  
In versions of T/HIS prior to 9.3RC2 a macro file directory specified in a users local preference file would overwrite the one specified in the system preference file. From 9.3RC2 onwards the macro directory specified in each of the 3 possible preference files is stored and processed separately.

- Case 10220  
In versions of T/HIS prior to 9.3RC2 the second curve input for the OPERATE COMBINE function would not be converted correctly if a variable was used in a FAST-TCF script or in a MACRO function.

## 5 Bugs fixed in Oasys T/HIS 9.3 RC1

- **Case 10036**  
In T/HIS 9.2 the \$RUN\_NAME and \$RUN\_TITLE variables would not be set correctly if FAST-TCF was run in batch mode with a model list file. This has been fixed in version 9.3.
- **Case 10026**  
In T/HIS 9.2 if multiple curves were input from the KEYBOARD and then written out to a FAST-TCF script the curve tags were applied to the wrong curves.
- **Case 9861**  
In version 9.2 of T/HIS the data extracted from the THF for Part Groups could be wrong if the Parts had not been defined in order of increasing ID. This has been fixed in version 9.3.
- **Case 9807**  
In version 9.3 of T/HIS the 'ERR' function now generates an output curve which is the difference between the 2 input curves. The values reported by the 'ERR' function are stored with the new output curve and can now be accessed from within FAST-TCF as follows using the property words (max\_err, pc\_err, pc\_max\_err, av\_err, av\_max\_err, area\_err, err)

tab test.txt curve_1 max_err	Maximum Difference & time
taba test.txt curve_1 pc_err	Max Difference as %age
taba test.txt curve_1 pc_max_err	Max Difference as %age or peak reference
taba test.txt curve_1 av_err	Average Difference
taba test.txt curve_1 av_max_err	Average Difference as %age or peak reference
taba test.txt curve_1 area_err	Area Weighted Difference
taba test.txt curve_1 err	Error Value
- **Case 9802**  
In version 9.2 of T/HIS additional uncommented lines would be written out to a curve file if the NASTRAN Table D1 format was used and more than one curve was written to the file. These additional lines would then have to be removed before NASTRAN could read the data. The additional uncommented lines are no longer written out in version 9.3.
- **Case 9791**  
In version 9.3 a new 'tabcr' command has been added to the FASTTCF options. This option is the same as the existing 'tabc' command except that it also forces the next output onto a new line. 'tabc' and 'tabcr' can be mixed in a script so that multiple output can be appended to a line using 'tabc' and then a new line can be started by using 'tabcr' for the last output on the line.
- **Case 9785**  
In version 9.2 of T/HIS results for \*CONSTRAINED\_JOINT\_STIFFNESS... joints are not read correctly from the JNTFORC ASCII file, all the results are reported as 0.0. This has been fixed in 9.3.
- **Case 9687**  
In version 9.2 of T/HIS the CSV and CSV2 FAST-TCF output options only expect a single curve input. A curve tag with a wildcard 'curve\_\*' can be used to specify multiple curves but there is no easy way to select a subset of curves.

In version 9.3 multiple curves can be specified for both of these commands.

- **Case 9686**  
In version 9.2 of T/HIS the 'Key in' option in the curve selection menu correctly highlights curves in the menu but the curves are not selected for output to a file. This has been fixed in version 9.3
- **Case 9549**  
Fix for bug 9459 - rewritten routines for reading SLEOUT and RCFORC ASCII and binout files. The CONTACT->ENERGIES option now has one component 'TOTAL ENERGY'. If a contact surface has energy values for both the Master and Slave sides then the values are summed. If the contact only has a slave side value (single surface contacts) then that value is reported.
- **Case 9502**  
In versions of T/HIS prior to 9.3 the first point in the curve generated by the rolling average operation was always set to zero. In version 9.3 T/HIS correctly sets the first point to the same value as the input curve.
- **Case 9491**  
In version 9.3 of T/HIS the minimum and maximum values for the CLIP function are tested when the APPLY button is pressed to see if the minimum is larger than the maximum. If the values are defined the wrong way round then the values are swapped and the menu updated before the function is applied.
- **Case 9490**  
In T/HIS 9.2 if the zoom shortcut 'Z' is used while using the Point function the Point menu is still displayed after the zoom operation has completed but the point function is no longer active. In T/HIS 9.3 the point function is automatically restarted after the zoom operation is finished.
- **Case 9488**  
The inputs for the CLIP function have been changed so they are now displayed using 7 significant figures.
- **Case 9477**  
If in version 9.2 of T/HIS a FAST-TCF script was run that attempted to reference a curve that was not defined within the script then the following error message was generated which was not very clear.

```
Number exceeds the current curve count:
```

In version 9.3 I have modified this error message so that it now displays the following Attempt to reference a curve not defined in this script. If you want to use this script to process curves that you select interactively then you should convert this script to a MACRO function. See section 5.13 of the manual for more details.

- **Case 9474**  
Version 9.2 could crash on some platforms if the minimum and maximum axis values were set the same. In version 9.3 (and 9.2.4 onwards) a minimum or maximum value for an axis is only applied if it is not the same as the other value.

- **Case 9384**  
In version 9.2.x of T/HIS LSDA files would be ignored if a LS-DYNA MPP run did not output a binout0000 file. In version 9.3 T/HIS checks for any binout file produced and opens the first one it finds.
- **Case 9381**  
In version 9.3 a new 'tabcr' command has been added to the FASTTCF options. This option is the same as the existing 'tabc' command except that it also forces the next output onto a new line. 'tabc' and 'tabcr' can be mixed in a script so that multiple output can be appended to a line using 'tabc' and then a new line can be started by using 'tabcr' for the last output on the line.
- **Case 9241**  
In previous versions of T/HIS if a FAST-TCF script was made containing curves generated with a function like NIJ then the script would contain 1 NIJ command for each of the curves and the resulting plot would then contain multiple copies of curves. In version 9.3 only one NIJ command is correctly generated in the FAST-TCF script.
- **Case 9207**  
T/HIS 9.2 issues a warning if it thinks you are trying to filter a curve which is in ms instead of seconds. If you try and filter multiple curves then the same warning is displayed for each curve. In T/HIS 9.3 there are now 2 new options 'Always Ignore' and 'Always Convert'.

If 'Always Ignore' is selected then T/HIS will no longer issue the warning message and all curves will be filtered without any conversion.

If 'Always Convert' is selected then T/HIS will no longer issue the warning message and any curves that T/HIS thinks should be converted will automatically be converted from ms to s before filtering.

An option to reset this has also been added to the setting menu to reset this.

- **Case 9074**  
Version 9.2 of T/HIS could crash if an old style command file was replayed which was recorded after some menus has already been setup. On playing the command file back T/HIS would crash if a variable which was setup up in one of the menus that was not recorded in script was not initialised.

The following script would crash

```
Read      ....      31      3      2      3      0      0      0      0
Read      ....      31      3      2      3      0      0      0      0
M1:Node10000132 : 11      4      3      1      0      0      0      0
```

as it tried to access a Node 10000132 without selecting NODES first. If the script is modified as follows

```
Read      ....      31      3      2      3      0      0      0      0
Read      ....      31      3      2      3      0      0      0      0
Nodes     ....      32      3      2     153      0      0      0      0
M1:Node10000132 : 11      4      3      1      0      0      0      0
```

to select NODES before node number 10000132 then the script runs.

T/HIS 9.3 has been modified in a number of routines to add error traps to stop these crashes.

- Case 8993

In version 9.3 of T/HIS the Automotive 3ms clip function has been modified so that it no longer generates a separate output curve containing the clipped curve region. From version 9.3 onwards the clip region is marked on the input curve along with the value. This change has been made to make the 3ms clip function consistent with the HIC function and to correct a bug that prevented the 3ms clip value from being displayed when a FAST-TCF script was replayed.

- Case 8912

Added options to specify a T/HIS curve file on the command line.

<code>-curve_list=filename</code>	where 'filename' is a file containing a list of T/HIS curve files to be read
<code>-curve=filename</code>	'filename' is a single file containing a T/HIS format curve
<code>-bdf=filename</code>	'filename' is a single T/HIS BDF format file

You can also specify a T/HIS command file by giving the filename as the last item on the command line. If the filename at the end of the command line has a '.cur' extension it is assumed to be a T/HIS curve file, '.bdf' is assumed to be a BDF file and anything else is used as the name of a model file to open.