

## **MultiSurf 5.0.1 Build 170 release notes**

Build 170 is being released primarily to fix a set of bugs that have come to light since the Sept. 1, 2004 release of MultiSurf 5.0 (build 168). (The 4-digit codes are the identifying bug report numbers in our bug database.)

### **#7565 Bugs in Create/ Copies dialog**

There were two bugs related to naming of copies: (1) Sometimes the dialog would refuse a perfectly legal choice of names, saying they were already in use. (2) When the dialog comes up, the "Specify names" checkbox would be checked, but the 2 controls for root name and starting index would be grayed out.

### **#7584 Needless invalidations during editing**

Any edit of an object -- including such innocent changes as name, user data, layer, color, and visibility -- was causing invalidation of all the descendants of the object. This could result in slow performance, especially if the object had a large number of descendants (which would all need to be recomputed before the view could update).

### **#7590 Formatting of unit weights**

Version 5.0 provided more decimal places for unit weights in the weight schedule, depending on the model units, but the additional places were not shown during editing, or maintained when the model file was written out.

### **#7596 Crash editing multiple surfaces**

Certain edits of a set of selected surfaces resulted in a crash; for example, changing a group of surfaces to a turned-off layer could do this.

### **#7599 Missing contours on narrow TrimSurf**

A contour cutting a narrow enough portion of a TrimSurf could be missing. In this case the TrimSurf was a chine flat, and the missing contour cut prevented the XContours from making valid offsets for hydrostatics.

### **#7600 Beads at wrong places on SubCurve.**

A programming error resulted in incorrect locations for IntBeads and XYZBeads hosted by a SubCurve.

### **#7601 Erratic contour passing close to a pole**

A contour passing through or close to a surface singularity could have spikes or "bloops" in smooth wireframe mode, resulting from incorrect derivatives.

### **#7602 Crash during creation of IntRing**

This crash occurred during creation of an IntRing, while selecting the supporting snake by picking in the wireframe view. There are likely other combinations of entity and

support that would behave similarly. (The program was trying to evaluate the IntRing before its data was complete.)

### **#7604 Display of surface breaklines in wireframe view**

This is a deliberate change of behavior for the program in wireframe view (smooth wireframe mode only -- Settings/ Preferences/ Smooth wireframe). Degree-1 breaklines are now drawn along with other  $u=\text{constant}$  and  $v=\text{constant}$  lines, but with a somewhat wider line to make them stand out. This is to help the user be aware of the presence of breaklines. Breaklines in surfaces are perfectly legal and are supported in principle; but to date, they do cause some problems, such as irregularities where snakes and contours cross a breakline.

### **#7604 Warnings for surface breaklines**

Degree-1 breaklines in a surface trigger a warning at the time of creation, and when opening a model file. This is to help the user be aware of the presence of breaklines. Breaklines in surfaces are perfectly legal and are supported in principle; but to date, they do cause some problems, such as irregularities where snakes and contours cross a breakline.

MSurf 50 Build 170 Release notes.doc

## MultiSurf 5.0.2 (Build 171) release notes

Build 171 is being released primarily to fix a set of bugs that have come to light since the Oct. 27, 2004 release of MultiSurf 5.0.1 (build 170). A few new features are also noted. (The 4-digit codes are the identifying bug report numbers in our bug database.)

### **#6658, #7635 PolySurf continuity error**

The component surfaces of a PolySurf need to join with C0 continuity, i.e. the two edges coincide *and* have the same parameterization along the junction. However, this has not previously been enforced. In "Smooth Wireframe" view, the visible result of not satisfying continuity is long spikes originating at the junction. With "Smooth Wireframe off, there is often no visible anomaly in the surface. For this release we have added a new error condition (error code 478, PolySurf has discontinuities between its component surfaces) to enforce adequate continuity.

### **#6885 Variable format for Mass Properties**

Lengths, areas and volumes are now formatted with a variable number of decimal places, depending on the magnitude of the quantity, providing 3 to 4 significant figures regardless of model units. Also, the centroid coordinates are formatted using the model *places* setting (Settings/ Model).

### **#7609 ProjSnake error details misleading**

The t position noted in the "Error details" message for ProjSnake and ProjSnake2 was often incorrect, pointing to a location unrelated to where the actual projection failure occurred.

### **#7611 Triangles don't show in TrimSurf symmetry images**

With Visibility option "triangles (16)", the triangles would appear only on the "real" object and not on the symmetry images. This has been corrected.

### **#7612 Missing Contour on TrimSurf**

Under some conditions, portions of a contour cut on a TrimSurf would be missing. (The previous fix made for #7599 turned out not to cover all cases.)

### **#7614 Command to export PolyArc DXF**

There is a new command File.Export2D.DXF-PA, which enables DXF export of polyarcs through OLE automation.

### **#7616 DXF PolyArc export corrections**

A complete circle (type-3 arc) was missing altogether from polyarcs exports. In addition; some short arcs were being exported as straight lines.

### **#7617 Transformation of FramePoints**

For release 5.0.1 there was a change in the way FramePoints respond (or fail to respond) to Scale and Shift transformations. However, this change was found to cause anomalous results in other situations, so for release 5.0.2 the change has been backed out.

### **#7619 IGES file won't import**

An IGES file from an unknown source (Autoship, Autocad, and Maxsurf were all named in the header), would not read into MultiSurf. The file was found to have zeroes in column 65 in the directory section, which according to the IGES standard is supposed to be blank. We modified MultiSurf's IGES import code to ignore the contents of column 65, and were able to read the file.

### **#7632 Bead-to-curve clearance doesn't return t**

Tools/ Clearance between a point and a curve tells the distance from the point to the closest place on the curve, and also shows the parameter value of that closest point. When the point involved was a bead on the same curve (or a ring on the same snake), the distance was correctly reported as zero, but the parameter value was shown as zero.

### **#7638 FRAMEPOS function added to formulas**

This function allows frame transformations of points in formulas.

Syntax: FRAMEPOS (*point, frame, index*); *index* is 1, 2 or 3, for the x, y or z frame coordinate.

### **#7641 CFreeze command broken for snakes**

The CFreeze command applied to a snake produces a CSnake supported by AbsMagnets. However, the syntax for the magnets was invalid, so they would all get syntax errors.

### **#7642 Variable editing requiring limits**

A coding error in the create/edit dialog for Variables was requiring lower and upper limits on all variables created interactively. This was not intended at all; lower limits and upper limits are both optional, as documented.

### **#7643 RelCurve made from a point**

A RelCurve is supported by (*curve, point1, point2*). A point can always serve as a curve, so a point is a legal (though not particularly useful) choice for the curve support. However, doing so caused various bad effects such as infinite extents and odd graphic displays; probably crashes were also possible. These resulted from a division by zero in computing the exact NURBS representation of the RelCurve. The code was fixed by bypassing the division by zero. (The resulting RelCurve is just a straight line from *point1* to *point2*. The point chosen for the *curve* support has no effect.)

### **#7644 RelSnake made from a magnet**

This bug was similar to #7643, but because of differences between snake and curve calculations, it would crash every time. (The resulting RelSnake is just the same as a LineSnake from *magnet1* to *magnet2*. The magnet chosen for the *snake* support has no effect.)

### **temp #9 Can't use A as Formula name**

Because of an error in the Formula editing dialog, there was one name unavailable during Create/ Formula. If there was no object in the model named 'A', 'A' was the unavailable name. Trying to use it would lead to a spurious error on the created object.

### **Mass Properties functions added to Formulas**

Syntax: AREA( *surface*, *use\_sym*)

VOLUME( *solid*, *use\_sym*)

CENTROID( *object*, *use\_sym*, *index*)

In each case, *use\_sym* is a flag (0 or 1) specifying whether to include symmetry images in the area or volume. *index* is 1, 2 or 3, for the X, Y or Z coordinate of the centroid.

### **DevSurf code extensively revised for breaklines**

DevSurfs have previously had breaklines along the rulings originating at breakpoints of the basis curves. However, this did not account for the important degree-1 breaklines that occur at the ends of any cones, such as occur as portions of many DevSurfs.

Locating and including these breaklines required considerable revision of DevSurf code.

### **ExportIGESTrim command changed to Files.Export3D.IGES**

The ExportIGESTrim command was left over from a time when IGES export was under early development. It was different in syntax and options from most other 3D exports.

We replaced it with File.Export3D.IGES, with options similar to other exports.

## **MultiSurf 5.0.3 (Build 172) release notes**

Build 172 is being released primarily to update Crypkey protection software, and to fix a few recent bugs. (The 4-digit codes are the identifying bug report numbers in our bug database.)

### **Crypkey DLL update**

Build 172 was built with a new Crypkey DLL (Crypkey version 6.1). This change is in response to a spate of recent complaints of unexpected authorization denials.

Users may need to update their local Crypkey driver in order to authorize this MultiSurf version. Instructions for doing this are available on AeroHydro's main web page ([www.aerohydro.com](http://www.aerohydro.com)).

### **#7665, #7666 Breakpoint very close to surface edge**

A breakline that was very close to a surface edge caused a variety of anomalous display features, and a crash in Render View with "Mesh lines" option on. This breakline (on a RuledSurf, arising from a SubCurve support) was logically at  $u=0$ , and should have been excluded on that basis, but roundoff placed it at a very small positive  $u$ . Display anomalies included missing lines in wireframe view, black lines going from the surface to a corner of the view, and black shadings in Render view. Code was changed to prevent surfaces from having breaklines at parameter values of 0 or 1.

### **#7667 Formulas losing parentheses**

Because of an error in the code writing out the formula syntax, parenthesis pairs could be lost, resulting in a different formula. For example  $360 / (2 * N)$  would be written out as  $360 / 2 * N$ , and then would get a different result (900 vs. 36, for  $N = 5$ ). This affected Save, Undo, Redo, and editing of formulas involving / and - signs followed by parentheses.

### **#7668 Triangle size calculation in TrimSurf**

Part of the data for a TrimSurf is the requested number of triangles. When a TrimSurf's area was small compared with its basis surface, the application of this datum was incorrect, resulting in fewer triangles than requested.

### **#7670 DevSurfs getting spurious extra rulings**

Following the changes in DevSurf breaklines introduced in build 171 (version 5.0.2) a few examples came in of DevSurfs that got extra stray rulings, resulting in complex folds and tears. This was traced to errors in the new breakline code, and repaired.

### **Enhancement of LayerOn, LayerOff commands -- range syntax**

These commands were modified to allow groups of layers to be specified with a range, for example "LayerOn 0 2 16-24" or "LayerOn 0-3, 20-29"

MSurf 50 Build 172 Release notes.doc