

FEMAP v10.2.1 New Features and Corrections

Updates and Enhancements

GUI - Dockable Panes

Program File

- Added recording of tab changes in dialog boxes. Allows for cases where tab is changed, but nothing is changed within the tab prior to exiting the dialog box (PR 1823474)

Load and Constraints

- Enhanced Geometric Constraint Expansion to better handle situations where geometry-based and node-based constraints were expanded to the same node(s)

API

- Added Axis and TwoAxis methods to CSys API object
- Added NextExistingInSet method to Entity API object
- Added feGroupBoolean2
- Added support for End B shapes in the Get/Put methods of the Prop object
- Enhanced GFX graphics to now obey layer control

Corrections

General

- Corrected Undo files when deleting output with the "Go Fast" option. Previously, some undo files would remain and would not be deleted from the scratch directory after exiting FEMAP (PR 1822685)

Licensing

- Protected RefreshLicense and other functions from failing if the job was lost
- Corrected issue introduced with the addition of HP Itanium licensing that caused a problem when checking license info and using a Node-lock Any- Host license
- Corrected issue in the FlexLM dll that caused FEMAP to unexpectedly exit if "Show Users" was chosen, because it was not properly passing 64-bit time values

GUI - Dockable Panes

Model Info

- Corrected issue with Properties created by copying an existing property in the tree which used a "General" cross-section which referenced a surface. If either property was later deleted, the cross-section outline would be deleted from the property which still exists in the FEMAP model

Views

- Automatically turn off Model Data Contour display if no elements remain in the model (User must refresh screen). Previously, this would remain displayed and could not be turned off until new elements were created.
- Corrected issue which did not access to View Commands while in the "Tools, Measure..." commands and vice versa (PR 6482183)
- Corrected display of "element directions" for RBE3 elements. Arrows point towards "independent" nodes for all rigid elements now, not just RBE2 elements

Interfaces - Nastran

- Corrected issue where Non-Structural Mass was not being imported for PBEAMLs and PBARLs. These values were actually imported into FEMAP, but then overwritten by an internal calculation
- Corrected issue which caused the last line of data to not be read properly if an INCLUDE file ended with a wide-field Nastran entry
- Corrected issue for combined load and constraint sets. Wrong variable type was used causing an artificial limit of 255 referenced set and would cause FEMAP to unexpectedly exit
- Corrected issue where not all SPCADD and MPCADD (Nastran SPCADD/MPCADD Combination) entries would be exported if different constraint sets were specified in different subcases
- Corrected issue reading DLOAD combinations with more than 400 terms. Increased maximum terms to 4,500
- Updated Plate properties to have 12I/T3 and Ts/T values default to 0.0 if fields were blank in imported Nastran input file. Previously, other default values would be calculated from property values.

Interfaces - NX Nastran

- Prevented writing of MAT11 or MAT11 for 3D Orthotropic materials for Solutions 601 and 701 where they are not supported.
- Corrected issue where imported Connection Properties (Linear or glue) with same IDs as CBEAM or CBEND elements could cause renumbering of Connection Regions
- Corrected issue where rigid 2-D Edge connection Regions were being reordered. Also improvements to the reorder code so it will not force reordering if the Connection Region is simply defined in reverse.

Interfaces - Geometry

- Corrected an issue that prevented IGES files from being imported if the name of the Scratch directory contained spaces

Loads and Constraints

- Corrected issue which some geometric loads to be added incorrectly when two loads came together as a common location but were defined in different coordinate systems.

- Corrected issue where Bolt Preloads that were transferred from pre-V10 models via neutral files were incorrectly defined and could not be edited
- Corrected issue where Combined load sets (Nastran LOAD Combination) containing varying pressure loads on element face with corners and combined with scale factors other the 1.0. Produced incorrect values when using "Tools, Check, Sum Forces", "Model, Output, From Load", or "Model, Load, Combine" commands.
- Corrected issue where curve-based nodal loads would not be expanded correctly if nodes were on in a certain order on specific faces of 8-noded or 20-noded brick elements
- Corrected issue where internal counters where not being reset properly after a "File, Rebuild" for nodal heat generation loads
- Corrected issue with display of Beam distributed loads, which are now drawn at the shear center. Previously, they were always drawn at the neutral axis.
- Corrected issue where incorrect elemental heat generation and heat flux loads were being created when using a Data Surface or "Model, Load, Map Output from Model" command

Meshing

- Corrected an issue which caused FEMAP to unexpectedly exit if both the "Fast Tri" and "3-D Tri" meshers failed on a planar surface

Output and Post-Processing

- Corrected issue with "View, Advanced Post, Beam Cross Sections" to include axial cross term due to Iyz in calculation of stress values
- Corrected issue with "View, Advanced Post, Beam Cross Sections" to allow proper display of stresses on "tube" shaped beams
- Corrected issue where contour set to "Auto-Group" would become all one color (red) when toggling element thickness or offset on/off
- Corrected issue where elements were disappearing when "Cutting Plane" was on. Required "Window, Regenerate" command to have elements reappear

API

- Corrected issue with API method feMeshHexSolid() that in certain situations did not properly mesh solids with attributes when passing propID=0
- Corrected issue that prevented the Variant forms of the API Layup properties (vmatIID, vthickness, vangle and vglobalply) from working if you tried to specify more than 100 plies
- Corrected issue with feMeshSurface2 that caused the surface to not be meshed properly if surface did not already have mesh attributes set and user specified not to set default attributes
- Corrected issue with Prop object by copying an existing property which used a "General" cross-section which referenced a surface. If either property was later deleted, the cross-section outline would be deleted from the property which still exists in the FEMAP model
- Corrected issue with MaxNormalDeviation on Surface object to work properly for boundary surfaces

FEMAP v10.2 New Features and Corrections Updates and Enhancements

Windows 7

- FEMAP is now supported on 32-bit and 64-bit versions of Windows 7.

Views

- Added Connection and Coord Sys tabs to View, Visibility command.
- View Options: Labels, Entities and Color category: Added Curve/Surface Directions option controls the display of Parametric Directions of Curves and/or Surfaces. Replaces the Curve and Surface Accuracy option found in the Tools and View Style category in previous versions.
- View Options: Tools and View Style category: Clipping Planes option renamed Group Clipping Planes to differentiate between the clipping planes used in groups and the new Model Clipping Plane.
- View Options: Tools and View Style category: Added Model Clipping Plane option.
- View Options: PostProcessing category: Contour/Criteria Levels option. Modified and added options under Set Levels for Standard Colors.
- View Options: PostProcessing category: Contour Type option. Added “2..Match Output” option to Contour Type list. When option is selected, nodal output data will be plotted as a Nodal Contour, while elemental output data will be plotted as an Elemental Contour.
- View Options: PostProcessing category: Beam Diagram option. Added Scale % option to scale beam diagrams.

Analysis Manager

- Added “conditional text” to all Start Text and End Text buttons in Manual Control sections throughout the Analysis Set Manager.
- Increased width of Analysis Text window and added 8-character wide “field markers” to the top of the dialog box to aid in entering fixed field Nastran entries.

Connection Properties, Regions, and Connectors

- Added Look For option when using the Connect, Automatic command. By default, option is set to “1..Face-Face Only”, which means the command will only automatically find, then create “face-to-face” connections. Other options are “2..Edge-Face Only”, which will only automatically find, then create “edge-to-face” connections, while “0..All Connections” will find, then create both “face-to-face” and “edge-to-face” connections.
- Connection Regions defined with Curves or Nodes, using Output set to Nodes can now be used to create “edge” connection regions for an “edge-to-face” Connector..

Functions

- Added 11 new function types which are currently only used for output functions created by the Model, Output, Forced Response command.

- Added ability to choose a particular XY curve from a list when using the Get XY Plot Data command. Only used when multiple curves are displayed on a single XY plot.

GUI - Toolbars and Icons

New 10.2 Toolbars

- Added View - Simple Toolbar. Contains a subset of commands on the View Toolbar.

Panes Toolbar

- Added PostProcessing icon

Select Toolbar

- Changed “Property/Material Value” item on the “Selector Actions” menu of the Select Toolbar to “Model Data Value”. This was done because “Element Quality” values may now be used to select entities along with Property and Material values.

View Toolbar

- Added the Measure icon menu. Contains the six commands on the Tools, Measure menu.
- Added Clipping Plane menu item to the View Style icon menu. Submenu contains commands for toggling the “Model Clipping Plane” on/off (Clipping On), toggling which side of defined plane to “remove” from the display (Clip Positive Side), and specifying the “Model Clipping Plane” (Plane).

GUI - Dockable Panes

PostProcessing Toolbox - New for FEMAP 10.2

- Added PostProcessing Toolbox dockable pane. The PostProcessing Toolbox provides a single, consolidated location in the interface from which to postprocess results from an analysis. First, choose a “Style” from either the Deform or Contour tool, then use the unique set of options for that “Style” to create or change what is displayed in the graphics window. The toolbox itself allows changes to be made “on-the-fly” or when directed by the user.

Data Table

- Added an “Explicit Time Step” column when using the “Add Element Checks” command.

Model Info Tree

- Active entities in the Model Info Tree are now shown using “Bold” blue text.
- Added Visibility check boxes (on/off) for Coordinate Systems (User-defined only), Regions, and Connectors.
- Added “Show Selected, Hide Referenced Groups” to Group “Visibility check boxes” context-sensitive menu.

Entity Editor

- Added “Explicit Time Step” field to Element Quality section when an element is loaded in the Editor.

Meshing Toolbox

- Added the Feature Editing tool.
- Added the Geometry Editing tool.
- Added the Mesh Surface tool.
- “Auto Remesh” is set to “on” by default. Can be set to other options in User Interface tab of File, Preferences.
- “Expand Active Tool Only” is “on” by default. Can be turned “off” in User Interface tab of File, Preferences.
- Added button to clear “Show” of Curves or Surfaces in Feature Suppression tool.
- Added “Match Node(s)” option to Sizing Option section of Mesh Sizing tool, which mimics capabilities found in the Mesh, Mesh Control, Custom Size Along Curve command.
- Added “Elements” as a “Search For” option in the Locator.

API Programming

- Updated to new version API Programming tool, which now shows line numbers (which can be turned off) and changes some of the look and feel for more efficient use.

GUI - Entity Selection

- Changed “Property/Material Value” option on the “Pick” menu of the Entity Selection dialog box to “Model Data Value”. This was done because “Element Quality” values may now be used to select entities along with Property and Material values.

Interfaces - FEMAP Neutral

- Updated Neutral Read and Write for v10.2 changes

Interfaces - Nastran

- Added Defaults button to Nonlinear Control Options dialog box for Analysis Types “10..Nonlinear Static” and “11..Nonlinear Transient Response”.
- Added support for Structural Damping on each DOF for PBUSH (GEi fields) and PBUSHT (TGEIDi fields)
- Added support for PARAM, KDAMP
- Added support for PARAM, FZERO
- Added support for PDAMPT
- Added support for “Fluid Nodes” by setting CD field of GRID entry to -1
- Added support for writing “blank” Z1 and/or Z2 fields to the PSHELL
- Added support for “Nastran Equivalent Laminate” material, which generates multiple MAT2 entries.
- Added read support for GROUNDCHECK and WEIGHTCHECK

- Added read support for FREQ1, FREQ2, FREQ3, and FREQ4 (only reads first 2 FREQi entries in input file)
- Changed “Bulk Data Delete” entry for restarts from “/,1,999,999” to “/,1,9,999,999”
- Changed default Output Requests for Nastran Nonlinear Static Analysis to include Element Forces.

Interfaces - NX Nastran

- Added support for BLSEG and BCPROPS to support edge-to-face glue.
- Added support for the TSTART and ATSMASS options on NXSTRAT entry.
- Added support for Minimum Acceleration (5th Line of NAVSHOCK File), Unit Conversion -Force (10th Line of NAVSHOCK File), and Unit Conversion - Acceleration (11th Line of NAVSHOCK File) options for DDAM analysis.
- Added support for MAT11 and MATT11 entries for 3D Orthotropic Materials when referenced by solid elements.
- Added support PARAM,WMODAL
- Added support for ENFMOTN system cell. Value 0 = “Constraint Mode”, 1 = “Absolute”, 2 = “Absolute, Viscous Damping”.
- Added support for CPLSTN3, CPLSTN4, CPLSTN6, and CPLSTN8 Plane Strain Elements via formulation.
- Added support for CPLSTS3, CPLSTS4, CPLSTS6, and CPLSTS8 Plane Stress Elements via formulation.
- Added support for reading CDDATA from Mode Tracking Method 2. Also, fixed import of CDDATA when using Mode Tracking Method 1.

Interfaces - MSC/MD Nastran

- Added Support for PARAM, ENFMOTN. ABS = “Absolute”, REL = “Relative”.

Interfaces - NEi Nastran

- Added support for MAT12 and MATT12 entries for 3D Orthotropic Materials when referenced by solid elements.
- Removed default values from Nonlinear Control Options dialog box for Analysis Types “10..Nonlinear Static” and “11..Nonlinear Transient Response”,

Interfaces - ANSYS

- Added support for BEAM188 element type. Set using Formulation.
- Added support for SECTYPE, SECDATA, SECCONTROLS, SECOFFSET and SECNUM entries for properties for BEAM188s and plate elements with offsets.
- Added support for PRETS179 element. Created as a Bolt Preload in FEMAP.
- Added ability to write pressures specified from property card for tube elements.

Interfaces - ABAQUS

- Added support for reading *EQUATIONS defined using NSETS.

Interfaces - LS-DYNA

- Added support for membrane, plate, and plane strain elements with offsets via *ELEMENT_SHELL_OFFSET
- Added support for materials “81..LS-DYNA Plasticity with Damage”, “89..LS-DYNA Plasticity Polymer”, “91..LS-DYNA Soft Tissue”, and “181..LS-DYNA Simplified Rubber/Foam” in “Other Types”.
- Updated default formulation for beam elements from “2..Belytschko-Schwer Resultant” to “1..Hughes-Liu”. Beams with formulation set to “1..Hughes-Liu”, may now be oriented with a vector instead of a 3rd node and are exported as *ELEMENT_BEAM_ORIENTATION.
- Updated default formulation for 10-noded tetrahedral solid elements from “10..1 Point Tetrahedron” to “17..10 Node Composite Tetrahedron EQ 17”.
- Updated material type “66..LS-DYNA Linear Elastic Discrete Beam” to write MAT_LINEAR_ELASTIC_DISCRETE_BEAM instead of MAT_LINEAR_ELASTIC_BEAM
- Updated material type “67..LS-DYNA Nonlinear Elastic Discrete Beam” to write MAT_NONLINEAR_ELASTIC_DISCRETE_BEAM instead of MAT_NONLINEAR_ELASTIC_BEAM

Interfaces - Geometry

- Added support for NX 7.5, Solid Edge with Synchronous Technology 3, and Solid Works 2010
- Added support for Parasolid 23.0
- Added support for ACIS 21
- Added support for reading IGES files with no “Start Section”.

Loads and Boundary Conditions

- Added ability to specify a Coordinate System for “body loads” in the Create Body Loads dialog box

Materials and Properties

- Added support for MAT11 and MATT11 for NX Nastran - solid elements which use a 3-D orthotropic material.
- Added support for MAT12 and MATT12 for NEi Nastran - solid elements which use a 3-D orthotropic material.
- Added support for “Nastran Equivalent Laminate Material”, which writes multiple MAT2 entries with IDs higher than 99,999,999, can be created for Nastran. When exported, the material ID in FEMAP will have 100,000,000 added to it for “Membrane”, 200,000,000 for “Bending”, 300,000,000 for “Transverse Shear”, and 400,000,000 for “Membrane-Bending Coupling”. Typically, these materials created by a Nastran run and are only used on planar elements
- Added support to specify individual “Structural Damping” values for each DOF in the NASTRAN BUSH Property Values section of the Spring/Damper property, instead a single value for the entire property. Also, added the ability to make the “Structural Damping” functionally dependent for each DOF.
- Added support for “Force vs. Frequency” function for Damping in DOF Spring Property.

- Added check boxes for Top Fiber and Bottom Fiber in the Bending Only, Plate, and Plane Strain Properties. When off writes a “blank” to the Z1 and/or Z2 fields on the PSHELL for Nastran.

Tools

Parameters

- Added global Curve Facetting values for Angle Error, Chord Error, and Curve Factor into Tools, Parameters.

Check, Coincident Nodes

- Added options and improved the Tools, Check, Coincident Nodes command.

Check, Element Quality (formally Check, Distortion)

- Added “Explicit Time Step” Element Check

Measure Submenu

- Added Tools, Measure submenu. Moved Tools, Distance and Tools, Angle commands under Tools, Measure submenu. Also moved Tools, Mass Properties, Measure Curves and Tools, Mass Properties, Surface Area from Tools, Mass Properties submenu to Tools, Measure submenu.
- Added Tools, Measure, Distance Between Nodes and Tools, Measure, Angle Between Nodes commands.

Meshing

- Added ability to highlight points currently selected for 3-corner and 4-corner mesh approaches when using the “Mesh, Mesh Control, Approach on Surface” command.
- Added Merge Nodes drop-down check box to the various Tet Meshing commands.
- Added Allow Mapped Meshing check box to the various Tet Meshing commands.
- Added Allow Void Regions check box to Mesh, Geometry, Solids From Elements command, which allows meshing enclosed volumes which contain internal voids.
- Improved the “Post-Meshing Cleanup” option in the Automesh Surfaces dialog box to be able to recognize more patterns and mesh issues, then update and improve the mesh.
- Increased number of “custom” mesh locations on a curve from 160 to 325.

Output and Post-Processing

- Added View, Advanced Post, Beam Cross Section command.
- Added Model, Output, Forced Response command.
- Updated Model, Output, Process command.
- Added "Include Max/Min Absolute Value" option to the List, Output, Summary To Data Table command. If Include Max/Min Absolute Value is checked, then additional columns will be created displaying max/min values created using the absolute value of the data
- Updated View, Advanced Post, Contour Model Data command to plot “Element Quality” values on elements as a contour or criteria plot.

- Updated Select XY Curve Data dialog box of View, Select command to use drop-down lists to select Output Sets for From and To in the Show Output Sets section instead of entering an integer value.

Element - Rigid

- Updated the Rigid Element dialog box to be “tabbed” and have separate creation options for RBE1, RBE2, and RBE3 element types. Also, now support the UM DOF for RBE1 and RBE3.

User Interface

- Changed extension of FEMAP model files from *.MOD to *.MODFEM. *.MOD file may still be opened.
- Added “-INI filename” option to the command line options. Allows choice of a specific FEMAP .INI.
- Updated the Generation Options dialog box, which is used in many different commands which create copies of an existing entity. Replaced the Parameters Radio Button with the Color and Layer check box and renamed the section Match Original. Also, moved the Match Mesh Sizes, Loads, and Constraints check box into the Match Original section.
- Color of “suppressed” entities is now saved as a global switch. When an entity is suppressed, the specified “suppression” color will be used. When restored, the color will revert to the entity’s original color instead of the “active” color for that entity type.
- Added Modify, Update Other, Node Type command. Allows modification of “Node Type” for any number of selected nodes.
- Changed name of Tools, Check, Distortion command to Tools, Check, Element Quality. Updated references from “Distortion” to “Element Quality” or “Quality” several places throughout the program.

Preferences

Messages

- Added Max Repeated Errors (0=All) option.

Views

- Added Include Metafile Format option in Picture Copy section.
- Added Contour Palette option in Options section.
- Added Resolution button to Picture Save Defaults section.

User Interface

- Added Fast Output Delete drop-down to Menus and Dialog Boxes section.
- Added Meshing Toolbox section, which includes Expand Active Tool Only and Auto Remesh.
- Added Alternate Docking Symbols to Dockable Panes section.

Database

- Added Read/Write Test button to Database Performance section.

Geometry/Model

- Changed name of Element Distortion button to Element Quality.

Interfaces

- Added Create Groups from INCLUDE files option to Nastran Solver Write Options section.
- Changed the default for the Direct Output To option in the Nastran Solver Write Options section from “0..Current Directory” to “1..Model File Directory”.

API

- Updated the API Programming Window to use new version of WinWrap.
- Added NasModeDampOverall, NasBulkEnfMotn, NasBulkEnfMotnOpt, NasDynFzero, NasDynFzeroVal, NasDynWmodal, NasDdamForceConversion, NasDdamAcellConversion, NasNXStratAtMass, NasNXStratModexOld, and NasNXStratModexNew to AnalysisMgr Object.
- Added AMatrix, BMatrix, DMatrix, AInvMatrix, BInvMatrix, DInvMatrix, InPlaneProp, BendingProp, vAMatrix, vBMatrix, vDMatrix, vAInvMatrix, vBInvMatrix, vDInvMatrix, vInPlaneProp, and vBendingProp to the Layup Object
- Added DataSurface and vDataSurface to the LoadGeom Object
- Added BodyLoadCSys to the LoadSet Object
- Added xyz to the Node Object
- Added BeamDiagramScale, ClipPlaneOrigin, ClipPlaneNormal, vClipPlaneOrigin, and vClipPlaneNormal to View Object
- Added InitAnalysisCase for AnalysisCase Object
- Added InitAnalysisMgr for AnalysisMgr Object
- Added IsNonManifold, IsSmooth, TangentAtEnds, CurvatureAcrossEdge, and CloserPointToSurface for Curve Object
- Added Get and Put for DataSurf Object
- Added GetMinMaxEdgeLength for Elem Object
- Added Compute2 for Layup Object.
- Added GetVectorAtSingleNode for Output Object
- Added SelectIDInSet and AddNewRemoveCommonSet for Set Object
- Added FreeCurvesAsSet, Points, and PointsAsSet for Solid Object
- Added SortRemoveDuplicates for SortSet Object
- Added BoundingSize, ApproximateArea, MinRadiiOfCurvature, and CurveLoops for Surface Object
- Added MsgWndRepeatedErrors
- Added Pref_ResPrintMethod, Pref_ResPrintScale, Pref_ResCopySaveMethod, Pref_ResCopySaveScale, Pref_ResScaleWithWidth, Pref_ResScaleWithHeight, Pref_ResFixedWidth, Pref_ResFixedHeight, Pref_ResPenMethod, Pref_ResPenScale, Pref_ResScreenLogoScale, Pref_ResPrintLogoScale, Pref_ResCopySaveLogoScale, and Pref_DefContourPalette

- Added Pref_TbxExpandActive, Pref_TbxAutomesh, Pref_PaneAltDockSymbols, and Pref_FastOutputDelete
- Added Pref_OpenSaveMethod
- Added Pref_GroupIncludeFiles
- Added Info_FacetAngleTolerance, Info_FacetChordTolerance, and Info_FacetCurveFactor
- Added Info_SuppressedCurveColor and Info_SuppressedSurfaceColor
- Added feModifyRadialOffsets
- Added feAppUpdateModelBox
- Added feOutputProcessCopy
- Added feOutputProcessMerge
- Added feOutputProcessLinearCombination
- Added feOutputProcessRSSCombination
- Added feOutputProcessEnvelope
- Added feOutputProcessErrorEstimate
- Added feTextMultiPut
- Added feFileReadPatran
- Added feFileReadNeutral3
- Added feFileReadCatiaV5
- Added feFilePrint2
- Added feCheckElemDistortion2
- Added feGetElemDistortion2
- Added feCheckCoincidentNode2
- Added feMeasureDistanceBetweenNodes
- Added feMeasureAngleBetweenNodes
- Added feScreenPctPick
- Added feCurveOffsetCurveWasher
- Added feCurveSplitPointToPoint
- Added feCurveSplitPointToEdge
- Added feCurveSplitEdgeToEdge
- Added feConnectAuto2
- Added feSetToolbarSeparator
- Added feSolidCleanupAdvanced
- Added feRunIOTest
- Added DialogAutoSkip

Corrections

Windows 7

- Updated File Open/Save dialog for Vista/Windows 7 to properly set dialog title, and handle default extensions. Changed all default extensions to lower case so they do not add duplicate extensions if you type one manually (still will double if you type an upper case extension). Removed overrides to OK Button text - now always says Save/Open - for consistency across all Operating Systems

Views

- Corrected a problem that caused a hang/crash when you tried to renumber layers and one or more Views had multi-group visibility lists.
- Corrected problem that caused & characters in titles to show up as underlines in text displayed in the graphics window legends.
- Fixed Auto - Group for multi group in post legend listing of max deformation.
- Fixed Autoscale visible to account for entities which are not visible, based on visibility check boxes.
- Fixed problem with boundaries and eliminated surfaces both on, the surface color was the eliminated color - with boundaries off, it is the suppressed surface color. It is now the suppressed surface color.
- Fixed problem with multi group display of double sided contours
- Fixed spring elements to allow beam diagram display.
- Fixed File, Picture, Copy for arrow plots displayed as Deformed Vector Style
- Reduce the maximum number of contour levels from 256 to 255 to eliminate a problem in Render Graphics where the top level in the legend matched the bottom level if using 256 levels.
- Removed curve/surface color change in Feature Suppression - will be controlled in graphics only
- Removed "Reset Clipping" from page setup
- Updated contact and slideline to properly use visibility check boxes.

Functions

- Corrected a problem that caused "Get XY Plot Data" in Model->Function to fail if you had the "Include Text for XY Plots" View Preference turned off.
- Corrected the end of the "Linear Ramp" function to get the last value
- Fixed problem deleting a item from the function, after the item was deleted it was automatically added back since the x field was not cleared.
- Fixed problem with Default title string for Q Damping Function

Geometry

- Corrected a problem where a cylinder would split using a Global Plane, but not one specified by three points
- Corrected a possible crash in Geometry, Solid, Cleanup if slivers were removed and then match model scaling was done.
- Fixed a stitching problem on general bodies that caused a crash - fixed prior to the release of v10.1.1
- Now move surfaces of single-sheet bodies to the No Pick layer or delete them just like Boundary Surfaces when you use them as the base of an extrusion or revolution.
- Updated Modify, Move To; Modify, Move By; Modify, Rotate To; Modify, Rotate By; and Modify, Align by CSys commands to properly handle the situation where points on a solid were defined in the Coordinate System - previously points were moved which is invalid for Solid points

- Updated the Geometry, Rotate, Curve; Geometry, Reflect, Curve; Modify, Rotate To, Curve; Modify, Rotate By, Curve; and Modify, Align, Curve commands to automatically rotate/reflect any meshing attributes (cross section orientation and offsets) that were attached to the curve.
- Updated Geometry - Solid - Cleanup so the user can convert wire bodies they select in FEMAP to curves if they want to.

Graphics

- Fixed OpenGL non XY plot save picture

Groups and Layers

- Corrected missing value of 0..None for the "No Pick" layer in the Visibility dialog box.
- Corrected the "Add Connected Fillets" and "Add Tangent Surfaces" pick option in the standard entity selection dialog when it was used in a Group definition command. Previously worked in normal entity selection, but not in group commands.
- Corrected issue which did not entities to be added, removed, or excluded by color when the entity color of the selected entity was color = 0 (Black).

GUI - Dockable Panes

Entity Editor

- Fixed problem in entity editor when loading Layups.
- Fixed problem in entity editor saving materials where the standard material constants were not saved to the record.
- Fixed problem setting the Surface Bearing Load Orientation Vector in the Entity editor to ensure a unit vector was defined.

Model Info tree

- Changed Drag and Drop of files so that it properly processes like a normal file read/open command. Previously the model info tree was not updated when you dropped a results file.
- Prevented using "Previous Command" after every change in selection in the Model Info Tree. Previously, this could cause problems if you switched entity types and then chose previous. Crashed if you edited a function, switched to property and hit previous.

Meshing Toolbox

- Corrected a problem in Meshing Toolbox Locator that prevented finding Surface Spikes correctly
- Fixed problem using the Move Node Toolbox where mesh based facet projections failed when the element normals were not consistent.
- Immediately update the Model Info tree after the Meshing Toolbox Locator -> Create Group command rather than after the next command

Data Table

- Corrected a problem that caused some load values in the Report Window to be incorrect/zero if the Entity Editor window was not open

Program File

- Corrected playback of program files for single-selection list view controls (lists with icons), like in the Group, Load, BC, ... Create/Manage dialogs.

Messages Window

- Updated how text is written to the message window to minimize flashing

GUI - Entity Selection

- Converted rigid element picking to use lines of rigid element.
- Fixed box picking of femap and parasolid curves if clipping on and all inside option selected
- Fixed problem in area picking solids - they were not being marked but were being picked.
- Fixed highlighting of properties and materials for box picking.
- Fixed problem with picking coordinate systems by coordinate and around point, line and plane.
- Fixed problem picking spline curves with front or query picking. Also fixed issue when fast standard picking was "off".
- Fixed problem where selection was set to boundary only, then deleted all the boundaries in the model. This would make all surfaces not pickable because the switches were grayed in the dialog.

Interfaces - Neutral

- Corrected problem that prevented Neutral Read from reading library files.
- Fixed problem in neutral file for NEi NL Convergence flags. Patched the neu_101.exe shipped with 10.2 to junk the bad flags and add the correct variables to the end of the line.
- Fixed problem in renumbering. It was incorrectly renumbering the data points in a function and also would not stop reading until it read a -1 in another dataset
- Updated Neutral Write to include needed Global Ply information when you are writing just a Group to the Neutral File. Chooses all global plies referenced by included layups. Also works for Copy in Select Toolbar.
- Updated Output Data format (changed from Block 451 to 1051) for version 10.2 and above. On model with large output saw 40% reduction in Neutral file size and 20%-25% reduction in read/write times.

Interfaces - Nastran

- Changed bulk data delete card to 1, 99999999
- Corrected problems with writing SUPORT, SUPORT1, BSET, CSET, ASET, QSET, OMIT and MAT4 in Large Field Format.
- Corrected problem reading Random results files, PSDF output is now in the f06 file and we were not correctly skipping it.
- Fixed problem reading mixed SORT1, 2 output.
- Fixed issues saving the Solution Strategy Overrides in the analysis set.

- Fixed problem in dynamics writing the static portion of the load when using the "Write Dynamic Load using LOADSET/LSEQ" option
- Fixed problem reading a TABLED2 where the function would be set as the FREQ in the Analysis Manager dynamic solution frequencies.
- Fixed problem reading DLOAD scale factor for response spectrum generation.
- Fixed problem reading frequency response output when a 0.0 solution frequency was defined.
- Fixed problem reading LOAD combinations where the load set id was the same as the referenced set.
- Fixed problem reading MAT1 mass if a MAT4 card also existed and WTMASS factor was used. The WTMASS factor was applied when the MAT1 was read then again when the MAT4 was read.
- Fixed problem reading of METHOD and CMETHOD if extra cards were present that were not activated by the case control.
- Fixed problem reading .op2 design optimization output when the design variables did not exist in Femap.
- Fixed problem reading SPC/MPC ADD combinations when the set ids were the same as the referenced sets.
- Updated output to not transform random nodal results unless user pref CalcRandomResults has been set.
- Updated ASSIGN statements that could be too long (> 72 char) so they split onto multiple lines
- Updated Nastran Case Control reader to support reading various commands with or without equals and with varying spacing

Interfaces - NX Nastran

- Fixed problem reading nonlinear stress from SOL 601 when corner output was requested. SOL 601 is writing values for sigma z and causing the Femap Standard vector calculation to use the 3D calculation.

Interfaces - MD/MSC Nastran

- Updated HEXA, PENTA, TETRA OES datablocks for MSC Nastran ONLY. 2008 r1 and later have two extra words in these data blocks.

Interfaces - LS-DYNA

- Corrected problem skipping unsupported ALE materials which caused Femap to get out of sync.
- Removed "implicit solver" check box from dialog box. Now set via an Analysis Type.

Licensing

- Changed Network Licensing to give a more descriptive message when no license file has been specified and automatically transfer to the dialog to specify it.

Loads and Boundary Conditions

- Changed the PartialCurveLength functions to always return the shorter distance around a FEMAP Circle curve, which was causing an error in some cases of Expand Load when element edges hit the node at the 0.0/1.0 parameter
- Corrected a problem that caused total loads on curve-only boundary surfaces to not expand because these surfaces have no area.
- Corrected a problem that caused variable geometric loads along curves that varied using either the function or interpolation multiplier methods and that produced elemental loads (like pressure) to expand to zero load.
- Corrected a problem that could cause bearing loads that expanded to nodes that were very close to, but not at 90 deg., to have a zero value rather than being skipped.
- Corrected a problem that occurred when you edited a load definition of an elemental face-based load, and defined the updated load using a data surface. Previously, the first load in the definition did not get updated to the data surface values. Corrected prior to release of v10.1.1
- Enabled placing Surface-based Convection and Radiation loads on the back faces of plate elements, just like Element-based loads. Previously this was available in the "Advanced Thermal" interface, but not the others. Also corrected a problem that caused these loads to always be expanded to the back faces, whether or not this flag was turned on (problem was only if you were in Advanced Thermal interface).
- Fixed problem in expanding bearing loads on multiple surfaces where small surfaces would pick up a disproportionate amount of load - fixed prior to release of v10.1.1

Meshing

- Changed Surface mesher to not smooth mapped planar curve-only boundaries
- Changed Meshing error when the mesh approach points do not exist to now error and then reset the mesh approach.
- Corrected a problem in Fast Tri meshing where the element normals did not match the surface normal of a curve-only boundary surface.
- Corrected a problem that caused FEMAP to hang if you reflected a mesh using a nonzero trap size, and you used the "Match Loads, Constraints..." option, and there were nodal loads (like forces) on nodes that fell within the trap distance.
- Corrected a problem that caused tet-meshing of a large number of solids to slow down as you progressed through the list of solids
- Corrected a problem that did not properly assign offsets (if offsetting from top or bottom face) when meshing a surface from meshing attributes
- Corrected a problem with the v10 mesher that caused meshing curve-based boundaries to fail if the first and last curves of the boundary did not join at two coincident points rather than the same, single point.
- Corrected numerous problems with Interactive Mesh Editing where it did not properly set the Material Orientation angle for certain split patterns (Quad to Tri+Quad, Tri to 2 Tri, and Tri to 3 Quad). PR 1774578 reported angles of #NAN being set on some elements. That was not reproduced in the development environment, but this should fix it.

- Corrected problem that allowed the Edge Members command to create invalid elements if you picked a Plot Planar element type and had parabolic faces - Plot Planar elements can not be parabolic
- Corrected a problem that caused associativity of some nodes on a surface that is adjacent to another surface that has a suppressed curve with a shared endpoint to be improperly associated with both surfaces.
- Fixed problem when applying quad paving to a boundary surface that caused the paved element normals to be reversed, and potentially free edges to be created for parabolic elements, if inner holes in the surface had the same clockwise/counterclockwise orientation as the outer loop.
- Fixed problem that created a mesh with a zero property if no property attribute had been set.
- Fixed problem copying surface mesh attributes when combining surfaces into a boundary, if the boundary being created/modified has had mesh attributes initialized then don't overwrite them.
- Fixed problem splitting elements that were loaded with a elemental heat generation.
- Updated the 2D Fast-Tri mesher to loop back and tri multiple starting locations if it has a problem recovering all of the mesh edges. Also properly abort if edge recovery failed
- Updated the Geometry, Rotate, Curve; Geometry, Reflect, Curve; Modify, Rotate To, Curve; Modify, Rotate By, Curve; and Modify, Align, Curve commands to automatically rotate/reflect any meshing attributes (cross section orientation and offsets) that were attached to the curve.

Output and Post-Processing

- Changed title format for computed Laminate output from Lam# to Lam Ply#
- Corrected a problem which caused Global and Top/Bottom Ply data to be computed improperly (data from wrong ply) if on a laminate element the property ID was equal to the layup ID of the previous (lower ID) laminate element but the layup IDs of the two elements were different, and the Global Ply represented a different ply in the two layups.
- Corrected problem that showed that you were using the selected ply rather than top/bottom if top/bottom was selected and no global plies existed in the Laminate Options dialog
- Corrected a problem with the List->Output->Results To Data Table that would cause no output to show up if the selected output was complex and transforms were required.
- Fixed a problem in Output From Loads that caused the magnitude to be incorrect for nodal forces and other nodal vector loads when multiple loads were applied to the same node.
- Fixed problem unloading the XY PLOT request dialog box where in some cases you were not prompted to select the element group.
- Fixed Nodal contour using on the fly transformed results to use the corner data correctly.
- Fixed problem with expand complex for beam results for ends A and B.
- Remove check in op2 Read that caused data to be ignored if any "Put" to the database failed.

Tools

- Changed Merge Nodes command and automatic during meshing to merge two nodes across a connection, even if merge across connections is not set, if the two nodes are also both in the same connection region. This prevents self-contact regions from preventing meshing failures.

User Interface

- Changed wording on several dialog boxes from "Toggle Set Selection" and similar to "Toggle Selected Sets" to better reflect what the buttons do.
- Changed underlined characters in several dialogs that were previously &O, which interferes with program files <OK> - this will not be in the translated versions of v10.2
- Corrected a problem that could occur if you got an error message or a question dialog when working in a dialog. After one of these, if you displayed the context menu, the menus and toolbars would be enabled and you could start a second command while still in the previous one.
- Corrected a problem that caused FEMAP to crash if you assigned a program file to User Command (and then assigned it to a toolbar button), but in that command definition you used a lowercase .pro or .prg filename extension (uppercase worked fine and was the default if you picked the file)
- Fixed a problem caused when launching commands/dialog boxes from an undocked pane. If a second level dialog was created when that dialog ended focus was returned to the pane and not the first level dialog. In particular this caused Shift+Ctrl polygon picking to fail and in some cases crash.
- Fixed problem in tabbed dialogs that caused the mouse to be captured if the mouse was in a control when a dialog was initialized. It would stay captured until you left that control. Fixed prior to the release of v10.1.1
- Updated Font Size drop-downs in File Message Preferences and File Page Setup to contain a list of standard sizes.
- Updated Translators (Catia V4, ProE, STEP, IGES) to support reading files with multi-byte filenames.
- Updated using Ctrl+Z to enter a point location into another dialog, previously always entered in Global Rectangular, now enters properly in active CSys.
- Updated Load, Constraint, Output Set and Group Create/Manage made "New..." the default button if none exist.
- Updated Help, About so NX Nastran modules now show up in the licensed options list when using network licensing (previously only with a dongle).

Preferences

Database

- Corrected potential Undo problem where undo files were written directly to the scratch directory if you specified one in File Preferences, rather than being written to the model subdirectory which is in the scratch directory. This could cause conflicts if you had two FEMAP sessions with different models that had the same base filename.

API

- Changed the PartialCurveLength functions to always return the shorter distance around a FEMAP Circle curve.

- Corrected a problem that caused multiple toolbars created from the API function `feAddToolbar()` to be lost when you exited FEMAP and returned. Only the last toolbar was reloaded, others were lost. Worked properly if toolbars were created from the user interface.
- Corrected loading of API window so that it always loads the correct version of the type library when multiple versions of FEMAP are installed
- Corrected the `feFileReadParasolidOpt()` method. The `assign_color` boolean argument previously worked backwards.
- Corrected a problem with the `SelectID` method of the `Set` object that prevented it from choosing the 0..Global Rectangular coordinate system.
- Fixed api definition of `NasModeMassForm`
- Fixed a crash in `SortSet.Current()` if you called it when the `Sort` object was empty or the current index had not been set.
- Fixed a problem that prevented ranges of Coordinate Systems added by ID to be removed from a group when you called `RangeDeleteAll(-1)` which is supposed to clear all ranges.
- Fixed problem in data surface API object.
- Fixed API access to print and save preferences.
- Make sure that no file extensions get registered during startup with `/Register` if using an API-only license
- Updated `SelectAllOnLayer()` method so that it does not change the ID of the current object.

FEMAP v10.1.1 New Features and Corrections

Updates and Enhancements

Views

- Added All Views option to View, Rotate, Model command. When All Views is checked, the first action taken in the View Rotate dialog box will “sync” the views, then the views will move in unison until All Views has been unchecked.
- Added Filter and Clear All Filters buttons along with corresponding text field to View, Visibility dialog box. The Filter and Clear Filter buttons are available for use in the Group, Layer, Material, Property, and Geometry tabs of the Visibility dialog box. Simply enter text into the field, then click the Filter button. The list in that tab will be reduced to only those entries that contain the text you specified. You can now enter additional text, and press the Filter icon button again to further reduce the list. Press Clear All Filters icon button to return to the full list and start again. This can be especially useful in models which contain a large number of groups and layers.
- View Options: Labels, Entities and Color category: Force and Bearing - now controls display of Force and Bearing Force loads
- View Options: Tools and View Style category: View Legend - added Legend Style option “3..Titles, Model Name, Date” which will display the current time and date when the option is turned on along with the full model name and directory path.
- View Options: Tools and View Style category: Render Options - removed the Graphics Engine button.
- Added Geometry tab to View, Visibility command.

Analysis Manager

- Improved performance of the Preview window significantly.
- Added ability to hold down Alt key and left click the “expand/collapse” toggle to expand/collapse all of the “sub-branches” under the highlighted branch. Also, pressing the right arrow key while holding down the Alt key will “expand” all sub-branches, while pressing the left arrow with Alt will “collapse” all sub-branches.
- Enhanced Analysis Multiple capability for MSC Nastran to perform as expected.

Connection Properties, Regions, and Connectors

Connection Property - NX Linear tab

- Added “2..NXN 7.0 Method” to the “Refine Source” drop-down in the Common Contact (BCTPARAM) and Glue (BGPARAM) Parameters section. This is the default for NX Nastran 7.0.
- Updated Auto Penalty Factor option in the Common Contact (BCTPARAM) and Glue (BGPARAM) Parameters section to be “on” by default. This is the default for NX Nastran 7.0.

Functions

- Modified the Function Definition dialog box to be more intuitive. The Add button replaces More, Copy Function replaces Copy, Load from Library replaces Load, Save to Library replaces Save,

Copy to Clipboard replaces Put, and Paste from Clipboard replaces Get. Also, added the Update button which will take the currently entered values and update the XY pair currently highlighted in the list, as well as the Get XY Plot Data button, which will place the values from a XY Plot currently being displayed in FEMAP into the list.

- Added 4 new function types which allow the user to specify use of the TABLEM1 for Nastran when creating vs. Temperature functions. They are “19..vs. Temp (TABLEM1 Linear, Linear)”, “20..vs. Temp (TABLEM1 Log, Linear)”, “21..vs. Temp (TABLEM1 Linear, Log)”, “22..vs. Temp (TABLEM1 Log, Log)”

Geometry

- Added 3 “Align” options to the Geometry, Curve - From Surface, Pad command

Graphics

- Improved performance of undo/redo of surface facets.

Groups

- Added support for selecting Solids in the Group, Clipping... commands

GUI - Dockable Panes

Data Table

- Added “Select All” command on context-sensitive menu for the Data Table. Selects all rows currently in the Data Table regardless of which rows are currently highlighted.

Model Info Tree

- Added “Auto Create Definition” to context-sensitive menu for “Other Loads”. Allows you to highlight any number of loads and will automatically create new load definitions based on load type, load values, and additional load information (i.e., loaded face of an element). A new definition will be created for loads of the same type which have different values and/or different additional load information, which differs from the Create Definition command.
- Added ability to hold down Alt key and left click the “expand/collapse” toggle to expand/collapse all of the “sub-branches” under the highlighted branch. Also, pressing the right arrow key while holding down the Alt key will “expand” all sub-branches, while pressing the left arrow with Alt will “collapse” all sub-branches.
- Added Visibility check boxes for solids and sheet solids under the Geometry branch.

GUI - Entity Selection

- Added the ability to quickly access “Polygon picking” without choosing “Polygon” from the “Pick” menu in the Entity Selection dialog box. Simply hold down both the Shift and Ctrl keys at once and press the left mouse button to specify the first point of the selection polygon, then click additional points on the screen until the appropriate area is within the polygon.

- Added “Filter” and “ Clear All Filters” buttons and corresponding text field to the “Select One or More...” dialog boxes displayed when the Select From List button is pressed in the Entity Selection dialog box. Once text is entered into the text field click the Filter icon button to reduce the list to just those entries that contain the text you specified. You can now enter additional text, then press Filter icon button again to further reduce the list. Press Clear All Filters icon button to return to the full list and start again
- Added “Color” option to the “Pick” menu of the Entity Selection dialog box. This option allows you to select a color from the Color Palette, then adds all entities of the current type which are also the selected color to the selection list. Options also exist to Match Color, Match Pattern/ Transparency, and Match Line Style options which may turned on/off to either broaden or narrow the selection criteria. By default, all Options are on.
- Added “Property/Material Value” option to the “Pick” menu of the Entity Selection dialog box. This option allows you to choose entities in the model with values Equal to a specific material/ property value (i.e., Plane Element Thickness, Young’s Modulus, BEAM End A Area etc.) or entities which have values within a range (Above or Below a single value; Between or Outside two values) for a particular material/property entry.
- Improved “Copy as List” option on the “Pick” menu of the Entity Selection dialog box. Using this function on “Large” models containing several million nodes has gone from taking hours to taking seconds.
- Added “Filter” and “Clear All Filters” buttons and corresponding text field to all “Select ‘single entity’ from list” dialog boxes. An example of a command that would display such a dialog box would be Modify, Update Elements, Property ID, which displays “Select Property for Update”.
- Added graphical picking of Solids from the Solid Manager dialog box. Also, the displayed Loads Set, Constraint Set, Group (only when single group displayed), or View can be graphically chosen from the screen and then become highlighted in the appropriate Manager dialog box.

Interfaces - FEMAP Neutral

- Updated Neutral Write to use the proper versions of ACIS and Parasolid when exporting neutral files for older version of FEMAP.

Interfaces - Nastran

- Added support for PCOMPG entry
- Added support to read the QVOL, CONV, PCONV, QHBDY, QVECT, QBDY1, CHBDYG, VIEW, VIEW3D, RADM, RADMT, RADCAV, and RADSET entries
- Added support to read and write PARAM,SIGMA and PARAM,TABS
- Added support to write TABLEM1 entries when creating vs. Temperature functions using specific function types in FEMAP.
- Added ability to Skip NLPARM in the Nonlinear Control Options dialog box for the Master and all Subcases when creating an analysis set for a nonlinear analysis.

Interfaces - NX Nastran

- Added Support for BCTADD and BGADD entries for version 7.0

- Updated XDB import to only allow reading of regular stress or nonlinear stress, not both.
- Added support for Sussman-Bathe hyperelastic material
- Added support for Shape Memory Alloy material

Interfaces - Geometry

- Added support for CATIA V5 release 19
- Added support for NX 7
- Added support to optionally read or skip blanked/invisible/hidden parts when importing NX 6 assemblies
- Restored support for ACIS versions 7, 8, and 9, which had been removed in a previous version.

Layups

- Added ability to create PCOMPG instead of PCOMP entries for Nastran by specifying a Global Ply for every Ply in a Layup. If even 1 ply does not have a Globally Ply assigned, the PCOMP will be written instead.
- Added “Ok to Update Material and Thickness of Global Ply # in all Layups?” question to Edit Ply capability in the Global Ply Definition dialog box.

Loads and Boundary Conditions

- Added “Bearing Force” Load type to “Model, Load, On Surface” command.
- Updated “Force”, “Bearing Force”, “Moment”, and “Torque” load types from “Model, Load, On Surface” command to use “Total Load” option by default. Allows you to take a “total load” and spread it across all of the selected surfaces.
- Updated “Total Load” option for “Force” and “Moment” load types to “Model, Load, On Curve” command to use “Total Load” option by default. Allows you to take a “total load” and spread it across all of the selected curves.
- Added “Update Scale Factors” button to Referenced Load Sets for Nastran LOAD dialog box. Allows you to update the “For References Set” scale factor of all load sets currently highlighted in the list of Referenced Sets.

Materials

- Added support for Sussman-Bathe hyperelastic material to Other Types for solution 601 in NX Nastran
- Added support for Shape Memory Alloy material to Other Types for solution 601 in NX Nastran

Meshing

- Added automatically assigning corners to surfaces with more than 4 corners when using the “Mapped - Four Corner” approach of the Mesh, Mesh Control, Approach on Surface command.
- Added “Radial Offset Around Vector” option to Modify, Update Elements, Line Element Offsets command.

- Improved performance of midside node attachment significantly, especially on models with a large number of geometric entities (Surfaces, Curves, Points). This capability is used when creating new mesh on a solid, as well as when using the Modify, Associativity, Automatic command.
- Added Delete, Model, Mesh on Nodes command. Works exactly like Delete, Model, Mesh except nodes are selected instead of elements.

Output and Post-Processing

- Added support for importing of Nastran output files containing PCOMP results. PCOMP results are stored in Nastran output files using the Global Ply ID. Results are converted from Global Ply ID to FEMAP Ply ID.
- Updated View, Advanced Post, Contour Model Data command to only show property and material values in the “Other” lists which are actually available in the model.
- View Options: PostProcessing category: XY Curve 1-9 - Updated use of Scale factor for Log plots.

Element - Rigid

- Added “New Node At Center” method to Independent (Reference) section of Define RIGID Element dialog box. When this method is used, FEMAP will automatically create a node at “center” of all the selected Dependent (Nodes to Average) nodes, much like the “Spider” API command.
- Added “Convert” button to Define RIGID Element dialog box. This button is used to convert a rigid element to an interpolation element and vice versa. When converting from rigid element to interpolation, FEMAP will ask “OK to Convert only Translational Degrees of Freedom?”.
- Added “Distance Weighting” option to the Update Interpolation Element dialog box displayed after clicking the “Update” button in Define RIGID Element dialog box. This option will create different interpolation factors for highlighted Nodes to Average based on their distance from the Reference node. Multiple nodes must be highlighted in the list for this option to have any effect

User Interface

- Added File, Picture, Copy Desktop command. Works much like File, Picture, Save Desktop, except it copies a picture of the entire FEMAP GUI to the clipboard instead of saving it to a file.
- Added File, Picture, Copy Layout and File, Picture, Save Layout commands. These commands work much like File, Picture, Copy Desktop and File, Picture, Save Desktop, except they only copy to the clipboard or save to a file the contents of the “Graphics Area” instead of the entire GUI.

Preferences

Views

- Added Include Text for XY Plots option in Picture Copy section.
- Added Picture Save Defaults section.

User Interface

- Added Captions Always on Top option to Dockable Panes section.

Interfaces

- Added Auto Answer Post Questions button.
- Added Delete Read Synthetic Load Sets option.

API

- For functions that take input arguments that are Arrays/Variants, you can now pass a single value/constant directly if the entire array is supposed to be filled with the same value.
- Disabled Undo after calling feFileRebuild, feFileSave, feFileSaveAs, and feFileSaveAll from the API.
- Converted UserData to a non-Entity-based object. Implemented numerous methods that are identical in call to Entity-based objects, but work properly with UserData
- Added Length to Element object
- Added AddAllTitle, AddAllColor, and AddMidsideNodes to Set object
- Added ComputeStdShape and ComputeGeneralShape for Property object
- Added CountLoads and IsTotalLoad for LoadDefinition object
- Added Add to LoadMesh object
- Added Add to BCNode object
- Added Preview to AnalysisMgr object
- Added HasFullGlobalPly for Layup object
- Added Pref_PictureCopyTextForXY
- Added Pref_PictureFormat, Pref_AnimationFormat, Pref_GIFColorOpt, Pref_GIFAnimationDelay, and Pref_GIFFrameSeries
- Added Pref_NasQstOn, Pref_NasQstVal, and Pref_DeleteRdScratchLdSets
- Added Pref_CustomToolsPath
- Added feAppMessageStartListing
- Added feAppMessageEndListing
- Added feFilePictureSave2
- Added feFilePictureCopy2
- Added feFormatReal
- Added feTruncateReal
- Added feModifyRadialOffsets
- Added feDeleteMesh

Corrections

Connection Properties, Regions, and Connectors

- Corrected a problem that caused connection regions defined on Curves or Surfaces, to expand to improper element faces

Graphics

- Fixed clearing of XY graph background if it is OpenGL window
- Fixed issue in weld elements if renumbered badly

- Fixed logo so if bitmap was bigger than graphics region it would still draw.
- Fixed issue in plate result transformation that was introduced in 10.1
- Fixed issue if number of lines of text in post legend was too large
- Fixed random issue when elements were blanked based on timing of redraw.
- Fixed issue that Copy Picture of XY Plots does not work on Vista if you are in render mode.
- Corrected an issue that caused output created by Model, Output, Global Ply to be deleted every time you made a plot of the data.
- Modified drawing of edges to get around nVidia graphics issue in drivers newer than 178.46

Groups

- Fixed issue when displaying multiple groups and had automatic add “on” and were adding into one of the groups being displayed. The created entities did not show up unless you turned one of the groups on/off. Now they show up immediately.

GUI - Dockable Panes

Entity Editor

- Fixed problem editing loads in load definitions that had different faces from the Entity Editor.

Model Info tree

- Corrected a problem that caused the Element Type and Shape counts in the Model Info tree to show linear elements when you hex meshed with parabolics.

Interfaces - Neutral

- Fixed issue reading neutral files from 5.0 or earlier into 10.1
- Corrected a problem reading multiple UserData objects from a neutral file.

Interfaces - Nastran

- Fixed issue that caused velocity body loads not to be written out unless a nodal load was also defined
- Fixed issue creating multiple LOAD combinations.
- Fixed problem where MEFFMASS output was skipped when results destination was set to post
- Fixed problems reading complex output where phase angles were being skipped
- Modified writing of loads so SPCD is written to the LOAD case control set rather than as a combination.
- Corrected a problem that caused Nastran to fail to run if the Nastran Scratch directory you specified in File, Preferences had spaces in the path.

Interfaces - NX Nastran

- Fixed problem reading BCPROP
- Fixed problem when writing CQUADX8 in wide field format.

- Fixed issue when writing BCRPARA in wide field format.

Interfaces - NEi Nastran

- Fixed issue that converts nodal contact regions to elemental faces to fail for solid elements

Interfaces - Ansys

- Added ability to specify Ansys results version in API.

Interfaces - Abaqus

- Fixed problem reading complex output.

Loads and Boundary Conditions

- Fixed issue that caused crash when using face selection to create elemental loads
- Corrected a problem expanding loads on nodes along a curve that used the variable type function or interpolate. Previously they did not expand properly - usually gave 0.0 loads

Meshing

- Corrected a meshing problem that caused planar surfaces with poles to not be smoothed properly if you applied a mapped meshing approach.
- Updated Meshers to properly create and project to a sheet body on multi-surface boundaries that have suppressed loops.

User Interface

- Fixed issue in opening models with preference set to Windows I/O with 64K portions
- Fixed issue renumbering entities that referenced a Weld element.

API

- Automatically set some fields in PutContactList method of the connection region object if you set them to invalid values
- Made Info_GeometryScale a writable property if there are no solids in the model
- Corrected Layup method on the Property object.

FFEMAP v10.1 New Features and Corrections

Updates and Enhancements

Views

- Changed View, Set to View, Create/Manage
- Added View, Visibility command. Replaces a combination of functionality in Model Data, Quick Options, and Layer Management.
- Added Load - Body option to View Options, Labels, Entities and Color category
- Changed Moment option to Moment and Torque in View Options, Labels, Entities and Color category. Now controls display of Moment and Torque loads
- Changed “1..Surfaces Only” option for Surface Hatch to “1..Hatch Wireframe Surfaces” and added “2..Never Hatch Surfaces” option to Render Options in View Options: Tools and View Style category
- Removed Stereo option from View Options, Tools and View Style category
- Removed Quick Options button from View Options
- Removed Model Data button from View Select

Analysis Manager

- Added Previous (Prev...) buttons to many of the Analysis Set Manager dialog boxes when using the Nastran Solvers.
- Enhanced Analyze and Analyze Multiple options to use internal solver queuing system when multiple jobs in one model or jobs from any number of models are sent to the solver. Queuing system now tracks which model the analysis job was launched from and will attempt to return to the correct model and import results before beginning the next analysis job. Also, added “Clear Queue” button to clear the internal queuing system.

Connection Properties, Regions, and Connectors

- Added “Reverse” button to Connection Regions to switch “positive” to “negative” and vice versa for surfaces and “Face 1” to “Face 2” and vice versa for shell elements.
- Updated Connect, Automatic command to properly handle composite surfaces in regions.

Connection Property - NX Linear tab

- Added Adaptive Stiffness and Penetration Factor to the Contact Property (BCTPARAM) section. Create the PENAPAPT and PENETFAC fields on the BCTPARAM entry.
- Added Glue Type and Glue Factor to the Common Contact (BCTPARAM) and Glue (BGPARM) Parameters section. Create the GLUETYPE and PENGLUE fields on the BGPARM entry.
- Added Auto Penalty Factor to the Common Contact (BCTPARAM) and Glue (BGPARM) Parameters section. Creates the PENAUTO field on the BCTPARAM entry.
- Modified Penalty Factor Units in the Common Contact (BCTPARAM) and Glue (BGPARM) Parameters section to have different options depending on what option is set for Connect Type.

Connection Property - NEiNastran tab

- Added 10..Offset Welded Contact option to Penetration Type drop-down list.

Functions

- Added X Axis Log Scale option to Function Definition dialog box.

Geometry

- Implemented the Solid Manager which is used to activate, update, or make no solids active in the model.
- Modified Geometry, Curve - From Surface, Pad command. Entering an Pad Size Factor of 1.0 will extend curves out using the radius of the chosen circular curves, while entering a value of 1.5 would offset the curves $1.5 \times$ the radius of the chosen circular curves in all directions.

Groups and Layers

- Implemented the Group Manager for creation, management, and activation of Groups
- Added ability to create “Referenced Groups”
- Updated Group, Operations, Evaluate; Group, Operations, Evaluate Always; and Group, Operations, Renumber Rules to allow selection of multiple groups.
- Updated Group, Operations, Condense to allow selection of multiple groups and “condense” the groups “in place” without creating a copy.
- Added Condense New Group option to Group, Operations, Copy to also condense the active group when copied.
- Implemented the Layer Manager for creation, management, and activation of Layers

GUI - Toolbars

View Toolbar

- Replaced “View Layers” and “Quick Options” icons with “Visibility” icon on View Toolbar.
- Added “Model Data Contour” icon to View Toolbar.

Post Toolbar

- Added “Laminate Options” and “Contour Vectors” options to Post Options drop-down menu on Post Toolbar.

GUI - Dockable Panes

Data Table

- Added “Memb-Bend Coupling” fields for plate elements.
- Added support for “Nastran LOAD Combination Sets” and “Nastran SPCADD/MPCADD Combination Sets”

Model Info Tree

- Added “Reset All Visibility Options” button.
- Added Visibility check boxes (on/off) for Elements (Shape and Type), Properties, Materials, and Layers.
- Added Visibility check boxes (Show/Hide/Clear) for Groups.
- Added Elements object and context-sensitive menu to tree.
- Added “Copy” command to context-sensitive menus for Coordinate Systems, Connections-Properties, Connections-Regions, Materials, Properties, Layups, Functions, and Groups
- Added “Color” command to context-sensitive menus for Materials and Properties.
- Added “Layer” command to context-sensitive menus for Materials and Properties.
- Added “Global Ply” command to Layups context-sensitive menu.
- Added “Referenced Sets” command to context-sensitive menus for Loads and Constraints.
- Added “Edit Where Applied” command to context-sensitive menus for Load Definitions and Constraint Definitions.
- Changed “Edit” command to “Edit Load” on Load Definition context-sensitive menu.
- Changed “Edit” command to “Edit Constraint” on Constraint Definition context-sensitive menu.
- Added “Show Constrained Entities” command to Constraints context-sensitive menu.
- Added “Referenced Groups” command to Groups context-sensitive menu.
- Changed “View Active” command to “Show Active Group” and added “Show Full Model” and “Show Multiple Groups” to Groups context-sensitive menu.
- Changed “Show All Layers” to “View All Layers” and “Show Visible Layers Only” to “View Visible Layers Only” on Layers context-sensitive menu.
- Removed “Make Visible”, “Make Hidden”, and “Manage” commands from Layers context-sensitive menu. No longer needed due to Visibility check boxes.

Entity Editor

- Added “Memb-Bend Coupling” fields for plate elements.
- Added support for “Nastran LOAD Combination Sets” and “Nastran SPCADD/MPCADD Combination Sets”

Status Bar

- Changed “Set” to “Create/Manage (Set)” for Load Sets, Constraint Sets, Groups, and Output Sets
- Changed “View Active” to “Show Active” for Groups and added “Show Full Model” and “Show Multiple” options

Interfaces - FEMAP Neutral

- Updated Neutral Read and Write for v10.1 changes

Interfaces - Nastran

- Turned off PARAM,MAXRATIO by default
- Added support to read the CVISC and PVISC entries
- Added support to read and write PARAM,RESVINER
- Added support to read and write LOAD, SPCADD, and MPCADD entries

- Added support to set the All Plates as QUADR/TRIAR option when CQUADR and CTRIAR elements are imported
- Added ability to write GEOMCHECK, NONE and read GEOMCHECK entries and populate GEOMCHECK dialog box in Analysis Set Manager
- Added Dynamic Control Options dialog box to Analysis Set Manager for analysis Types 3..Transient Dynamic/Time History, 4..Frequency/Harmonic Response, 5..Response Spectrum, and 6..Random Response
- Added Nonlinear Control Options dialog box to Analysis Set Manager for analysis Types 10..Nonlinear Static and 12..Nonlinear Transient Response
- Added support to read DLOAD, NONLINEAR, TSTEP, TSTEPNL, NLPARM, SDAMPING, FREQUENCY, RANDOM Case Control entries
- Added support to read PARAMs LMODES, LFREQ, HFREQ, W3, W4, G, RSPECTRA, SCRSPEC, OPTION (ABS, SRSS, NRL, NRLO), CLOSE, LANGLE
- Added support to read TSTEP, TSTEPNL, NLPARM, NLPCI, RANDPS, DTI Bulk Data entries

Interfaces - NX Nastran

- Turned the “Loads Change with Deformation” option in the Analysis Options section of NXSTRAT Solver Parameters dialog box “on” by default for SOL 601 and SOL 701.
- Turned the “Constraint Force” option in the Nodal section of Nastran Output Requests dialog box “on” by default for SOL 601 and SOL 701
- Added support to SOL 601 for function dependent acceleration body loads.

Interfaces - NX Nastran

- Added support to read PARAM,OPTION,CQC

Interfaces - DYNA

- Added support 8-noded Quad elements
- Added support for nonstructural mass for Beam and Shell elements
- Added support for the following element formulations for Shell Elements (Fully Integrated DKT triangular, Fully Integrated linear DK quadrilateral, Fully Integrated linear assumed strain C0, 1 point Eulerian Navier-Stokes, 8 point Eulerian Navier-Stokes, and CVFEM Eulerian Navier-Stokes)

Interfaces - Geometry

- Added support for Parasolid 22.0
- Added support for Solid Edge with Synchronous Technology 2
- Added support for ACIS 20, Service Pack 1

Layups

- Updated Global Ply Definition dialog box for Layups

Listing

- Changed listing of model size from Bytes to MBytes when using “List, Model Info” command
- Updated “List, Model, Element” command to list element formulation based on solver set in the “active” Analysis Set in the Analysis Set Manager.

Loads and Boundary Conditions

- Added “Torque” Load type to “Model, Load, On Surface” command.
- Added “Total Load” option for “Force”, “Moment”, and “Torque” load types to “Model, Load, On Surface” command. Allows you to take a “total load” and spread it across all of the selected surfaces.
- Added “Total Load” option for “Force” and “Moment” load types to “Model, Load, On Curve” command. Allows you to take a “total load” and spread it across all of the selected curves.
- Added Gradient thru the thickness of plate elements on Temperature loads
- Implemented the Load Set Manager for creation, management, and activation of Load Sets.
- Added option to create a Load “Set Type” option which allows you to create a Nastran LOAD Combination and use Referenced Load Sets
- Implemented the Constraint Set Manager for creation, management, and activation of Constraints Sets
- Added option to create a Load Set which represents a Nastran SPCADD/MPCDD Combination and use Referenced Constraint Sets

Meshing

- Added “Use Reference Point” option to Mesh, Mesh Control, Attributes Along Curve command.

Output and Post-Processing

- Added View, Advanced Post, Contour Model Data command
- Added Contour Vectors - 2D Tensor Plot option to View, Select command
- Added Laminate Options to View, Select command
- Added “Exponent” Color Modes, Digits, and Length options to View Options: PostProcessing category: Contour Vector Style

Element - Rigid

- Added Update Button to Define RIGID Element dialog box. Allows you to update the Interpolation Factor and DOFs on any number of highlighted nodes in the Nodes to Average section when using the Interpolation option.

User Interface

- Added Tab Location option to View Windows. Now the “View Tabs” may be placed on the Top, Left, Right, or Bottom of a View Window.
- Added Axis of Revolution method to Vector Definition dialog box.

- Added FEMAP.INI and PATH to listing provided by Help, About command
- Added improved precision to transforms with cos/sin functions in degrees

Preferences

Views

- Added 2D Tensor Plot View Options Override option.

Database

- Added Open/Save Method option.

Interfaces

- Added Use ILP-64bit NX Nastran option.
- Added Write All Static Load/BC Sets option.

API

- Added NasBulkDynLdAsLOADSET, NasBulkResViner, NasGCheckNone, NasBulkWriteAllLoadBCSets, NasDynOn, NasDynUseLoadSet, NasDynDampOverall, NasDynDampW3, NasDynDampW4, vNasDynKeepFreq, NasDynTranDT, NasDynFreqTbl, NasDynDampModalTbl, NasDynKeepModes, NasDynTranTimeSteps, NasDynTransOutInt, NasDynDampModalMethod, NasDynRespSpect, vNasDynNoFreq, vNasDynLogInterp, vNasDynFreqType, vNasDynMinFreq, vNasDynMaxFreq, and vNasDynSpreadCluster to AnalysisMgr object
- Added NasCnlIncrements, NasCnlTime_Increment, NasCnlMaxIter, vNasCnlConvergenceFlags, vNasCnlConvergenceValue, NasCnlCtiffnessMethod, NasCnlKstep, NasCnlIntermediateOutput, NasCnlOutputInterval, NasCnlSolutionStrategy, NasCnlSolutionOverrides, NasCnlModnewtonLineSearch, NasCnlModnewtonQuasiNewton, NasCnlModnewtonBisection, NasCnlArcConstraintType, NasCnlArcMinAdjust, NasCnlArcMaxAdjust, NasCnlArcLoadScale, NasCnlArcDesiredIter, NasCnlArcMaxSteps, NasCnlTimeSkipAdjust, NasCnlDominantPeriodSteps, NasCnlBoundsRb, NasCnlStabilityTolerance, NasCnlDivergenceLimit, NasCnlQuasiNewtonVectors, NasCnlMaxLineSearch, NasCnlCreep, NasCnlLineSearchTolerance, NasCnlMaxBisections, NasCnlMaxRotation, NasCnlFstress, and NasCnlMaxAdjust to AnalysisMgr object.
- Added IsCombination to LoadSet object.
- Added Gradient to LoadETemp object.
- Added IsCombination to BCSet object
- Added GlobalPlyLocation to View object.
- Added AddCoordinate, AddAroundPoint, AddAroundVector, AddAroundPlane, AddNodesOnGeometry, and SelectList methods for Set object
- Added RemoveSet, ConvertToBoundarySurfaces, and SelectList methods for Sort object
- Added ClearAnalysisQueue, GetCorrelate2, and PutCorrelate2 methods for AnalysisMgr object
- Added GetDataSurfType method for DataSurf object
- Added PartialLengthXYZ, PartialLengthNode, and SelectList methods for Curve object

- Added IsBoundingSolidRegion, Mesh, and ResetMeshAttr methods for Surface object
- Added IsGeneral method for Solid object
- Added GetClosest method for Node object
- Added Thickness, Area, and Inertia methods for Elem object
- Added Thickness, Area, and Inertia methods for Prop object
- Added GetCombination and PutCombination methods for LoadSet object
- Added GetCombination and PutCombination methods for BCSet object
- Added ReferencedGroups method for Group object
- Added DefineReal method for Var object
- Added GetMultiGroupList, SetMultiGroupList, and ClearMultiGroupList methods for View object
- Added InitScalarAtBeam and PutScalarAtBeam methods for Output object
- Added Reverse method for Contact and ConnectionRegion objects
- Added Pref_NastranUseILP64, Pref_ConstructionGeometry, and Pref_NastranWriteAllLdbcSets
- Added FLT_SNTORQUE for Load Type
- Added FVD_AXIS_OF_SURFACE for Vector Definition Method
- Added feSurfaceRemoveHole
- Added feModifySolidFacetting
- Added feSolidRemoveFace
- Added feMeshSurface2
- Added feAppRegisterAddInPaneWithFrame
- Added feVectorAxisOfSurface
- Added feMeshSurfaceByAttributes

Corrections

Analysis Manager

- Fixed problem renumbering Analysis Sets that sometimes caused FEMAP to exit unexpectedly.

Connection Properties, Regions, and Connectors

- Corrected a problem when copying surfaces or solids that were used to define contact segments, the contact segment moved to the copy. It now is duplicated into a new connection region if all of the underlying definition is copied.

Groups and Layers

- Corrected a problem when renumbering Layers that caused layers that were not renumbered to be lost from the visible layers list for views.
- Corrected a problem that caused "Evaluate Always" to be turned off if you renumbered any entities referenced by the group.

GUI - Dockable Panes

Model Info tree

- Updated so that reloading the Model Info tree does not change expansion of branches

Data Surface Editor

- Fixed problem that caused element fill to be disabled when clearing a Data Surface

Data Table

- Enhanced Copy to Clipboard and Save of Data Table. Increased speeds by several orders of magnitude.

Interfaces - Nastran

- Fixed PLOAD4 so Femap writes a blank for element faces with only 3 corners.
- Fixed output request in Transient Heat, was missing SORT1 request in THERMAL and HDOT.
- Fixed problem reading XY Summary and optimization from the f06 when results are in the op2 and auto skipping.
- Fixed a problem where Femap would not write a proper DLOAD scale for each dof when more than 1 SUPORT dof was defined in Response Spectrum Application
- Fixed problem where overwrite were occurring if model file name and path were over 160 characters.
- Fixed wide field for BSURFS, BCTADD, PFAST
- Fixed problem reading XYPRINT output for CQUADR NXN3 new formulation. Femap was reading the items using the item codes from the old formulation.
- Fixed problem writing MFLUID in random and response spectrum.
- Fixed problem where if Force load is created after Temperature load then Force is not written out
- Fixed expand Moment load at points is not expanded to the underlying node
- Fixed problem reading QUADR output with corners from f06 when complex output existed.
- Fixed problem recognizing the proper Femap function type for the TABLED2 being read.
- Fixed issue reading SLOAD only the first load per card was read properly.
- Fixed Problem when reading Nastran files that have Free Format cards with continuation that have blank field 10 and 1, and that don't continue on the same line (i.e. traditional multiline arrangement)

Interfaces - NX Nastran

- Fixed problem where NXN 6.0 would fail to run if Fluid Pressure output was chosen for MFLUID. The Alter used no longer worked or was needed.
- Fixed problem when writing Glue and Contact sets to SOL601 at the same time.

Interfaces - NEi Nastran

- Removed SPCD errors for NL trans and SPCD.

Interfaces - Ansys

- Fixed problem when reading ANSYS elements where the element coordinate system is set with a real constant.

Interfaces - Abaqus

- Fixed problem reading *SYSTEM where a default second axis was used.

Interfaces - I-DEAS/NX

- Corrected a problem reading UNV file from NX6 where the Material Table for properties defined by a table were not being read. Looks like NX added a line to the table definition that is not in the spec.

Loads and Boundary Conditions

- Fixed numerous graying issues with creating loads with data surfaces as well as added restricting type of ds created based on the load type being defined.
- Updated expand load to handle nodal loads on curves when only solid elements are connected

Meshing

- Changed boundary mesh error for coincident nodes to write the nodal location rather than the ID.
- Corrected a problem with Mesh Region that prevented it from working in "Nodes Only" mode - still asked for a valid property/shape
- Prevent automatically choosing a mapped mesh if there is a reentrant (>225 deg) corner in the surface - which could lead to an overlapping mapped mesh.

Output and Post-Processing

- Corrected problem that caused Output Sets that did not exist to be added to a selection set when using the standard selection dialog and typing in ID ranges that did not exist.
- Corrected problem in Freebody Display. If you displayed the freebody resultant, but only displayed moments, the moment calculation did not include the components due to the forces that were not displayed.

User Interface

- Corrected a problem on Message Boxes that just had an OK, or just a Yes/No button, that caused them not to close if you pressed Esc or the X in the title bar.
- Enhanced speed when deleting a large number of solids with their associated meshes.

API

- Fixed problem in ComputeShape where the property was being put after the shape was calculated.
- Fixed infinite loop when loading AMgr_Correlate in the Analysis Mgr object.

- Fixed infinite loop when loading AMgr_Contact in the Marc Analysis Case from the API.
- Removed "CaseID" property on the Analysis Set manager object. The master case should always be ID=0, you should not be able to set it.
- Corrected problem in Set object if you called AddSetRule with GDEF_Elem_byShape

FEMAP v10.0.2 New Features and Corrections

Updates and Enhancements

Interfaces - NX Nastran

- Updated version of NX Nastran included with FEMAP with NX Nastran to version 6.1
- Updated Analysis Monitor to be able to handle NX Nastran 6.1 monitor files

Interfaces - Nastran

- Updated reading of OP2 files to support results files larger than 4GByte

Interfaces - TMG

- Updated version of TMG interfaces for FEMAP to “version 6.0, build 470”

User Interface

- Added “guard bytes” around preferences so that if memory becomes totally corrupted it will not overwrite the FEMAP.INI file with values which are not valid
- Modified certain aspects of FEMAP to allow for more complete localization to Chinese, Japanese, and other languages.
- Removed Modify, Update Other, Surface Divisions command

API

- Updated version of WinWrap used by the API Programming window

Corrections

Coordinate Systems

- Corrected problem that filled in wrong defaults for vector if “snap to node” was on and coordinate systems were repeatedly created using one of the Axes creation options.

Geometry

- Fixed problem deleting Composite Curves when the associated Surface or Solid was deleted.

Graphics

- Prevent facetting of curves if a point is missing from Femap curve definition, which is not normal, but can happen in rare occasions.
- Fixed graphics issue related to using the Modify, Scale, Solid command.

GUI - Dockable Panes

Meshing Toolbox

- Fixed problem using the Mesh Locate Toolbox to edit solid meshes (Tet and Hex).

API Programming

- Fixed loss of focus when you hit Ctrl+C to copy the API Programming Window and other panes.

Interfaces - FEMAP Neutral

- Fixed problem reading the property data block from neutral files from Femap 9.2 and earlier which caused Femap to issue errors where they didn't really exist.
- Fixed issue in Tosca code for Neutral file when importing Neutral file. Neutral files were written properly, but could not read past first analysis manager case

Interfaces - NX Nastran

- Added support for NXN 6.0 Advanced nonlinear datablocks for CQUAD8, CTRIA6
- Fixed problem reading the Nastran f06 file when contact separations (SEPDIS) were requested which caused Femap to go into an infinite loop which could end without ending the FEMAP process.
- Fixed BCTPARAM NCHG to allow zero to be written.
- Made NXSTRAT ICMODE default solution dependent.
- Fixed problem writing BCTSET when using the Portion of Model to Write option in the NASTRAN Bulk Data Options section by evaluating the group before the case control is written.
- Fixed problem when writing Nastran files when Improve Single Field Precision option was on in File, Preferences. Was writing too many real fields when creating CONM2 entries

Interfaces - Nastran

- Fixed import of NSM for PBEAML and PBARL.

Interfaces - Dyna

- Fixed problem writing LS-Dyna nodal velocities that sometimes caused Femap to write loads improperly
- Fixed improper *SECTION_SHELL ELFORMIDs for formulations of shell elements. If a formulation below "4..C0 Triangular" on the drop-down list was used, the formulation actually written was off by 1.

Interfaces - ABAQUS

- Fixed problem writing node groups using the DEFINE command. Femap was always writing element sets when writing FEMAP groups as sets.

Interfaces - Geometry

- Added missing Solid Edge Moniker code which fixes matching of previous solid/assembly when updating during read

- Enabled “Read Inactive Layers”, “Points”, “Curves”, “Surfaces” and “Bodies” options to CATIA V5 translator. Previously, these were in the translator, but not available to turn on and off.
- Several issues have been resolved in the CATIA V4, CATIA V5, Pro/Engineer, IGES, STEP, and Parasolid geometry interfaces

Meshing

- Fixed reporting of problems when meshing fails in certain instances. Previous versions of Femap reported the Node ID where it failed, but in v10 and above meshing the mesh is not saved unless it actually succeeds. Therefore the node IDs Femap was reporting do not exist, thus now the coordinates where the failure occurred are reported instead.
- Fixed problem when using new meshing to mesh curve-only boundary surface where no mesh sizes were set on the curves. Both mapped and free meshes were not working as expected
- Fixed problem in new meshing when meshing surfaces that had associativity to nodes that did not exist.
- Fixed problem of “Midside Nodes” and “Midside Nodes on Geometry” options not persisting between surface meshing commands.

Materials and Properties

- Fixed issue of shear center offset values swapping on End B of a non-tapered beam after Shape button was pressed, but no changes were made in the Cross Section Definition dialog box.
- Fixed issue of the Reference Point being greyed in the Cross Section Definition dialog box when creating NASTRAN sections (PBEAML and PBARL).

User Interface

- Fixed issue in output transformation dialog boxes where the main dialog boxes were not hidden when trying to select a vector, making it very difficult to choose a vector graphically from the screen

Preferences

Library/Startup

- Corrected a problem that caused FEMAP to unexpectedly close when trying to open a new model if a startup basic script was set to be run on a new model after all current models had been closed.

API

- Fixed API docs for parametric space and added missed methods, HasPole(), RationalParamToXYZ()

FEMAP v10.0.1 New Features and Corrections

Updates and Enhancements

Connection Properties, Regions, and Connectors

- Added ability to have zero (0) as the rigid reference node for NXN SOL601.

Groups and Layers

- Improved “Group, Operations, Generate Solids” to also include elements on the surfaces, curves and points of solids

GUI - Dockable Panes

Data Table

- Added “Save to a File” command
- Added “Save Rows” command to context sensitive menu.

Properties

- Added “Section Evaluation” option in “Cross Section Definition” dialog box for Beam, Bar, and Curved Beam properties.
- Added PBEAML/PBARL option to “Section Evaluation” for use with PBEAML/PBARLs properties.

API

- Added InsideXYZ to Surface Object

Corrections

Connection Properties, Regions, and Connectors

- Fixed issue in BCTPARAM REFINE default.

Groups and Layers

- Corrected problem in Group, Operations, Generate Superelements. Previously, the command included elements that touched the boundary of a superelement in the residual group rather than in the superelement group.

GUI - Dockable Panes

Meshign Toolbox

- Added ability to auto compress loads,bcs, connection regions then delete mesh in the Meshing Toolbox.

Program File

- Corrected problem that caused error message if you tried to save a program file with no filename extension, and without changing the file type on Windows XP. Now properly adds .PRO

Interfaces - Nastran

- Fixed issue writing initial conditions from the master case when all loads were in subsequent subcases.

Loads and Boundary Conditions

- Updated “Load, Expand” and “Constraint, Expand” to default to “Compress” if expanded loads/ constraints are in the active set, otherwise defaults to “Expand”.

Listing

- Updated the List Destination dialog box to show longer filenames
- Fixed problem in List Surface that caused some surfaces with a “linked” meshing approach to list extra values in addition to the Linked surface ID.
- Updated “List, Geometry, Curve” to list points on all curves connected to solids, not just straight lines.

Meshing

- Fixed problem in merging nodes that randomly caused some solids to fail hex meshing

API

- Updated API Type Library to return specific interfaces rather than generic IDISPATCH interfaces - should help programming in Python and Matlab

FEMAP v10.0 New Features and Corrections Updates and Enhancements

Windows Vista

- FEMAP is now supported on 32-bit and 64-bit versions of Windows Vista. Many issues from previous “unsupported” versions of FEMAP with regards to Windows Vista, such as entity picking and proper use of the Model Info tree have been addressed.

Analysis Manager

- Added Analyze Multiple option. This accesses a multi-select dialog box which allows you to pick any number of Analysis Sets and run them one after another.

Connection Properties, Regions, and Connectors

- Updated Connection Regions to support 2-D contact in NX Nastran Solution 601.

Connection Property - NX Linear tab

- Moved Normal Penalty Factor and Tangential Penalty Factor from the Contact Property (BCTPARAM) section to the Common Contact (BCTPARAM) and Glue Parameters (BGPARM) section.
- Moved Shell Z-Offset from Glued Contact Property (BGSET and BGPARM) section to Contact Property (BCTPARAM) section.
- Removed Penalty Factor from Glued Contact Property (BGSET and BGPARM) section.
- Replaced Num Allow Contact Changes with Convergence Criteria and Num For Convergence in the Contact Property (BCTPARAM) section. Together, these two values create the NCHG field on the BCTPARAM entry.
- Added Contact Inactive to the Contact Property (BCTPARAM) section. Creates the CSTRAT field on the BCTPARAM entry.
- Added Penalty Factor Units to Common Contact (BCTPARAM) and Glue Parameters (BGPARM) section. Creates the PENTYP field on the BCTPARAM or PGPARM entry.

Connection Property - NX Adv Nonlin tab

- Added Glued Contact Property (BGSET) section with Extension Factor option. Extension Factor enters a value in the EXTi field specified on the BGSET entry for the contact pair “i”. Specifies an “extension factor” for the target region.
- Removed the Time Activation section and moved Birth Time and Death Time options to the General section.
- Added Friction Delay option to Standard Contact Algorithm section.
- Moved all options found in the Rigid Target Contact Algorithm section except Normal Modulus to a the Old Algorithm (RTALG=1 on NXSTRAT) section of the NX Adv Nonlin Rigid Target Algorithm dialog box, which is accessed by clicking the Rigid Target Options button. Normal Modulus is found in Common Options.

- Added Penetration Cutback and Max Penetration options to the Old Algorithm (RTALG=1 on NXSTRAT) section of the NX Adv Nonlin Rigid Target Algorithm dialog box.
- Added Max Tensile Contact Force (TFORCE), Max Sliding Velocity (SLIDVEL), Oscillation Check (OCHECK), Contact Gap (GAPBIAS), and Offset Method (OFFDET) options to the Current Algorithm (RTALG=0 on NXSTRAT) section of the NX Adv Nonlin Rigid Target Algorithm dialog box.

Connection Property - NX Explicit tab

- Renamed Rigid Contact Algorithm section to Old Rigid Contact Algorithm section.
- Added Current Rigid Target Algorithm section with Max Sliding Velocity (SLIDVEL), Contact Gap (GAPBIAS), and Offset Method (OFFDET) options.

Entity Select dialog box

- Added “Combined Curves” options (Default, All Points/Curves, Points/Curves Eliminated by Combined Curves, and Combined Curves Only) to the Pick Menu in the standard Entity Selection dialog box. Only one mode can be selected at any given time.
- Added “Boundary Surfaces” options (Default, All Curves/Surfaces, Curves/Surfaces Eliminated by Boundary, and Boundary Surfaces Only) to the Pick Menu in the standard Entity Selection dialog box. Only one mode can be selected at any given time.
- Added “Add Connected Fillets” option to the Pick Menu in the standard Entity Selection dialog box.
- Added “Add Tangent Surfaces” option to the Pick Menu in the standard Entity Selection dialog box.
- Updated direction of mouse wheel for Query Pick list to follow direction of mouse wheel.

Functions

- Added dynamic XY plotting of functions to the Function Definition dialog box.

Geometry

- Added Geometry, Curve - From Surface, Offset Curve/Washer command.
- Added Geometry, Curve - From Surface, Pad command.
- Added Geometry, Curve - From Surface, Point to Point command.
- Added Geometry, Curve - From Surface, Point to Edge command
- Added Geometry, Curve - From Surface, Edge to Edge command.
- Added Geometry, Surface, NonManifold Add command.
- Added Geometry, Surface, Recover NonManifold Geometry command.
- Added Geometry, Midsurface, Offset Tangent Surfaces command.
- Added “Measure Distance” icon button to Geometry, Midsurface, Automatic command
- Added “Ok to Consolidate Properties by Thickness?” question to Geometry, Midsurface, Assign Mesh Attributes command after the material has been chosen
- Added “Cleanup Mergable Curves” option to Geometry, Solid Stitch command

- Added Modify, Update Other, Solid Facetting command.
- Added option to Modify, Project, Point along Vector and Modify, Project, Node along Vector commands to project in both directions along the vector.

Groups and Layers

- Improved Group, Operations, Add Related Entities to include coordinate systems used as definition coordinate systems for Coordinate Systems in the selected group and include reference nodes on beams when the nodes are related to elements, properties, or materials in the selected group.

GUI - Toolbars

Panes Toolbar

- Added Meshing Toolbox icon

Curves on Surfaces Toolbar

- Added Curve Washer, Curve Pad, Split Between Points, Split Point to Edge, and Split Edge to Edge icons.
- Updated Curve Split at Points icon to be Curve Split at Locations icon.

Select Toolbar

- Improved Select Related mode to include coordinate systems used as definition coordinate systems for other selected Coordinate Systems
- Improved Select Related mode to include reference nodes on beams when the nodes are related to elements, properties, or materials

GUI - Dockable Panes

Meshing Toolbox - new for version 10

- Added Entity Locator
- Added Feature Suppression Tool
- Added Feature Removal Tool
- Added Combined/Composite Curve Tool
- Added Combined/Boundary Surface Tool
- Added Mesh Sizing Tool
- Added Mesh Locate Tool
- Added Mesh Quality display options.

Data Table

- Added “Transformed To” capability for listing nodal and elemental output.
- Updated using Show When Selected. Entities already chosen will now highlight when Show When Selected is turned on and un-highlight when turned off.

Model Info Tree

- Updated using Show When Selected. Entities already chosen will now highlight when Show When Selected is turned on and un-highlight when turned off.

Entity Editor

- Added “Transformed To” capability for displaying nodal output and elemental output.
- Added support for Load Definition and Constraint Definition information.
- Added support for Rotor Region information.
- Added support for Layup ID information.

Status Bar

- Added the ability to customize what entity types appear on the Status Bar.

Interfaces - FEMAP Neutral

- Removed option for choosing Binary and Formatted in File Format Section. All Neutral files are Formatted.
- Updated Neutral Read and Write for v10.0 changes

Interfaces - Nastran

- Added support for “-2..Automatic(Statics)” for INREL to the PARAM section of the NASTRAN Bulk Data Options dialog box.
- Added support for SUPORT1 to the Boundary Conditions dialog box.
- Added support for Fastener elements (CFAST) and properties (PFAST).
- Added support for spring/damper elements (CELAS1 and CDAMP1) which use a property (PELAS and PDAMP). Controlled via the Spring/Damper element formulation.
- Added Beam/Bar Cross-Section Dimensions as comments when Nastran input file is written. When a Nastran file with these comments is imported into FEMAP, the Beam/Bar Cross-Section Dimensions will be filled-in.
- Added support for reading Nastran Free-Field Auto Continuation (long entries with or without embedded continuation fields and large-field free field).
- Added support for reading CMETHOD from the case control

Interfaces - NX Nastran

- Added support for triangle and quadrilateral axisymmetric elements (CTRAX3, CTRAX6, CQUADX4, and CQUADX8), which were new for NX Nastran version 6.
- Added option for “Extended Solution Status Monitoring”. Writes SYSTEM(442)=-1 to the *.dat file. This option is on by default and the feedback it produces is used by the NX Nastran Analysis Monitor.
- Added BOLTFAC to the PARAM section of the NASTRAN Bulk Data Options dialog box.
- Added “Gaps as Contact” to the “Plate, Beam, and Rigid” section of the NASTRAN Bulk Data Options dialog box. Writes out a BCSET entry in Case Control. Also added support for reading SYSTEM CELL 412 in the System Cell field of the Analysis Manager. This is the override to have gaps written as normal gaps even when using Contact.

- Added Support for CQUADR and CTRIAR Composite Stress and Strain output from the op2.
- Added “Large Strain Form” (ULFORM), “Incompatible Mode for 4 Node Shells” (ICMODE), “Max Disp/Iteration” (MAXDISP), and “Drilling DOF Factor” (DRILLKF) options to the Analysis Options section of NXSTRAT Solver Parameters dialog box.
- Added “Bolt Force Increments” (BOLTSTP), “Convert Dependency to True Stress” (CVSSVAL), and “Allow Element Rupture” (XTCURVE) options to the Other Parameters section of NXSTRAT Solver Parameters dialog box.
- Added “Line Search Lower Bound” (LSLOWER) and “Line Search Lower Bound” (LSUPPER) options to the Line Search Setting section of NXSTRAT Iterations and Convergence Parameters dialog box.
- Added “Do not allow Consistent Contact Forces” (TNSLCF) and “Use Old Rigid Target Algorithm” (RTALG=1) options to the Contact Control section of NXSTRAT Iterations and Convergence Parameters dialog box.
- Changed “Segment Type” (CSTYPE) options from “0..Old” and “1..New” to “0..Linear Contact” and “1..Element based” in the Contact Control section of NXSTRAT Iterations and Convergence Parameters dialog box.
- Added support for 2-D Contact, usually used in analysis with axisymmetric elements.
- Added support for Glued Contact.
- Added Contact Control section to NXSTRAT Solver Parameters dialog box. Added “Segment Type” (CSTYPE) and “Use Old Rigid Target Algorithm” (RTALG=1) to this section.
- Added Other Parameters section to NXSTRAT Solver Parameters dialog box. Added “Convert Dependency to True Stress” (CVSSVAL) and “Allow Element Rupture” (XTCURVE) options to this section.
- Added support for Initial and Final contact separation distance, which were new for version 6.0.
- Added reading of the SVDSPC from the Nastran command.

Interfaces - Ansys

- Added support for MPC184 rigid beam/link elements. Specified using element Formulation.
- Added support for output from rigid elements (Rigid Axial Force, Rigid Y Moment, Rigid Z Moment, Rigid Y Shear Force, Rigid Z Shear Force, and Rigid Torsional Moment)

Interfaces - DYNA

- Added support for 10-noded tetrahedral elements. Also, added “16..10 Node Tetrahedron - EQ 16” and “17..10 Node Composite Tetrahedron” formulations.
- Added support for Rigid and Interpolation elements. Writes *CONSTRAINED_NODAL_RIGID_BODY (Rigid) and *CONSTRAINED_INTERPOLATION (Interpolation) entries.

Interfaces - Geometry

- Added support for direct geometry import of SolidWorks parts and assemblies. Supports from SolidWorks 2000 - SolidWorks 2009.

- Changed CATIA V5 direct geometry translator. CATIA V5 versions R7 to R18 are supported. Reading of CATParts and CATProducts created using versions prior to R7 is not supported
- Added support for Parasolid 20.0
- Added support for Solid Edge with Synchronous Technology (version 21)
- Added support for NX 6
- Added support for Pro/Engineer Wildfire 4
- Added support for ACIS 19, Service Pack 1

Loads and Boundary Conditions

- Modified Directional Pressure loads to no longer be affected by choosing a particular element face.
- Added option to apply nodal constraints using the “-1..Use Nodal Output System” option when choosing a coordinate system.
- Updated Load Definitions. If a geometry load is applied to multiple curves at the same time, a double load will not be created on shared nodes.
-

Meshing

- Added 3 new patterns to Mesh, Editing, Interactive
- Added “Offset from Reference Point” option to Modify, Update Elements, Line Element Offsets.
- Added “Spring Elements” option to the Connection Type section of the Mesh, Connect, Unzip and Mesh, Connect, Coincident Link commands.
- Updated Mesh, Remesh, Convert Facets command to include capability to associate facets/nodes with the original geometry.
- Removed “Quad Mesh Layer Options” option from Mesh, Mesh Control, Size on Solid.
- Added “Suppress Short Edges” option to Mesh, Mesh Control, Size on Surface.
- Removed “Quad Mesh Layer Options” option from Mesh, Mesh Control, Size on Surface. This capability was improved and is now the Quad Edge Layers “mesh attribute” which can be specified before meshing using Mesh, Mesh Control, Attribute on Surface or during the meshing process using Mesh, Geometry, Surface.
- Added and updated many options found in the Mesh, Geometry, Surface command.
- Added new options for meshing surfaces which have already been meshed.
- Added Initial Size Ratio option to the Automesh Solids dialog box.
- Updated Adjust Nodal Precision option is to be on by default.
- Added Recovery Mesher (Use only if Standard Mesher fails) option to the Solid Automeshing Options. This option should ONLY be checked if the standard mesher has already failed.
- Added Update Data Table with Mesh Quality option to the Solid Automeshing Options.
- Updated the feedback sent to the Messages window during tet-meshing. FEMAP will produce status messages while the tetrahedral meshing is occurring and provide feedback on element numbers and quality.
- Added Offset from Reference Point to Modify, Update Elements, Line Element Offsets
- Updated Mesh, Extrude, Element Face command to automatically delete plot-only elements that it creates on the selected element faces.

Mesh Associativity

- Added the Modify, Associativity, Automatic command to attempt to automatically associate existing mesh to geometry.

Output and Post-Processing

- Added Transformation buttons for Deformation Vector and Contour Vector in the Select PostProcessing dialog box of the View, Select command. These allow for “on-the-fly” transformations of current output vectors.
- Added several options to the Model, Output, Transform command.

Properties

- Modified the Weld property to be the Weld/Fastener property.
- Added switch to specify if the property will used with CWELD (Weld) or CFAST (Fastener) elements. All Weld property inputs are the same as before.
- Added property inputs for CFAST (Fastener) elements.

Tools

Check, Coincident Elem...

- Added choice between Quick Check (Just Corners) and Full Check.
- Added Check Rigid Element option.

Check, Distortion...

- Added “Nastran Warping” and “Combined” Element Checks
- Added Permanent and Reset buttons to the Check Element Distortions dialog box.

User Interface

- Implemented support of the Astroid 3D controller from Spatial Freedom.
- Added support to create GIF, Animated GIF, TIFF, and PNG files when using File, Picture, Save command.
- Improved Curve and Surface facetting to more accurately display geometry.
- Renamed Weld Elements and Properties to Weld/Fastener
- Added automatic database recovery from failure during save (same as manual from File Preferences, but asks automatically when you start FEMAP)
- Added capability when reading files to detect that the file is open and locked by another application and then give option to Retry or Cancel the read.
- Added automatic Window Regenerate to end of Model, Load, Expand and Model, Constraint, Expand commands.
- Improved length-based spacing, distance along, and other length-based curve functions to perform better when highly nonlinear parametric domains exist on curves.

Preferences

Views

- Removed preference for Autoplot Created/Modified Geometry. FEMAP needs to do this in order to function properly.

Render

- Added preference for XOR Picking Graphics.
- Added preference for Dialog Refresh.
- Added preference for Block Size.

User Interface

- Updated how Load Layout works when loading a layout from an older version of the software into a newer version. If a *.LAYOUT file is loaded into a newer version of the software, only “Shortcut Keys” and “User Commands” will be updated, while “Menus and Toolbars” and “Panels” will not.

Geometry/Model

- Added “Construction Geometry - when used” preference.
- Added Output Orientation button which accesses the Current Output Orientation dialog box.
- Added Element Distortion button which accesses the Element Distortion Preferences dialog box.
- Added Pre-v10 Tet Meshing and Pre-v10 Surface Meshing preferences.

Interfaces

- Added Improve Single Field Precision option.

Colors

- Added preference for setting the default color of Combined Curves.

Spaceball

- Added preference for Print Debug Messages.

API

- Added NasExecSolutionMonitor, NasBulkInrelVal, NasBulkGapsAsContact, NasBulkBoltFact, and NasBulkBoltFactVal to AnalysisMgr object
- Added NasNXStratMaxDisp, NasNXStratBoltstp, NasNXStratCvssval, NasNXStratXtcurve, NasNXStratRtalg, NasNXStratTnslcf, NasNXStratDrillkf, NasNXStratLslower, and NasNXStratLsupper to AnalysisMgr object.
- Added InternalToBoundary and InCombinedCurve to Curve object.
- Added InternalToBoundary, attrTopology, attrMesher, attrMappedLevel, attrMapSubdivisions, attrMapEqualOnly, attrMapAltTri, attrMapRightBias, attrMapSplitQuads, attrMapAngleDeviation, attrMapMinCornerAngle, attrMidsideGeom, attrMidsideAngle, attrMinBetween, attrMaxAspect, attrQuickCutNodes, attrQuickCutAngle, attrSmoothLaplacian, attrSmoothIter,

attrSmoothTolerance, attrConnectEdgeNodes, attrConnectEdgeNodeTol, attrOffsetFrom, attrInitialized, and attrPostMeshCleanup to Surface object

- Added RotateCSys, TransformDeformMode, TransformDeformCSys, TransformDeformX, TransformDeformY, TransformDeformZ, TransformNodalMode, TransformNodalCSys, TransformPlateMode, TransformPlateCSys, TransformPlateDOF, vTransformPlateVector, TransformPlateVector, TransformSolidMode, and TransformSolidCSys to View object.
- Added Info_OrientSolidIsoOutput, Info_OrientSolidAnisoOutput, Info_OrientSolidHyperOutput, Info_OrientTria3StressOutput, Info_OrientTria3StrainOutput, Info_OrientTria3ForceOutput, Info_OrientTria6StressOutput, Info_OrientTria6StrainOutput, Info_OrientTria6ForceOutput, Info_OrientQuad4StressOutput, Info_OrientQuad4StrainOutput, Info_OrientQuad4ForceOutput, Info_OrientQuad8StressOutput, Info_OrientQuad8StrainOutput, Info_OrientQuad8ForceOutput to the Global Properties of the main FEMAP application object.
- Added Pref_ReadTabSize, PickBoundaryInternalMode, and PickCombinedCurveInternalMode to the Global Properties of the main FEMAP application object.
- Added SelectID, NextInSet, FirstInSet, and Count methods to the Common Entity Properties object
- Added OutputVectors method to the OutputSet object
- Added AnalyzeMultiple method to AnalysisMgr object
- Added GetMeshLoc, GetMeshLocXYZ, IsSmoothEdge, Surfaces, SurfacesAsSet, ElementsAsSet, NodesAsSet, Normal, IsCombinedCurve, GetCombinedCurves, CombineCurves, CombineCurvesAsSet, and Facets methods to Curve object
- Added AddOutput method to DataTable object
- Added GetCentroid, GetEdgeNodes, GetFaceNodes, and IsParabolic methods to Elem object
- Added Add method to Group object
- Added GetPly, SetPly, GetAllPly, and SetAllPly methods to Layup object
- Added InCombinedCurve, NodesAsSet, Curves, CurvesAsSet, and SurfacesAsSet methods to Point object
- Added SharedDelete, JumpToEnd, Size, Time Created, TimeWritten, and TimeAccessed methods to Read object
- Added RemoveNotCommon, RemoveNotCommonToGroup, RemoveGroup, Debug, IsSetAdded, ConvertToAllSurfaces, ConvertToBoundarySurfaces, ConvertToBoundarySurfacesOnly, ConvertToInternalSurfaces, ConvertToAllCurves, ConvertToCombinedCurves, ConvertToCombinedCurvesOnly, ConvertToInternalCurves, IsArrayAdded, HasCommon, and RemoveArray methods to Set object
- Added CurvesAsSet, SurfacesAsSet, ElementsAsSet, and NodesAsSet methods to Solid object
- Added Current method to Sort object
- Added NormalAtXYZ, NormalBox, BoundarySurfaces, AdjacentSurfaces, BoundarySurfacesAsSet, AdjacentSurfacesAsSet, CurvesAsSet, PointsAsSet, EndPointsAsSet, ElementsAsSet, NodesAsSet, and Solid methods to Surface object.
- Updated Curves and Surfaces methods of Solid Object.
- Updated Curves and Points methods of Surface Object.
- Added feAppModelDefragment
- Added feGetElementEdges
- Added feElementFreeEdge

- Added feElementFreeFace
- Added feSurfaceNormalDeviation
- Added feAddToolbarSubmenuSubmenu
- Added feBoundaryAddSurfaces
- Added feCoordVectorPlaneIntersect
- Added feSurfaceConvert
- Added feGroupMoveToLayer
- Added feBoundaryFromPoints
- Added feAutoMeshAssociativity
- Added feSolidStitchNoCleanup
- Added feAppVersion
- Modified feFilePictureSave to support new file types available in File, Picture, Save.
- Modified feOutputTransform to support new options available in Model, Output, Transform.
- Modified feRenumber to allow renumbering of Layups, Connectors, Regions, Connection Properties, Functions, Analysis Sets, and Layers.
- Modified feDelete to allow deleting of Layups, Analysis Sets in the Analysis Manager, Connection Properties, and Connectors.

Corrections

Licensing

- Corrected problem that caused a hidden FEMAP process to remain after you exited with File, Exit command if you were using network licensing and did not have a valid license. FEMAP was checking for a license during exit and hung the process.

Analysis Manager

- Fixed problem when a Nastran Static Analysis Set is created, then the Analysis Type is changed to Normal Modes. FEMAP was not removing the Load Set and Initial Conditions boundary conditions, which are not available for Normal Modes analysis.

Connection Properties, Regions, and Connectors

- Fixed problem migrating Contact properties to Connection Properties. The Contact properties for NX, Sinda, Ansys, Marc were not being migrated properly.
- Fixed problem reading Connection Regions from the neutral file. The ID offsets were ignored.
- Fixed problem when renumbering Coordinate Systems. The reference csys in Connection Regions were not being renumbered.
- Fixed problem when renumbering Materials. The Material references in Connection Properties were not being renumbered.
- Fixed problem when renumbering Load Sets. The Load Set references in Rotor connection regions were not being renumbered.

Groups and Layers

- Corrected problem with Group->Operations->Add Related that added extra entities into each group if you selected multiple groups for a single command

GUI - Dockable Panes

General Pane corrections

- Corrected how entities are deleted from the Model Info tree when pressing the delete key. Previously they were not using the proper procedure so undo did not work when using delete key.

Model Info tree

- Fixed problem deleting multiple Data Surfaces from the tree when one was loaded in the Data Surface Editor. Femap asked if it was "OK to delete" for each Data Surface instead of once for all selected
- Corrected several issues with next/prev in Model Info tree. When deleting entities, did not properly show/hide prev. Changed titles of next/prev from IDs to Next/Previous. Fixed proper hide/show of Next/Prev as you moved up and down list. No longer show CSys 0,1,2 always - just at the beginning. Added functionality of double clicking Next/Prev to move in list, not just right mouse menu.

Data Surface Editor

- Fixed problem deleting multiple Data Surfaces from the tree when one was loaded in the Data Surface Editor. Femap asked if it was "OK to delete" for each Data Surface instead of once for all selected
- Fixed problem interpolating using the arbitrary data surface when using a coordinate system other than Global Rectangular
- Changed setting of local CSys so coordinate picking in dialogs is in that local CSys.

Entity Editor

- Corrections to entries in Editor Help for Nastran.
- Fixed problem editing a RSPLINE element from Entity Editor, where the element lists were being mishandled.
- Fixed problem editing a Geometric Boundary Condition from the Load Definition.

Program File

- Stopped remembering "Previous Commands" while program file is running, so "Previous Command" reruns program if run from toolbar.
- Multi-select list boxes did not properly record/playback if a pick was made to clear the box after a selection was made and focus changed. This occurred in commands like Model, Load, Combine where more load sets and factors were repeatedly picked without leaving the dialog.

Interfaces - FEMAP Neutral

- Fixed error FEMAP v9.3+ unable to read neutral files from versions between v4.1 and v5.0 if they contained laminate properties.
- Only write TMG records to neutral file when writing the analysis model (not geometry model) and only if no group

Interfaces - Nastran

- Fixed problem requesting Random output. Added support for NX5.0 and MSC 2004 NORPRINT, RPRINT, RPUNCH. This caused problems in FEMAP since random output was written to the f06 file, which causes Femap to skip reading of the op2 file completely.
- Fixed problems reading the op2 file when unsupported composite output existed. FEMAP sometimes could skip supported output in addition to the unsupported output.
- Enhanced FEMAP to support reading up to 50,000 time steps from the f06 and now issues a error when exceeding the number of supports steps.
- Changed entry length limit from MAX_STR_LEN to 1000.
- Fixed problem when skipping the UM field on RBE3's.
- Fixed problem reading AUTOSPC,NO that caused Femap to write out two AUTOSPC entries when file was exported out again.
- Corrected reading of PCOMP if all plies are specified in a single column. Previously aborted reading as soon as it encountered a missing ply.
- Corrected several issues with checksum on Nastran files when using INCLUDE files - had a problem with spaces at the front or back of a line, tabs and blank lines.
- Corrected reading of Nastran OP2 file from Design Optimization analyses. Previously some results data could be missed.
- Fixed problem when writing only entities in a group to Nastran. No geometry based BC we being written.
- Fixed problem writing Design Optimization constraints for CTRIA elements.
- Corrected problem reading op2 files with time steps smaller than 1E-7. Changed to 1E-15, so FEMAP can read the time steps it can write.
- Fixed reading of PWELD elements which were reading properly, but issuing error messages indicating they had been skipped.
- Fixed problem writing LOAD card. When applying only a GRAV load an extra load field was written on the LOAD entry.
- Fixed problem where density for MAT4, MAT5, MATHP, MATHE, MAT10 were not being converted with WTMASS during import of Nastran files.
- Corrected problem where Femap was incorrectly reading End B of a PBEAML.
- Added error if Initial Yield Stress was zero for a plastic material using Von Mises or Tresca criterion.

Interfaces - NX Nastran

- Fixed problem where Femap was incorrectly finding ADINA messages C O R R E S P O N D I N G D I S P L A C E M E N T and L O A D V E C T O R M U L T I P L I E R in the f06 and causing the op2 to fail to read.
- Fixed problem in SOL 701, where TSTEP was not written when only an Initial Conditions boundary conditions set was chosen.
- Fixed problem writing BOLTFOR in SOL 601. FEMAP was using the dynamic loads set rather than the one specific to bolt load, which is setup when writing the case control.
- Fixed problem writing BCTPARAM entry. REFINE and INIPENE were being written to the glue set. Only affected BCTPARAM when no other options were written.
- Changed reading of NXN results. The output destination defined in the analysis case will now be used to determine where FEMAP should read results from. Warnings will still be read from f06 but if PRINT is not explicitly selected then results will be read from other output files regardless if any valid output exists in f06 file, expect XY PRINT data, which will still be read.
- Suppressed writing of METHOD field of TSTEPNL.

Interfaces - NEi Nastran

- Fixed the problem where FEMAP was not writing out the proper DPHASE entries for frequency response analysis when translating to NEi Nastran

Interfaces - Ansys

- Corrected problem writing Transient, NLTransient, Transient heat transfer and Frequency response. A solve command was being written at the end of these solutions which caused Ansys to sometime overwrite the good results that were calculated from the analysis.
- Corrected a problem writing elemental convection loads, where the bulk temperature was written to the wrong face.
- Fixed problem reading Ansys elements when no real constants were required for that element type.

Interfaces - Abaqus

- Fixed problem reading element continuation lines when the data line contained a single fixed format item.

Listing

- Corrected listing of Geometry loads to list in definition CSys instead of global CSys
- Corrected "Curve using Point" listing method to work properly for all solid curves. Previously, only selected curves that referenced points in the point list.
- Corrected problem that caused listing of Constraint Definitions to fail if you had the List, Destination set to Printer.

Loads and Boundary Conditions

- Fixed problem setting nodal output Csys to 1 or 2 for constraint expansion when Arbitrary in CSys option is used.
- Fixed problem when multiple Constraint Definitions were defined on the same geometric entity. Constraints are deleted but the Constraint Definition was not updated.
- Fixed problem expanding nodal temperatures with a data surface. If load evaluated to zero it was not being saved properly.
- Fixed problem editing face of a Surface Load from the Load Definition.

Meshing

- Fixed problem where a mesh consisting of parabolic beams is created, then converted to linear elements. The converted linear beams would not be written to NX Nastran.
- Corrected an issue introduced in v9.3.1 that prevented Modify, Move By, Offset Element from working.

Tools

Check, Coincident Curves

- Updated Tools, Check, Coincident Curves command to properly renumber boundary surfaces and update the reversed state when they contain curves that are being merged. Previously the boundaries were deleted.

Check, Sum Forces

- Corrected issue where pressure loads were being summed incorrectly. This error would occur when applying corner pressures to the triangular faces of solid tetrahedral or wedge elements.

User Interface

- Corrected a problem that could leave the progress bar displayed after aborting a mesh on a bad surface/boundary.
- Fixed Element checking to automatically zero extra nodes if fixup is allowed - previously prevented copying rigid elements that had a second node set.
- Expanded width of strings allowable in error, Print... so long errors like in Measure Distance do not get truncated.
- Removed error messages for zero length elements that are valid for that element type
- Stop ESC key from ending Message Boxes that don't have the Cancel button - previously ended Yes/No boxes with Yes.
- Modified custom tools menu so that it processes like a regular command and the tree gets updated

Preferences

- Fixed a problem when a user chooses a new library. If the library fails to load because it is the wrong type Femap was still saving the bad library path to the preferences.

API

- Corrected a problem with API method `feRenumber` and `feRenumberOpt` when you tried to renumber Solids or Volumes that would corrupt the database (did not renumber the `Solid_Volume` records)
- Corrected `GetTitleIDList` so that it can retrieve the global coordinate system IDs and titles.
- Corrected problem in `DataTable` API that created extra rows if you called `AddColumn` with duplicate IDs in the array that you passed.
- Corrected problem with `feMoveTo`. New coordinates were previously required to be in `Global Coordinates`, not in the specified coordinate system as documented.
- Fixed API problem where the `Set` object did not persist in some cases when using the `select` or `add` methods.
- Fixed several problems which caused the `Outline` property (shape of the beam property when using a `General Cross-Section`) of the `Property` object to not work.
- Fixed problem in `feMoveOffset` that caused it to fail if you did not use `Set 1`.

FEMAP v9.3.1 New Features and Corrections

Updates and Enhancements

64-Bit Version

- Upgraded FEMAP to run on 64-bit operating systems.

Database and Performance

- Added function to compute memory usage percent. Previously, you would need to specify a number of parameters in the preferences based on a certain amount of memory.

Geometry

- Added "Copy in Same Location" option to all geometry copy commands
- Improved Solid Add to work with various combinations of adjacent solids that previously did not fully add because of the order they were combined.
- Updated Radial Copy of Points/Curves/Surfaces to do either spherical or cylindrical about a vector
- Updated Geometry, Scale, Solid and Modify, Scale, Solid commands to allow scaling in 3 individual directions instead of using 1 uniform scale factor.

Groups

- Added option to Group, Operations, Generate Material, Generate Property and Generate ElemType to create either one group with all selected entities or multiple groups one for each selected entity.

GUI - Dockable Panes

Data Table

- Added access to the Data Table via the FEMAP API in order to create customized tables in the Data Table.

Data Surface Editor

- Added Messages indicating when location evaluated to zero.
- Added Table copy from Data Surface editor
- Added New interpolation commands for row column and to force weighted or bi-linear interpolation.

Model Info Tree

- Added Group commands to tree menus for Solids, Properties, and Materials
- Added Automatic Add to the Group Menu in Model Info tree
- Added support for editing Data Surface titles from the Model Info tree.
- Added context menu to the root of the Connections branch in Model Info tree.

Entity Editor

- Added Coefficient of Thermal Expansion to the Entity Editor and Data Table

Interfaces - FEMAP Neutral

- Added *Read Groups* and *Read Views* options to File, Import, FEMAP Neutral command.

Interfaces - Nastran

- Added reading CBUSH to ground.

Interfaces - NX Nastran

- Added support for the Shell Thickness (OSHT1) output from Solution 601/701
- Added support for Linear Contact in Modal Analysis (SOL 103)

Interfaces - MSC Nastran

- Added support for reading CTE on rigids
- Added support reading MSC RBAR1 as RBE2 and
- Added support reading RIGID=LAGRAN case control commands.

Interfaces - Ansys

- Added support for reading major Poisson's ratio PRij from Ansys

Interfaces - Geometry

- Added Support for Parasolid 19.0

Layups

- Added Layup Viewer
- Added Total Thickness to the Layup Manager Dialog Box.

Listing

- Added List, Output, Force Balance Interface Load command
- Added ability to list nodal output in a specified coordinate system to the List, Output, Results to Data Table command

Meshing

- Added "Copy in Same Location" to all mesh copy commands
- Added 4 new patterns to Mesh, Editing, Interactive
- Added 1 new pattern to Mesh, Editing, Split
- Added Regenerate display at end of Mesh, Editing, Interactive command
- Added the Radial method to Mesh, Extrude... commands
- Added Bias to Standard Extrusion in the Mesh, Extrude... commands
- Updated Radial Copy of Nodes/Elements to do either spherical or cylindrical about a vector.

Tools

Stress Wizard

- Added the ability to choose an assembly made up of multiple solids for use with the Stress Wizard. The Connect, Automatic command is run after import with the default values for contact detection and Glued Contact. This allows for a static analysis to be run on many assemblies.
- Added the ability to change the material associated with any desired solids of an assembly in Step 1
- Added a button to Step 4 which allows the use of the View, Advanced Post, Dynamic Cutting Plane command.

User Interface

- Added "32-bit" and "64-bit" version indicators to the Help About dialog
- Added Demo/Edu/Dealer strings to title bar
- Added Total and Available memory listings to List Model Info and Help About
- Cleanup leftover nodes/elements when surface mesh fails on planar surface
- Made OK the default button for the Coincident Node Preview dialog
- Made "Start Text"/"End Text" in analysis definition dialog boxes all fixed pitch font
- Supported EMDAC in addition to Wecan
- Updated UI for Rotation Center/Axis toolbar to properly show the top icon based on the rotation mode selected.

Preferences

- Added bar to preferences for amount of cache used currently
- Added multi-model memory setting for OpenGL
- Added Spaceball Preferences Tab
- Updated preference to always read nonlinear stress/strain without asking to OFF by default.
- Updated Layout and Shortcut Key save/load to use XML format (*.LAYOUT file) and allow for options in data to transfer

API

- Added Data Table object to the API.
- Added BoundingBox methods to Curve, Surface and Solid objects
- Added CurrentID property to Set Object.
- Added GetFromSet and FindMaxMin methods to the Output object.
- Added feSelectOutput method to the application object
- Added feConnectAuto method for automatic connection generation
- Added feMeshAttachNodes
- Added GetOutputListAtSet, GetScalarAtNodeSet, GetVectorAtNodeSet, GetScalarAtElemSet and GetElemWithCornerSet to the Output object
- Added feOutputProcessConvert
- Added GetRowValues() to the Data table API

- Added CoordDialogMethod, VectorDialogMethod, PlaneDialogMethod parameters, feCoordPickByMethod, feVectorPickByMethod, fePlanePickByMethod methods and zCoordDefinition, zVectorDefinition and zPlaneDefinition lists.
- Added IsEmpty to Set object
- Added MaxNormalDeviation method
- Added MaxNormalDeviation method to the surface object
- Added MapOutputFromModelToLocation() to MapOutput object
- Added Total Thickness to the Layup object.
- Added feLicenseIsAvailable and feLicenseMethod
- Added AddAllExcept method to the Set object
- Added feFileReadNeutral2() API method
- Added feAppModelContents() api method
- Updated ApiVariantSize() to handle variants that were created by the WinWrap Basic Array statement
- Updated ArcCircleInfo method of Curve object to work with Solid curves
- Updated DataTable SetColumnPosition to be able to move columns before or after other columns

Corrections

GUI - Dockable Panes

General Pane corrections

- Corrected how entities are deleted from the Model Info tree when pressing the delete key. Previously they were not using the proper procedure so undo did not work when using delete key.
- Corrected problem when Entity Editor and Model Info tree were in "stacked" configuration. When clicking on the Data Table while on "top" would activate the Entity Editor fields from behind.
- Corrected problem that added Header entity to selection after certain commands in the Model Info tree

Data Table

- Fixed sorting of CheckBox and ID..Title fields in DataTable. Previously sorted as text, not as their numeric values

Data Surface Editor

- Fixed problems using the Interpolate command. Negative values were not respected in some vector cases.
- Fixed problems calculating the tolerance used in locating points in the 2 point and multi point curve data surface.
- Fixed problem evaluating 4point bilinear and parametric surfaces.
- Fixed problem when creating DS with large number of rows > 40,000 that caused FEMAP to crash.
- Fixed problem reading neutral file of 2D tabular data surface.
- Fixed problem in undo when using Data Surfaces

Entity Editor

- Corrected a problem that caused the toolbar in the Entity Editor window to not contain part of a dialog box when you opened a dialog over it
- Fixed problem with the Analysis Type field from the output set object.
- Fixed problems with Contour Type and Contour Data Conversion controls in the entity editor for views.
- Fixed problem with the dependent rigid list in the editor and report window.

Interfaces - Nastran

- Corrected problems used to read/write MATHE for Nastran.
- Corrected a problem with unit conversion of the rotational DOF values for CBUSH
- Fixed a number of Hyperelastic stress/strain issues - supported Grid/Gauss point locations for linear solids, added support for several element types/output locations
- Fixed problem loading the Advanced Load Set Options for Dynamic analysis dialog box. The problem caused the option for cluster around to be changed to spread around modes when entering the dialog box.

Interfaces - NX Nastran

- Corrected issue with graying Rotor Dynamics Excitation order when switching to Fixed Reference System, but leaving the selected radio button which then generated invalid ROTORD. Also corrected default read for this field.
- Corrected a problem with writing wide-field versions of NXSTRAT, BCTPARA, BCTPARM and BGPARM. Depending on the number of parameters, you would not get the proper wide-field pair.
- Fixed problem introduced in FEMAP 9.3 that caused Gluing not to be written for SS heat and Transient heat.

Interfaces - NEi Nastran

- Fixed the problem where FEMAP was not writing out the proper DPHASE entries for frequency response analysis when translating to NEi Nastran

Interfaces - Ansys

- Corrected problem that caused FEMAP to write bottom location incorrectly for laminates.
- Corrected problem reading and writing the Ansys beam shear deformation constants SHEARZ, SHEARY.
- Fixed problem reading laminates from Ansys. FEMAP was not saving the layup.
- Fixed problem reading symmetric layup flag and adjusting bottom surface value with symmetric layup.

Interfaces - Abaqus

- Corrected problem writing spherical coordinate system for *TRANSFORM * ORIENTATION also fixed reading of Cylindrical and spherical coordinate systems in these cards.

- Corrected problem reading elements when the property was defined on a different ELSET from the *ELEMENT generation.
- Corrected the problem where FEMAP was not reading the DENSITY option from the *BEAM GENERAL SECTION keyword.

Layups

- Corrected problem where plies and global plies did not have material references renumbered when materials were renumbered
- Corrected a problem that caused bad output to be written if you had zero materials, pressed Compute, and did not have the Entity Info Window open.
- Corrected a problem that caused Material drop-down in Layup Manager to have duplicate copies of materials after you pressed "Load" to load a layup from the library

Listing

- Corrected bug in List, Output, Results to Data Table that prevented "Select Similar Layer/Ply/Corner Vectors" working
- Changed listing of Beam cross section shapes to only list those dimensions that are used, and with the correct titles

Loads and Boundary Conditions

- Corrected error when editing load definitions. If you had multiple loads in different definitions on the same Node/Elem/Geometry, then you edited the first definition, the loads in the other definitions were sometimes updated to be the same values.
- Fixed problem expanding elemental surface loads with a Data Surface, loads were never calculated when solid elements had faces on multiple loaded surfaces.
- Improved Delete, Model, Mesh to not delete loads and constraints on nodes that were on the boundary of the selected elements (also on other elements and therefore the nodes were not deleted). Previously everything was deleted from all nodes attached to the selected elements.
- Corrected a problem that prevented elemental Distributed Loads from being applied in the Global Z direction (worked in v9.2, broken in v9.3)

Meshing

- Corrected a problem that could cause a mapped mesh on a surface to crash if certain patterns of curves were suppressed.
- Updated Hex Meshing to not create a new property if there is a Solid Property available, even if it is not active. Now works just like tet meshing

User Interface

- Corrected a problem with the legend max/min on Beam Diagrams if a Group was displayed. The legend was calculated with Auto-Group, and the Beam Diagram Default Direction was set to one of the "Reverse End B" options.

- Corrected problem when Layers were defined to limit a group, they were not used to limit Solids that were included.
- Corrected a problem in Undo that could occur with Multiple consecutive Undos and multiple blocks per page in the cache.
- Changed Edit CSys to automatically reset the coordinate mode to at coordinates. Previously if you were in "On Node" or "On Point" you could not edit coordinate systems and simply hit return to get back the same locations.
- Corrected a problem that caused model to be lost if you ran out of disk space during a save which was prompted by File Exit.
- Corrected problem that caused automatic titles for property types that have shapes (Beams, Bars, Curved Beams...) to be Untitled if you did not define a shape
- Corrected error that caused FEMAP to hang if you typed an invalid value in the Nastran Output Request Destination
- Corrected a problem reading Optimization results - was previously labelling cases with the "before optimization" titles, but results were "after optimization". Now reads both before and after into separate cases.
- Corrected a problem that caused crash if you imported a CSV file with more items in the header than in the subsequent rows.
- Corrected a problem that allowed you to exit without saving (and lose your model) if you first cancelled a Save As
- Fixed error in V9.3 that left behind non-deletable but unattached nodes on triangular surfaces where it tried a fan mesh and failed.
- Fixed problem editing a spring element with BUSH formulation. The Element Dialog box that was being displayed did not have orientation or offsets available.
- Fixed Contour/Criteria buttons on Post Toolbar to automatically pick an output vector if none were previously selected.
- Prevent Freebody displays from being calculated if there are no results to display
- Prevent asking to save in ReadOnly Mode when we close FEMAP
- Updated display to not show the "Use Reference Point" Check box for a number of element types (curved tube, curved beam, spring/damper, gap) that did not use offsets
- Updated Current Directory handling to remember the current directory for each model and switch with the model activation. Also initializes all file dialogs to the current directory. This is a return to behavior of FEMAP v8.31 and before.

Preferences

- Corrected problem where startup program/api would run if you double-clicked an existing model to start FEMAP even though "run for every new model was set" - now only runs for new models

API

- Corrected problem that caused curve object to generate custom mesh sizes unless you explicitly set MeshMaxParam(0) = 1.0

- Corrected error in NextEmptyID and PrevEmptyID for CSys object - previously could return CSys 1 and 2 as empty IDs, when they are reserved.
- Updated SelectID set method to properly handle case of requesting CSys when no user-defined CSys exist, even though Global CSys always exist.
- Corrected bug in API Set Object when adding rule by element topology.

FEMAP v9.3 New Features and Corrections

Updates and Enhancements

Color Palette

- Moved color palette to be model dependent (and now saved with the model)
- Moved User Contour Palette to be view dependent, now saved with model. Also revised Preferences for "Color" and "Libraries" by moved User Contour Palette Library to "Color" with Palette (and added browse buttons)
- Added Transparency to title in Palette dialog

Connection Properties, Regions, and Connectors

- Added support for BGPARM (Glue Parameters)
- Changed Glue/Contact distances to match the connection sizes
- Added Fluid Regions, Bolt Regions, and Rotor Regions
- Added Enable/Disable of Fluid, Bolt and Rotor Regions
- Changed Modify, Edit, Region to ask for and edit multiple regions, not just one.
- Added "Show Expanded" for Connection Regions - shows regions that are defined by nodes/elements if selected in a multi-pick with other real expandable segment.
- Added option to turn on/off free surface of Fluid Region.
- Added reading of MFLUID and ELIST from Nastran
- Supported MPRES in output requests to get MPRES output into the OP2 (DMAP ALTER)

Elements - Rigid

- Added highlighting for nodes in rigid element selection list
- Added Thermal Expansion on Rigid Elements
- Added View Option to turn on/off independent and dependent markers, as well as DOFs

Geometry

- Added Geometry, Solid, Thicken
- Added Geometry, Surface, Remove Hole
- Solid Titles/Names now persist across Geometry, Solid, Cleanup and across writing a Parasolid transmit file

Groups

- Updated Group, Elements, Material; Group, Properties, Material; Group Materials, On Property; and Group, Materials, on Elements commands to handle the extra material IDs and the material IDs on layups of laminates
- Added function for multi-select titled entities, updated Group Evaluate to allow evaluation of multiple groups
- Added Group Operations "Booleans" and "Add Related" commands.
- Added Group Commands for Regions - using Node, Elem, Curve, Surf, Prop

- Allow output vectors to be reloaded to those in selected set on set changes in Group, Operations, Generate with Output
- Added ability to create groups from entities on layer
- Added capability to Group, Operations, Add Related and Select Related in the Selector to start with selecting just a layup
- Added new group definition for Elements by All Nodes.
- Update Group from Superelements to use that for all but the residual structure
- Ask question about Groups from Layers - condense or not
- Changed name of Add Related to Add Related Entities.
- Removed Group Operations And, Or, Exclusive Or and Not commands.
- Removed "Evaluating Group..." when evaluate always is on - happens many times just moving the mouse around if the group is displayed

GUI - Toolbars and Icons

New 9.3 Toolbars

- Added Custom Tools functionality
- Added Dockable Panes toolbar (Panes)

Icon Buttons

- Added "create function" buttons to load dialogs - load definition, body loads, heat loads and dynamic loads
- Added creation of New to Modify Update Elements Property ID, Material ID, and Modify Update Other Node Def CSys, Node Output CSys, Point Def CSys and CSys Def CSys

Load Toolbar

- Added Bolt Preload to the Loads Toolbar

Select Toolbar

- Added Export Neutral to Selector Action
- Added Coordinate Picking, Around Point, Around Vector, and Around Plane to Selector Actions
- Added automatically turning on "Select Multiple" when you choose "Select Related" on selector,

View Toolbar

- Added commands for quick use of Element Colors, Property Colors or Material Colors
- Added quick-drop-down command to turn on/off thickness and cross section
- Added view center/rotation center commands and menus
- Added View Rotation Single Axis and Model Axes commands

Customizing Toolbars

- Added 110 new custom icons for Customize command
- Added option to turn off menu icons

Icons for many commands were added (Many in Modify... commands)

GUI - Dockable Panes

Data Table

- Added "List Output Nodal Changes to Data Table" command (Relative Deformations)
- Added capability to add mass properties when you have properties or materials in the data table
- Added Copy Rows and Copy Columns to Data Table
- Added Set Value and Set Title fields to List Output Summary to Data Table
- Clear Report selection when adding rows (eliminates top line being highlighted when you add first row)
- Added wrapping for titles in output dump report, also added lookup for vector titles when the vector is not available in the first set selected
- Added multiline header to report

Entity Editor

- Added editing of nodal point coordinates in the definition system and a separate display of the coord in the active system.
- Added ability to edit the definition csys and edit the coordinates in that system, changing systems will transform the edited values dynamically.

Model Info Tree

- Added Loads and BC to tree
- Added Combine Load/BC Definitions to tree
- Added Icons for some Load/Constraint tree commands
- Added Load Tree Context Menus
- Added Nodal on Face for Loads and Constraints in Tree
- Added Bolt Preload to Load Definition context menu in tree
- Added Data Surfaces to Tree
- Added Show Expanded on Connection Regions
- Prevented Shift-Selection in tree from processing multiple notify/highlight messages
- Added when highlighting properties, if no elements are assigned to the property it will show geometry using the property as a meshing attribute
- Properly highlight loads and constraints when in the Selection list in the tree
- Added "Add Related" to Group Context menu in tree.
- Updated to keep track of pages that were deleted so the tree can be properly updated on a Redo.
- Added Load Set Copy and Constraint set copy to the right mouse menus. Also corrected problem with Constraint Set Copy that caused Node counters to not be updated to reflect the new set
- Added Regenerate command when changing groups from tree so that contours are updated

Program File

- After IF statement program files now wait for timer - it allows other things to happen, like an API to run and set some condition

- Added program file support for Layup dialog controls
- Allow <USER> or <PAUSE> program file commands to work with File Open dialogs
- Supported Multi-select list boxes in program files, and corrected problem replaying
- Program files that used dialog boxes with no underline in OK

Data Surface Editor - new for 9.3

- Allows you to create 7 different types of Data Surfaces which can be used to create variable loading conditions
- Data Surface Editor Model dependent - one control per model
- Update Entity ID, Update Coordinate, and Update Vector on context-sensitive menu

GUI - Entity Selection

- Added method to node picking to select nodes referenced by constraint equations
- Implemented Coordinate Picking, Around Point, Around Vector and Around Plane
- Enhanced Copy and Copy as List to both export the net selection, not the ranges in the box.
- Made Previous and Pick->Paste honor the Add, Remove, and Exclude settings

Interfaces - FEMAP Neutral

- Added Color Palette to the neutral file (Block 942)
- Added control over groups and views when writing neutral files
- Updated Neutral Read and Write for v9.3 changes

Interfaces - Nastran

- Changed a few items specifying MSC.Nastran to MSC/MD Nastran
- Supported checksums for NASTRAN files with INCLUDE files.
- Added ability to define 2 scratch directories and sizes for Nastran
- Added DDAM Analysis Support in Nastran (NX and MSC/MD)
- Added direct access to NASTRAN command for setting system cells
- Added ELRESCS option to NX Nastran 601/701 NXSTRAT to request solid results in elemental/material csys
- Added PARAM,NOFISR - to suppress output of Failure Indices and Strength Ratios to the F06
- Added support for Complex Modes in Nastran
- Added support for Initial Conditions (temperatures) and TEMP(INIT) in Nastran Static Analysis
- Added support for MATT8 - temperature dependence for 2D Orthotropic materials
- Added support for MFLUID, added MPRES support to F06
- Added complex eigenvalue support to reading F06
- Added support for NASTRAN Composite Strength Ratios.
- Added reading of Max Failure Index from OP2, and support for PARAM,SRCOMPS
- Added support for Stiffened modes in Nonlinear analysis (supports large deflection, follower forces...).
- Added support for writing and reading NASTRAN SUBCOMs

- Added writing property titles for PBUSH, PVISC, BFRIC, PLPLANE, PWELD
- Initial implementation of Superelement support - added SEID to node record, node options to set it, Update SEID command, added to Groups and Selection method, Added group Operations superelement command, added Nastran write support on GRID card, added NASTRAN read support of SEID on GRID/GRDSET, and read of SESET
- Initial support for BOLTLD, BOLTFOR, BOLT in Nastran, limited Bolt Regions to include only Beam and Bar elements
- Supported checksums for NASTRAN files with INCLUDE files.
- Supported include files in case/exec
- Supported MATHE for both NX and MSC Nastran
- Supported Multi-case buckling analysis in Nastran
- Improved reading of various contact issues in Nastran Read - none that failed with our files, but would fail if contact came at beginning of file
- Added INTORD and REFINE for NX Nastran BCTPARAM and BGPARM
- Added generation of 1P and 2P functions for Rotor Dynamics
- Added overall damping (Param,G) support for complex modes
- Added SORT1 for 601_TRANSIENT because ADINA changed default to SORT2
- Do not write DLOAD case control for transient heat to NASTRAN if you do not have any transient loads
- Initial implementation of Rotor Dynamics support for NX Nastran
- Added option to Nastran Bulk End Text to put it before or after ENDDATA
- Updated Random OP2 postprocessing to support changes in NX5 - added PARAM,RPOSTS1,1 and new changes to OP2 results
- Turned off computation of standard output vectors for random analysis
- Supported new "3D iterative solver" for Sol 601
- Modified ADINA restart so that the restart control in the Nastran executive control is in sync with the NXSTRAT dialog box.
- Added copying the ADINA restart file to the .dat directory and renaming it to the current jobname.res then set the dbs keyword on the command line.
- Enhanced the Preview Input functionality so switches in the executive control will be honored when writing via the preview file for Memory, Output Directory, Save database for restart do restart
- Added the ability to recognize between Solid Von Mises and Octahedral output and store data in their respective vectors.
- Added ability to read Superelement output from XDB
- Enhanced the XDB interface to enable turning off reading of individual cases as well as individual time steps within those cases.
- Added the ability to define initial conditions for Advanced Nonlinear Static. This will allow a user to define a initial temperature load and specify it as a initial condition which will then write the TEMP(INIT) case control.

Interfaces - Nei Nastran

- Added support for NEi/Nastran's version of DDAM

- Added BSCONP RBE3 contact option to Connection Property

Interfaces - Ansys

- Added Compress_Contact_Segment before the expand during export. Did not seem to be causing any problems but certainly could if the segments were not properly compressed and there was not any apparent reason why a compress was not done in the first place.

Interfaces - Dyna

- Added Material Angle for plates/composites for Dyna

Interfaces - I-DEAS

- Added writing of Groups to I-DEAS universal
- Supported reading Nastran files generated by I-DEAS where groups are defined as Sets with PARAM,G### commands to specify nodes and elements in each group

Interfaces - PATRAN

- Added support for reading Points, Lines/Curves, Patch/Surface and Named Components/Groups (PATRAN Neutral file)

Interfaces - Geometry

- Added option to skip updating material data when geometry is updated.
- Support added for Parasolid 18.1, ACIS 16, Solid Edge 19, NX 4, Catia V5 R 17, and Pro/E Wildfire 3

Layups - new for 9.3

- Initial implementation of Layups for Laminate Properties
- Added new Layup Editor with layup and global ply API classes
- Added New Layup to laminate property dialog
- Added Layup Library
- Added Layup to tree, added delete and list of layups
- Added Layups to Group and Selector, New Group types include Layups by ID, Layup by Matl, Layup on Prop, Elem by layup and prop by layup. Also added highlighting of layups from tree and layups to select related/copy in selector

Libraries

- Added delete capability into Load from Library dialog box

Licensing

- Added automatic waiting and checkout of network licenses when initial licensing fails

Listing

- Added missing titles for mesh attached to geometry when listing group definitions
- Added commands to List Load Definitions and Constraint Definitions
- Update List Load to not fail if no nodes/elements/points... were available and you selected loads on those along with others.
- Added command to list output results to the data table (List, Output, Results to Data Table)
- Added element IDs to Chk_Twist messages when importing

Loads and Boundary Conditions

- Added new dialogs for Load and BC Combine
- Added user titles for Load Combine and Constraint Combine.
- Added BC Definition creation for Copy and Combine
- Added Delete Load/BC Definition commands.
- Added functional dependence for body accelerations and rotations. Removed requirement for coincident vector for RFORCE rotation and accelerations
- Updated Loads so that variable loads are propagated when you edit with update all.
- Added option to rebuild to delete orphaned loads and bc
- Added "Rotating About Vector" to body loads to automatically set rotational velocity and acceleration components around a vector
- Added Edit Load Definition and Edit Constraint Definition to menu
- Also added face selection by free face for loads on mesh
- Clear the current face ID when you switch between Front and Back Face - to truly indicate that you have to re-pick the face after the radio button change.
- Initial implementation of Bolt Preloads
- Made center of rotation on body loads pick-able from screen
- Removed Reference Temperature from Body Loads unless you have FEMAP Structural as your default solver
- Bolt preloads not selected automatically for list or delete and keep going with error message if something does not exist

Meshing

- Added option to Modify, Move By, Radial Nodes and Modify, Move By, Radial Elements to move cylindrically around a vector, not just spherically
- Allow "loop" feature suppression to work on sheet bodies
- Added extra pass at end of tet meshing to cleanup interior midside nodes
- Changed setting size of small features to an option in Solid and Surface mesh size dialogs - automatically uses mesh size if turned off.
- Changed Edge Members of line elements to require both nodes be selected. Previously only one node was required so you got extra elements if you selected a "corner" node - which was different than the solid-face mode for the same command.

- Prevent Unrefine and Remesh of line elements

Modify Menu

Project

- Added commands to Project Onto Vector and Project Onto Plane for nodes and points.

Update Elements

- Updated commands on menu to be more descriptive and rearranged for better grouping
- Added command to reverse direction of line elements
- Added command to set Rigid Element CTE
- Changed command name Update Element Remove Cross Section

Renumber

- Added Renumber of Connection Prop, Connection Region, Connections and Functions
- Added Renumber Layers
- Added Renumber Analysis Sets.

Output and Post-Processing

- Added Contour Group to Contour Options dialog box
- Supported MPRES in output requests and automatically added DMAP ALTER to get MPRES output into the OP2
- Added function to automatically renumber output from v92 to v93 ID ranges, also added function to API to allow same
- Modified Delete Output Entry to ask for range of output sets and vectors and delete individual results from all selected
- Added computation of frequency and damping coefficient in title for complex modes output
- Added a "Complex Mode Shape" vector ignore during expand.

Preferences

- Converted File Preferences to Multi-Row tabs
- Added ability to recover from scratch directory (if it is up to date).
- Added browser for default View from View Library
- Added preference for length-based mesh sizing.
- Added preference for tooltip delay and duration
- Added preferences for controlling Show Entities defaults in new models
- Added Units drop down for File Preferences Geometry Scale Factor
- Fixed bug if you had a startup basic script and had the "every new model" option checked it would not work at startup
- Moved User Contour Palette to be view dependent, now saved with model - was simply a global variable that was never saved. Also revised Preferences for "Color" and "Libraries" - moved User Contour Palette Library to "Color" with Palette (and added browse buttons)

- Saved size of main window when exit - no longer always start maximized - obeys icon startup preference
- Added preference to keep NextID increasing during rebuild
- Added preference to always read nonlinear stress/strain from Nastran
- Enabled 32-bit/64-bit Nastran switch in preferences

Properties and Materials

Properties

- Added new PCOMP options for Membrane Only, Bending Only, Smeared and Smeared Core

Materials

- Added function drop-downs to materials and capability to create functions
- Handled putting materials that reference functions of functions into the material library.
- Supported MATHE for both NX and MSC Nastran
- Supported MATG gasket material
- Added MAT10 (fluid material) as an "other" material

Tools

Parameters

- Updated Tools Parameters dialog layout, Added option to Merge Tolerance for specified or automatic, and never update the values automatically.
- Added graying to Tools Parameters based on automatic/specified merge tolerance

Variables

- Changed delete variables to select multiple variables (update underlying multi-select to support variables)

Check, Coincident Nodes

- Updated Check Coincident Nodes to add preview (off by default) and options for which to keep
- Added dialog to Coincident Node/Point Merge for Showing Merge List, Keep List or both

Check, Distortion

- Added "Jacobian" Element Check

User Interface

- Added longer titles and automatic titling. Updated title length to 79 characters.
- Added minimum size limits to resizable dialogs
- Added Regenerates to Modify Rotate By, Rotate To, Move By, Move To, Align and Project commands
- Added Resizing to many dialog boxes
- Added error message if you create line elements with colinear orientation in Edge members
- Added adjustable drop-downs on combo boxes

- Added capability to save and load keyboard shortcut definitions
- Added context help to all of the standard dialogs (select, coord, vector, plane and palette)
- Added Help to Customize Dialog
- Added Methods to standard selection dialog box for Connections, Connection Properties, and Regions, and several for Elements, Props,...
- Made all set activate (Load, BC, Solid, Output Set, Layer, Output Vector) dialog boxes resizable
- Prevent overwriting a model that is currently open in same session
- Prevented pick from filling in XPT(-1) or XND(-1) if the entity selected did not exist - just fills with coordinates.
- Removed command line options for MSC, UAI, CSA, VR, SSS, CFD, and WECAN
- Renamed Spring Elements to Spring/Damper
- Save Position of undocked Analysis Monitor
- Support of dialog placement for multiple monitors
- Updated for longer title lengths, and added new single-precision data blocks
- Updated List push button on standard selection dialog to bring up a multi-select list instead of a single selection.
- Changed dialog title "Face Selection for Elemental Loads" to "Face Selection" because it is used other places
- Changed File, Open to work properly on Vista
- Updated Combo box drop-downs for Windows 2000. If controls were not high enough no drop-down was shown.
- Improved support of Spaceball graphics interface devices.
- Changed Default Message Font and Program font to Segue for Vista

API

- Added API enum for access to indices in View Options properties
- Added APIs for new preferences
- Added App.feWindowSetRect. Removed vu.WindowLeft, WindowRight, WindowTop, WindowBottom.
- Added zMessageColor enum and changed color for feAppMessage to that instead of regular colors.
- Added App.feWindowTitle to set window tab title and view title
- Also added feProjectOntoVector and feProjectOntoPlane API commands
- Added enum zDataType as index for Info_MinID, InfoMaxID...
- Added feAppEventCallback and EventLParam to enable easier access to FEMAP events.
- Added feConnectionRegion as equivalent name to feContact
- Added feModifySuperelementID method
- Added GetTitleIDList() and ParseTitleID(). Can be used to fill combo and list boxes in API and parse the results back into an ID
- Added NextEmptyAction()
- Added Clear() to delete all contents
- Added Text String Highlighting color

- Added SelectAllOnLayer to the Group object
- Added API feVectorPerpendicular
- Added echo of errors to messages window
- Added feGetElementFaces to API
- Added many new properties to AnalysisMgr API.
- Added SelectMultiID() to Set object
- Added ResetNextLoad, NextLoad, ResetNextLoadDef, NextLoadDef to the Load Set object. Added same functions to BC Set Object. Added the Load Definition and BC Definition objects
- Added Thermal Expansion on Rigid Elements
- Added User Graphics to API, and support for multi-dimensioned arrays
- API Connection Region added "GetEntities" method
- API method feGroupCombine
- Exposed Selector via API
- Update Set Entity Select method to always end up with a set that contains what was displayed in the dialog
- Updated API Type Library to show BOOL as Boolean (VARIANT_BOOL).

Corrections

Connection Properties, Regions, and Connectors

- Corrected problem with reflected/copied elements still having counters from previous connections and being nondeletable
- Reversed direction of connection regions generated by Connect Surfaces command

Geometry

- Fixed bug in Geometry, Spline, Tangents command. Order of arguments were confused.

Graphics

- Corrected problem during criteria display of solid elements with criteria limits on. Previously, FEMAP would only show free face element faces. Now all elements which meet specified criteria are shown.

Groups

- Automatic Add into groups did not work reading Nastran files because incremental plot records were not created. Turned them back on if you are automatic adding to a group
- Fixed problem automatically adding load and bc entitles to group with Automatic Add. FEMAP was using Load record ID instead of entity ID that was loaded.

GUI - Dockable Panes

Model Info Tree

- Fixed a problem with Next/Prev in the tree when you had gaps in numbering. Previously did not step properly

- Corrected crash when editing a load from tree in a non-active load set
- Corrected error that prevented the copy button to work when you edited a property from the tree
- Fixed graying for several other tree commands.

Data Table

- Fixed bug that caused output displayed in corner 1 to be corrupt if the element was loaded and the contour type was elemental.

Entity Editor

- Fixed a problem where you could not select coordinates when creating a csys from the entity editor.

GUI - Entity Selection

- Corrected a problem when picking into a combo box. Previously if you selected an item from the list, then picked, the pick would update the control, but it would then reset based on the selection in the list. It now clears the selection first.

Interfaces - Nastran

- Corrected handling of reading include files with no path
- Corrected stiffened modes in Modal - grayed loads in master case, not in subcases
- Corrected location of BGSET in Case Control in Random and Response Spectrum analyses when you requested XYPLOT/XYPRINT output - moved before those requests as reqd.
- Corrected problem reading nonlinear plate stresses from F06 file. Was improperly calculating MinPrin stress in some cases (positive values were zero) because it was using 3D calculation because an empty Z Stress value was read from the header
- Corrected problem reading complex modal output and real/imaginary constraint output from XDB
- Corrected problem reading coordinate system of the PLOAD3, PLOAD4 cards. FEMAP was renumbering the csys but never updating the surface load record with the new system (i.e., directed pressures were wrong).
- Corrected anomaly that causes FEMAP to incorrectly read buckling output from the .op2 file when multiple subcases exist where more than one Eigenvalue was requested in each subcase.
- Corrected anomaly in the switch for Single/Double sided contact (NSIDE) when going to Sol 601. This made it impossible to define double sided contact. Due to the bug in #2 the Penetration Depth was written when the Double sided Contact was checked even though this option is not available for NSIDE = 2.
- Corrected problem reading nonlinear Plane strain output from XDB and op2.
- Fixed problem reading PSOLID when the CORDM field was blank. FEMAP incorrectly read it as aligned to the element rather than the basic system.
- Fixed problem writing CBUSH FEMAP would write zeros instead of blanks to the CBUSH orientation fields when no orientation vector, node, or csys had been defined.
- Fixed problem where set id defined for BGSET, BCSET case control commands was too large
- Fixed problem reading CQUADR and CTRIAR output when corners were not requested

Interfaces - Dyna

- Fixed problem where FEMAP was incorrectly writing the Circular Tube cross section for a beam. When defining the cross section for a Circular Tube in FEMAP the Radius that is defined is actually OD of the tube. The ID is calculated with $2 * (\text{Radius} - \text{Thickness})$. Given the above convention FEMAP was writing the OD wrong for LS-DYNA(Field TS1, TS2 of *SECTION_BEAM).

Interfaces - MARC

- Corrected a problem saving the marc parameters dialog box the processor switch and the Parallel BETA were broken.
- Corrected issue where contact property field from the Marc model Definition was still referencing regular properties. Updated to load Connection Property

Licensing

- Corrected a crash that occurred if you got a licensing failure dialog (no dongle) during startup and rolled the mouse wheel while that dialog was displayed.

Loads and Boundary Conditions

- Fixed "hang" that occurred if you tried to combine a case back onto itself (loads)
- Corrected convention for pressures on corners of solid elements - they now properly follow the order of the right hand rule around the outward face normal. Previously they went in inward normal RHR order. This caused them to be written incorrectly to Nastran, Ansys... Also corrected problem in Nastran read that allows you to pick any solid face corner for the first load to start the varying pressures from
- Corrected problem in edit load when applying changes in coordinate system to multiple nodal load, the loads were not properly transformed to the correct CSys.
- Corrected problem when editing multiple temps and updating with same value - previously temps were marked as expanded geom loads and were later lost
- Fixed Reflect nodal loads, fixed reflect loads on geometry (no extra loads)

Meshing

- Corrected problem if you hex mesh sized a solid, without overwriting previous mesh spacing, and that spacing was defined by a custom mesh size, then the bias was never set (0.0) and the mesh was distorted.
- Corrected problem that made property undeletable if it was created by Geometry->Midsurface->Assign Mesh Attributes
- Hid Update Mesh Sizing button when meshing from elements
- No longer create (keep) a dummy PLOT PLANAR property when you tet or hex mesh.
- No longer lose "Use Meshing Attributes" if you create a property while meshing surfaces

- Corrected problem with Mesh, Rotate... commands. When rotating loads the rotation angle was not updated for subsequent repetitions.

Output and Post-Processing

- Calculation of the Total Velocity was missing from the FEMAP standard vector calculator.

Preferences

- Fixed bug if you had a startup basic script and had the "every new model" option checked it would not work at startup

Properties and Materials

Properties

- Corrected handling of element formulation. Does not zero accidentally when moving in Element/Property Type dialog. When copying, reflecting, splitting, editing, the original formulation is preserved.
- Corrected bug in fix-up for negative shear areas that ended up causing the centroid to be incorrect.

Materials

- Corrected bugs with Thermal Expansion and Thermal Conductivity properties - orthotropic props were in wrong slots.

References

- Corrected problem with File, References - said SE file was not available if it was open in SE

User Interface

- Corrected a bug that prevented replay from working from FEMAP if the path to the picture had spaces.
- Corrected a crash if you put more than 80 characters into an edit field in a dialog
- Corrected bug in printing that prevented proper selection of paper sizes and copies. Also removed v8.3 toolbar bitmaps from the resources
- Corrected bug when reading SPCADD which caused constraints to have no color or layer.
- Corrected error that occurred with 1 cache block and re-accessing that block after it was just deleted. It was still found, but was never in the directory lists. Should never be seen by previous users, found it during rebuild of tree control after undo.
- Corrected problems with Preview in Entity Selection dialog that erased the range list after you hit Preview and then transferred Methods
- Fixed Error if you had "save dialog positions" and closed a maximized dialog. The next time you tried to display that dialog it would "hang". Actually the dialog box was there but not visible - if you hit Esc or Return, you would get out and could continue
- Corrected sliding of combo drop-downs on multiple monitor configurations

API

- Sent commands that start an API from the API window through the main command loop so that it checkpoints the command and you can undo just the execution of the API, and not the previous command
- Fixed problem with multi-selection list from wInit_GetRange
- Fixed problem with XYZtoParam method of Surface object, previously did not return rationalized parameters
- Fixed problem that prevented indices on vector/matrix properties from exceeding 32767 if accessed from Excel using the type library. (were declared as short)
- Fixed problem when calling clear on a Set object - it was no longer held exclusively
- Corrected a problem with counters on nodes when using the API to create list-base (rigid, slide line..) elements
- Fixed feSplineTangent. Order of arguments were confused.

FEMAP v9.2 New Features and Corrections

Updates and Enhancements

64-Bit Support

- FEMAP v9.2 is still a 32-bit application, however this release can be run on 64-bit Windows. The dongle-based licensing has been updated to support the 64-bit platform.
- This release also includes both 32-bit and 64-bit versions of NX Nastran. If you are using NX Nastran for FEMAP on a 64-bit platform, the 32-bit FEMAP can still use the 64-bit NX Nastran.

Preferences

- Added a preference for running a Startup Program File/ Basic Script/ Executable either just at startup or for every new model.
- Removed Disk_Undo Preference.
- Added Preferences for Nastran solver including control of memory, output directory and scratch directory.
- The Workplane is no longer displayed by default.

Tools

- Tools, Distance has been enhanced to return the measured components in both global and the active coordinate system.

Geometry

- Added capability to extend surfaces

Connections

- Changed contact elements and properties to Connections, and moved them to the top level of the menu. This makes Connections more accessible and properly separates them from element types.
- Added automatic detection of connections between solids of an assembly. Also added automatic creation of connections between two or more surfaces.
- Added connections and connection properties to the Model Info tree along with capability to enable/disable connections.
- Added a Connection Property Library

Meshing

- To improve the workflow for tet meshing, the initial dialog for mesh sizing has been removed. Unsized curves are now automatically sized with default sizes, and an "Update Mesh Size" button has been added to the meshing dialog. This reduces the number of dialogs if you use default sizing, and if you need custom sizing, it allows you to update the size multiple times until you are satisfied

Loads, Constraints, and Results

- Added ability to create loads in a model by mapping results from a different model. The meshes in the two models can be dissimilar. Mapping is done by location. Currently temperature and displacement results are supported.
- Added the ability to quickly apply the same changes to many loads or constraints in the Edit commands. After editing the first Load/Constraint, you now have an option to apply the same conditions to all selected entities, rather than needing to manually edit each one.

Modify Project

- Added commands to project points and nodes along a vector onto selected surfaces.

Analysis Set Manager

- Added Support for LS-DYNA3D in the Analysis Set Manager.
- Added ability to preview ANSYS, ABAQUS, MSC.MARC, LS-DYNA input files from the Analysis Set.

Interfaces - FEMAP Neutral

- Added an option to Neutral Read to always create new output sets (not overwrite)

Interfaces - Nastran

- Added support for NX Nastran 4.1: LSEARCH, CSTYPE parameters on NXSTRAT card, AUTOSPC Singular Value Decomposition (SVD) option, and BGSET for “Glued” Contact
- Added the ability to read CQUADR/CTRIAR Z-offsets.
- Added ability to run NL Heat transfer with only an Initial Condition.
- An enhancement was made when Femap is writing radiation boundary conditions. A warning message will be issued by Femap if it is unable to create the necessary plot only plate elements to define the radiation condition.
- Added the ability to request extended error messages from the Executive/Solution options section of the Analysis Set Manager.
- Added the ability to set the amount memory to be used in the solution from the Executive/Solution options section of the Analysis Set Manager.

Interfaces - Nei Nastran

- Added support for MAXAD, TMAX, TMIN, MAR, and WO contact options on the BSCONP card.

Interfaces - MSC.Marc

- Fixed a problem reading results files from version 2003. Femap has been enhanced to read output from versions 2003 and 2005.

Interfaces - ABAQUS

- Fixed problem reading analytical rigid surfaces.
- Fixed a problem writing Quad and Tria elements when formulation was set to 3..Thin Shell(5-DOF/ Node, Small Strain)and Warping flag. Previously wrote S4R when it should have been S4RS and W and S3R when it should have been S3RS
- Improved reading of contact output, where Femap will attempt to match the output vector label to the actual contact pair label in Femap

Interfaces - Other Analysis Programs

- Interfaces to many analysis programs that have not been actively supported have been hidden in this release. They can re-enabled thru File Preferences, however these interfaces are no longer supported and may be removed in the future.

Interfaces - Geometry

- Due to contractual changes with Spatial Technologies, and the extremely low customer demand, the VDA interface has been removed and is no longer supported.
- A new interface has been developed to import NX parts and assemblies.
- Automatically support Pro/E Wildfire file naming convention which appends version number extensions (for example, fn.prt.4)

Groups and Layers

- Added ability to create layers from Groups. Added Group Operations Move to Layer command, and updated the Group Operations Generate Solids command

Graphics

- Added a View transparency option that allows you to make your model transparent without changing entity colors. This is often good for selection when you are trying to pick entities either inside or on the back of a model.
- Also added a new transparent highlighting mode where the model becomes transparent and only the highlighted entities are solid.
- The undeformed model is no longer displayed in default deformed views.
- All floating point numbers drawn in the graphics window (except workplane axes) are now controlled by the exponent and number of digit settings on the View Options, PostProcessing, Contour/Criteria Legend dialog.
- Contour vectors can now be labeled with their value. This is controlled by the labeling options on the View Options, PostProcessing, Vector Style dialog.
- Animate-MultiSet and Trace with scaled actual deformation now output individual frame maximum deformation and overall maximum deformation.

User Interface

- Updated a number of dialog boxes to use a tabbed style. This includes File Preferences, Materials and Connection Properties.
- To more closely follow Windows conventions, "Browse" buttons that searched for files or directories have been changed to "..."
- Improved selection in "Pick Front" mode on Rigid and Slide Lines - it now considers all nodes, not just the master node.
- Added a checkbox to the Delete confirmation dialog box to never ask for confirmation. Also added to File Preferences (to turn this option back on)
- Added a toolbar for turning on/off entity display - like View Quick Options
- Added ability to show surface and element normals from the highlighter in the Model Info tree and Data Table.
- Added alternate keyboard accelerator tables for API and Program file development.
- Added several buttons to the standard selection dialog that let you choose entities from a list or preview your selection.
- Added "Update Selection" to the context menu of the Data Table
- Simplified the toolbar layout that is initially displayed. Only the Model, View and Selector toolbars are now displayed. All toolbars are still available, just not displayed initially.

API

- Fixed API feFileMessageSelect, replaced global constant Message_LineNumber with feFileMessageLineNumber function
- Added feAddToolbarSubmenu, feAddToolbarSubmenuCommand, feAddToolbarSubmenuUserCommand
- Added new entity types for Connections, Connection Regions and Connection Properties
- Added AddContact, SetOutputType, SetOffset, GetOffset, SetRigidType and IsRigidType methods to the Connection Region object.
- Added new Sort object. This is much like a Set, but allows additional data to be stored with each ID and allows the IDs to be sorted based on the attached data.
- Added Match and SelectOutputVectorID methods to the Set object.
- Added ClearNodeList method to the Element object
- Added IsPlane, IsCylinder, IsSphere, IsCone, IsTorus, Conical, Toroidal and Spherical methods to the Surface object. Modified the calling syntax of the Planar method to match the syntax of the new methods.
- Added numerous attributes to the Analysis Set Manager object to support the new Dyna Interface.
- Added numerous global attributes for the new Preferences.
- Removed the feFileReadVda method since the VDA geometry interface has been removed from Femap.

Corrections

Tools, Model and Views

- Corrected a problem that allowed nodes to be merged even though they were used on the same constraint equations.
- Corrected a problem in Tools Mass Properties where the automatic mass element generation was creating a property with an X-direction mass and no mass for the y or z direction.
- Fixed Output from Load for vector output so that component results have proper subcomponents set so they deform in the proper direction.
- Fixed loss of hidden/visible layers if you turned on "All Views" and "Show All Layers"

Interfaces - Geometry

- Added an option to Neutral Read to always create new output sets (not overwrite)

Interfaces - Nastran

- Corrected a problem where the Contact slave and master surfaces were reversed.
- Corrected a problem reading contact BCTSET card. This caused Femap to only read the first contact pair defined in the input file.
- Corrected a problem writing contact BSURF when model contained Laminates, Bending, or Membrane elements.
- Corrected a problem that caused Initial conditions to not be available for Sol 701
- Corrected a problem that caused the NX FRIC parameter on the BCTSET card not to be written.
- Corrected problem reading XDB files from transient analysis with multiple subcases that caused some time steps to be skipped in the subcases.
- Fixed a problem reading XDB files where filename length was greater than 80 characters. The limit has been increased to 255 characters.

Analysis Set Manager

- Fixed problem deleting cases from an Analysis Set that is not active. This corrupted the start/end text and contact table.

Graphics

- Contact regions on shell top and bottom faces are now drawn correctly when shells are drawn with thickness.
- Centered Solid Contour Vector arrows are now drawn correctly centered.
- Fixed Spaceball issue when orienting and hitting Ctrl-G at the same time - incorrect graphics images were drawn.
- Constraint equations now drawn in groups.
- Corrected length of freebody resultant force. In previous releases, these arrows could be drawn extremely large.
- Criteria with Line Contour now correctly just contours the edges of the elements and does not fill the elements.

User Interface

- Prevented accelerator keys that accessed View commands from acting in View command Dialog boxes - these could potentially cause a crash.
- Fixed problem deleting Analysis Sets from the Model Info tree that caused fields in a newly created set to be improperly initialized.
- Fixed a problem in the Entity Editor that corrupted groups if the group title was modified.
- Fixed problem in the Entity Editor that caused a crash when the entity Title field was too long.
- Corrected a mislabeled field in Entity Editor for Materials.
- Fixed a problem in Data Table that caused Femap to crash when viewing a LS-DYNA one-way contact property.
- Fixed a problem in the Entity Editor / Data Table that caused output displayed for corner 1 to be corrupt if the element had a load applied and the contour type was elemental.

API

- Fixed numerous problems with the Group Object that corrupted groups if you used the same object to retrieve and store multiple groups.
- Fixed problem with the Element Object that caused problems if you used the same object to retrieve a "list-based" element (rigid or slide-line), then later created other non-"list-based" elements with that object.

FEMAP v9.1 New Features and Corrections

Updates and Enhancements

Model Management

- Added the File, References command which can notify you when files (Geometry, FE Model or Results) that you have imported into your model have been updated or changed, and might need to be re-imported.
- Added the File, Save All command to save all open models in a single command.
- Improved File, Timed Save to automatically save all models, not just the active one.

Printing

- Updated the Print command to allow you to specify paper orientation and number of copies directly in the Print dialog, without having to go into Printer Setup.
- Added options to Print the Entity Info, Data Table, Program File and API Programming windows.

Program Files

- FEMAP commands and keystrokes can now be recorded and replayed in a new Program Files docking pane. This pane can also be used for editing and debugging Program Files. It provides commands to single-step lines and set breakpoints during replay. Program files are now recorded in a more readable fashion, including highlighted comments showing and delimiting each command. Program files can also be assigned to buttons on the toolbars or menu using the existing Customization (User Commands) capability. Added the File, Save All command to save all open models in a single command.
- Added the #method command to the existing Program File syntax. This allows program files to predetermine the Method / Type used for coordinate, vector, plane, element/property and material dialog boxes.
- Improved the #silent command so that it will not conflict with the "Remember Dialog Positions" preference.
- Added the FNI and FNV commands which can be used to retrieve interpolated values from functions.

Tools

- Updated Tools, Check, Coincident Nodes to allow the "Alternate Merge Nodes" to also contain nodes that were specified in the original list of nodes to be checked. Also prevented this check from merging nodes that were contained on a constraint equation.

Entity Editor

- Added a button to Clear the editor.
- Added ability to display nodal output for Node entity in a selected coordinate system.
- Enhancements were made to the Entity Editor to improve moving between fields and expansion of categories.

Data Table

- Added the ability to choose which Coordinate System nodal output will be displayed in the Data Table.

Properties and Materials

- Added buttons in the Section Property calculator for General Sections to flip the cross section horizontally or vertically after loading it.
- Added Modify, Color, Property Transparency and Material Transparency to set the transparency level of selected properties and materials.

Meshing

- When meshing line elements which are defined using the Section Property calculator (Beam, Bar...), using the Mesh, Between command, the reference point (if defined) is automatically used to create element offsets - just as it is when meshing on geometry.
- Added automatic merging of nodes at the endpoints of curves when you mesh multiple curves simultaneously - just as nodes on the boundaries of surfaces are merged when meshing multiple surfaces.
- Added Paving of elements around edges of surfaces

Graphics

- Added capability for displaying Background and Logo Bitmaps
- Added numerous options for controlling the style of background shading
- Added dynamic highlighting during selection for Text and Coordinate Systems
- Added Preference for "BitBlit Delay" which can solve OpenGL problems on some inexpensive graphics boards.
- Updated the Palette dialog box so that linestyles and patterns can be seen even when you pick a very dark (or black) color

Geometry Interfaces

- Added export interface to JT
- Added a direct interface to CATIA V5 files that supports parts and assemblies.
- Added a new direct interface to Solid Edge that supports Parts, Assemblies, and Sheet Metal files. This interface also provides access to design and/or simplified bodies, part colors and material information. The ability to associatively update the models has also been improved

Analysis Interfaces - NX/Nastran

- Now confirms that the output directory (if specified) is a valid, accessible directory
- Added TABLEM1 support for Advanced Nonlinear Solution 601
- Added support for linear contact in statics.
- Added support for Advanced Nonlinear Explicit Solution 701.
- Added ability to define AUTOMPC parameter in the Analysis Set.

Analysis Interfaces - Nastran

- Added support for reading Hyperelastic nodal output from the op2 and f06 file.
- Added support for reading CPENTA output from the xdb file.
- Added element forces to available Random XYPlot output requests.
- Added weld element CWELD.
- Added support for z-offsets for CQUADR/CTRIAR elements.

Analysis Interfaces - I-DEAS

- Added support for I-DEAS NX Groups (DataSet 2477)

Analysis Interfaces - ANSYS

- Added support for ANSYS 10.0.

Analysis Interfaces - NEiNastran

- Added Reversion options for the Tension Only Shell element.
- Added support for Effectiveness factors F3, F4 for PSHEAR.

Post Processing

- Added the List, Output, Summary to Data Table command. This command allows you to quickly find max/min values across multiple output sets and vectors, envelope data, find critical data for selected properties, materials, and subsets of selected nodes and elements.
- Updated List, Output, Unformatted so that summary data reflects only the selected nodes/elements and not the entire output vector.

User Interface

- Updated Ctrl+C accelerator to copy whichever window/pane is active to the clipboard. Previously it only copied the active graphics window. Now, if input focus is in the Messages, Entity Editor, Data Table, Entity Info, Program File, or API Programming panes, data from those panes will be copied - otherwise, it will still copy the active graphics window.
- Added Preferences to define alternate pan and zoom keys, mouse wheel directions, and Shift/Ctrl key usage for Dynamic Pan and Zoom. Also added Preference to use certain accelerators for Top/Bottom/Left/Right and Isometric Views, rather than their traditional FEMAP usage.
- Added new Help Commands for the Entity Info, API Programming and Program Files panes
- Added ability to show the full model path in the tabs for views rather than just the short model name.
- Added the "Entity Info" window which automatically displays the same information that the Entity Selector "Show Tooltips" command did, without the delays necessary for a tooltip, and without overwriting the graphics area.
- Added a context menu for Text entities which allows you to create, edit, list and delete text.
- Updated the Model Info tree to only display a limited number of items of each category. This can significantly improve performance if you have thousands of entities of one type. Options are added to the tree to show the next or previous group, whenever less than the full number of entities are displayed. The number of entities in the tree is controlled by a preference.

- Added Ctrl+Shift+U accelerator to tile/maximize the graphics window
- Changed the Entity selection dialog box that is used to select single entities with titles to be resizable - this allows you to increase the size of the dialog box if you have a large number of properties, materials, ...
- Removed a few confirmation questions that slowed down mesh sizing and copying group rules.

API

- Added the API Programming window, which provides a Basic environment which you can use to develop, edit, debug and run API programs without needing an external Basic compiler.
- Significantly enhanced the Type Library to provide better usability with auto-completion and tooltips. Added numerous "enum" definitions to provide lists of available values. Also, now properly registers the Type Library so it is immediately available.
- Added access to the "Text" entity.
- Added GetFaceNormal, GetFaceCentroid and GetFaceArea methods to the element object.
- Added GetValue method to the Function object which interpolates the function.
- Added feWindowMinimize, feWindowMaximize, feWindowRestore, feWindowTileHorz, feAppLockDraw, feAppUnlockDraw, feWindowRedraw, feWindowRegenerate, feWindowShow, feWindowActivate, feWindowTile and feWindowCascade methods
- Added AddArray methods to the LoadMesh, LoadNTemp, LoadETemp and BCNode objects which allow creation of multiple entities from one call.

Corrections

User Interface

- Fixed context sensitive help for commands in drop-down menus on the toolbars.
- Corrected a problem that prevented context-sensitive (right mouse) menu commands to fail or not be available if the Model Info pane was not displayed.
- Fixed a problem that prevented models that were saved with multiple open Views from properly maximizing when the model was reopened.
- Fixed a problem with the splash screen that caused FEMAP to disappear from the screen, but continue to run, if you dropped a FEMAP Neutral file onto the program icon.
- Corrected a problem in the Entity Editor where the output displayed for midside nodes was incorrect when performing a nodal contour.
- Corrected a problem in the Entity Editor where Load Set options were unable to be saved without first defining the Ambient Element field in the Thermal Analysis category.
- Corrected a problem with Undo when in the Interactive Mesh Editing command.
- Corrected a problem which caused the Delete command from the Model Info window Layer context menu to delete groups rather than layers.

Interfaces - NX/Nastran

- Corrected a problem that caused plate corner fiber distances to be placed in the wrong output vector
- Corrected PBEAML for tapered beams.

- Corrected a problem writing the Response Spectra Correlation Table that caused FEMAP to only write the first node to the DTI SPSEL card.
- Corrected problem reading output from the op2 for the QUAD4 Fully Nonlinear Hyperelastic element.
- Corrected a problem that caused composite stress and strain output to be skipped when reading the xdb file.
- Corrected problem with the Tension only plate properties in the Entity Editor.
- Corrected a problem where FEMAP did not write the RESVEC parameter in Optimization, NL Static and Modes solution sequences.
- Corrected problem reading CBUSH elements that caused FEMAP to issue warnings when no orientation vector was defined even though an orientation was not necessary.
- Corrected problem for Advanced nonlinear analysis (SOL 601) where FEMAP did not write contact conditions when no load set had been defined.

Interfaces - ABAQUS

- Corrected a problem that caused PRINT entries to be written in ABAQUS Explicit analysis.
- Fixed a problem where multiple mass elements referenced a single FEMAP property. FEMAP would only write one mass element per property.
- Corrected a problem writing *EXPANSION where the ZERO option was not written when the coefficient of thermal expansion was function dependent.
- Corrected a problem writing the *SECTION POINTS command for beam cross-section. FEMAP was not correctly calculating the point positions when a beam offset was used.

Modeling

- Corrected a bug in Modify, Rotate To, Nodes, Elements and Points that prevented them from working properly
- Corrected a bug in copying mesh sizes, loads and constraints when Solids are copied.
- Fixed problem in Modify, Rotate To, Coordinate Systems that caused FEMAP to crash.

API

- Corrected a problem in feAddToolbarUserCommand that prevented icons from being saved after exiting FEMAP
- Corrected a problem in feSetToolbarCommandBitmap that prevented transparent bitmaps from being properly colored.
- Fixed bug in feSurfaceTrimWithCurves which did not correctly use the specified set of curves
- Fixed feCheckElemFixup - it did not properly get the list of elements to check
- Corrected feMeshTetSolid to return FE_FAIL if the mesher aborts
- Corrected feSplineBlend
- Corrected feLayerPut if you tried to use the active layer color
- Corrected the "Expand" method of the BCSet object that caused it to fail if you had "advanced" (not just fixed and/or pinned) geometric constraints.
- Corrected feViewVisible (and feWindowVisible) that prevented it from reactivating hidden views

FEMAP v9.0.1 Updates and Corrections

Analysis Set Manager

- Removed Analysis Set Manager data from a neutral file "group" write

ABAQUS

- Corrected a problem where FEMAP did not correctly match the element and property when the ELSET field was not defined on the *ELEMENT card.
- Corrected a problem where FEMAP incorrectly wrote the *SURFACE card for ABAQUS Explicit.

ANSYS

- Added support for reading ANSYS 9.0 results files
- Corrected problems launching ANSYS directly from FEMAP.

MARC

- Corrected a problem reading Contact Data from T16 for Contact Bodies that use Control Points, but no trimming curves to define the contact surface (IBODTYP=4, ITRIM=0)

NX Nastran

- Added Support for reading NX Nastran 3.0 TFLAG field (Alternate Method for Specifying Shell Thickness) field for shells.
- Added support for reading output for the NX Nastran 3.0 QUADR, TRIAR

MSC Nastran

- Corrected a problem with XYPRINT, the PSDF request code was incorrect for CQUADR with no corners.

Geometry Interfaces

- Updated to ACIS Release 14.0.
- Updated Unigraphics interface, supporting NX.
- Updated Pro/E interface to support Wildfire 2.0.
- Added Support to read in Pro/E Assembly files through the Pro/E interface.
- Added proper conversion and reading of ACIS from FEMAP Neutral File
- Added ACIS Renumbering and Neutral file Translation
- Added NonMergeable Curve capability (Modify, Update Other, NonMergable Curve command)
- Added support for transferring colors from X_T, and options to choose whether you want it
- Added Solid Edge Entity Map
- Added support for reading XMT files with disjoint bodies

File Management / Database

- Added ability to close multiple models open at the same time in a FEMAP session with one command: File, Close All.

Preferences

All Preferences

- Implemented context-sensitive help for each of the Preference sub-dialogs

Render Graphics

- Added Search Depth option to optimize memory usage of the graphics data structures for models with a very large number of “similar but not identical” entities.
- Added support for using Smooth Textures in 2D Mapping.

Libraries

- Removed Menu from the list of Libraries

GUI - Toolbars and Icons

Select Toolbar

- Updated Solid picking to stop properly in the Selector when all solids were selected

Model Toolbar

- Added Analyze icon to the Model Toolbar

View Toolbar

- Added Filled Edges command to the View Style icon drop down menu
- Added new icons for Fill, Shading, and Filled Edges on View Style icon drop down menu

Icons for the following commands were added:

- File, Close All
- View, Advanced Post, Dynamic Cutting Plane
- View, Advanced Post, Dynamic IsoSurface
- View, Advanced Post, Dynamic Streamline

GUI - Dockable Panes

Messages

- Corrected scrolling problem related to some commands causing the list in the window to scroll back to the beginning of the list instead of continuing in the current position.

Entity Editor

- Added support for Advanced Thermal mode in the Entity editor.
- Made multiple corrections to help strings in the Entity Editor.

- Corrected problem that caused FEMAP to crash when a large number of layers were viewed in the Entity Editor
- Added the ability to the Entity Editor categories to remember their last expanded/contracted state.
- Added missing Entity Editor Field - Ambient Element on the Heat transfer Loads
- Corrected a problem in Entity Editor where the orientation vector selection did not properly display the last vector.

Data Table

- Corrected a problem that caused the ID field in the Data Table to be incorrect for nodal /elemental thermal loads.
- Corrected problem where nodal and geometric thermal loads incorrectly displayed a -1 in the ID column in the data table.
- Corrected problem in Data Table where entities with no titles blank labels rather than the standard FEMAP "Untitled".
- Corrected a problem in the Data Table where in some cases the columns may not line up properly.
- Added missing tooltip for "Show When Selected" icon in report window
- Added Element Mass Properties to the Data Table

Model Info Tree

- Added Layers as a category in the tree
- Added a context sensitive menu for Layers category (Show All Entities, Show Visible Entities Only, Make Visible, Make Hidden, New, Activate, Manage, List, and Delete commands)
- Added automatic entity activation when you double click in the tree
- Added "View Active" to Group Context Menu
- Added "Add to Selection" on the Group Context Menu

GUI - Entity Selection

- Added Pick->Copy As List in standard entity selection.
- Enhanced Copy and Copy as List to both export the net selection, not the ranges in the box.
- Made Previous and Pick->Paste honor the Add, Remove, and Exclude settings

Output

- Added deleting a range of output vectors to Delete, Output, Vector command

Geometry

- Enhanced the Geometry, Curve - From Surface, Project command to be able to choose any number of surfaces on different solids for a selected curve to be projected in a normal direction. The Geometry, Curve -From Surface, Project Along Vector command has also been given this capability.

Materials

- Added warning message to unit conversion to warn when Hyperelastic materials are not fully converted.

Meshing

- Added checking to determine if a surface has already been meshed. If the user tries to mesh the surface again, FEMAP will issue a warning message and then the user can decide to mesh any selected meshed surfaces again or only mesh non-meshed surfaces which are currently selected.

API

Overall API

- Updated Type Library generation to include all inherited interfaces.
- Corrected bug that caused model groups to become corrupted when you used the API to copy (Get->Put(newID)) groups

Changes to API Output Object

- Added GetOutputListAtID
- Corrected problem with mixed quad/tri corner output in GetElemWithCorner

The following methods have been modified:

- feMeasureMeshMassProp (Removed blank line being written when it was called with no printing)

The following methods have been added:

- feCurveProjectOntoSurfaces
- feReNumberOpt
- feCoordArrayTransform2()
- feLicenseExpiration
- feRunCommand
- feFileProgramRun - enables the user to run FEMAP program files (.prg files).

Graphics

- Corrected problem where beams not drawn if contour display but beam diagram option set to contour only
- Corrected problem where workplane is moved away from the origin and model, it can be clipped during dynamic rotation
- Added symbol to spring element so springs on coincident nodes can be detected
- Corrected problem when using fast pick for coordinate systems
- Corrected crash when aligning view to workplane
- Corrected problem in coloring elements by property or material if the element does not have a property

FEMAP v9.0 Updates and Corrections

Analysis Set Manager

- Speed Improved to the Analysis Set Manager Preview command.
- Corrected a problem copying the start and end text of each analysis section.
- Added support to List-Destination-File so that the command List - Model – Analysis can be written to a file.

ABAQUS

- Added the ability to define both mass and inertial properties on the same FEMAP Property.

ANSYS

- Corrected a problem where the ANSYS LINK10 element would fail to be written when the Initial Strain was set to zero. A option for Compression Only Gap has been added to enable this fix.

MARC

- Corrected multiple problem writing DIST LOADS command.
- Added support to the Analysis Case Manager for the FOLLOW FOR command to treat increments as Total Load.
- Corrected a problem writing the Rotational Velocity body load. Previously it was only possible to define the body load in the master case which caused the load to be doubled. The ability to define the body load in just the subcase has been added to correct this problem.
- Corrected a problem reading Tet element results from Marc when both Hex and Tet elements exist in the model.
- Corrected a problem where nodal results from a MSC.Marc t16 file were incorrectly imported into FEMAP when multiple coordinate systems existed.
- Corrected a problem writing definition of Beam to Beam contact.

NASTRAN

- Corrected Problem graying the GROUNDCHECK options.
- Removed writing of PARAM, LSTRN it is no longer needed to request strain output.
- Corrected a problem writing the line continuation field for the CBUSH element.
- Corrected a problem reading nonlinear transient results from the op2 file. In some cases FEMAP was incorrectly reading the time steps if Slide Line elements were present.
- Corrected a problem writing Radiation loads on the edges of elements. FEMAP was incorrectly defining the orientation node.
- Added the ability to selectively read results from the XDB file.
- Corrected a problem with the Tools-Convert command where rotational stiffness of the PBUSH property is not converted correctly.
- Corrected a problem importing a Nastran deck with a PARAM, WTMASS value, where the PBEAML and PBARL nonstructural masses were not scaled properly

DYNA

- Corrected a problem writing *CONTACT_TIEBREAK_SURFACE_TO_SURFACE.
- Corrected a problem writing the *DAMPING_GLOBAL that caused DYNA to abort.

Geometry Interfaces

- Updated to ACIS Release 13.0.
- Updated to Parasolid 16.1.
- Updated Solid Edge Interface to 16.0.
- Updated Unigraphics interface, supporting NX.
- Updated CATIA v5 interface to V5 R9 and R10 via Elysium interface.
- Corrected a problem writing IGES files that caused FEMAP to fail to write the file and issue no error messages.
- Corrected a problem that caused geometry to become corrupt when Renumbering Splines.
- Added command (Geometry, Curve – From Surface, Split at Points)to split a surface along a parametric curve positioned by user defined points.
- Added command (Geometry, Solid Remove Face) to remove face(s) from a existing solid.

File Management / Database

- Added ability to open multiple models in a single FEMAP session.

Preferences

Messages and lists

- Deleted Borders and size section (Create with Title Bar, Max Text, Status Color, Scroll Back Lines, and Window Lines).
- Added field to set Max Text Lines
- Changed Font to Message Font
- Added Listing Font drop down list to set a specific font for listing operations
- Added Command Color to control the color of commands in the Messages Window
- Added Bold check boxes to all colors to allow font to be in Bold type

Render Graphics

- Removed Render Method section
- Removed Rotate Animation, Rotate with Edges, and Fast Curve Picking from Render Options section

Menus and Toolbars

- Removed Show (startup only) section
- Removed Auto pop-up Previous Menu and Menu Help from Menus and Dialog Boxes section
- Added options to Menu and Toolbar Preferences to load and save toolbar positions.
- Added option to Menu and Toolbar Preferences to animate the fly-out of the dockable window panes.

Database

- Removed Use Model Scratch File from Database Options section

- Added Alternate Section Property Calculation to the Meshing and Properties section which allows FEMAP to use an Alternate method for calculating property values for a beam cross-section
- Removed Message File from the Scratch Disks section

Geometry

- Added Automatically Adjust Geometry Scale Factors option

Libraries

- Removed Toolbox from the list of Libraries

Output

- Corrected a problem that caused Error Estimate to not use corner vectors for elemental results.

Geometry

- Corrected a problem that caused the command Geometry- Curve Spline-Multiple Curves to sometimes fail when creating spines on edges of solid surfaces.
- Corrected a problem that caused FEMAP to create a extra solid when selecting one solid for advanced geometry cleanup.

Properties

- Corrected a problem where the property ID's in Contact Segments are not renumbered when using the command Modify-Renumber-Property.

Meshing

- Added Auto Boundary Small Surf option in the (Mesh, Mesh Control, Size On Solid) command. When this option is selected FEMAP looks for small surfaces within the tolerance and combines them prior to meshing.

API

The following methods have been removed:

- feToolCursorPosition
- feAppEmbedGraphics
- feAppEmbedMessages
- feAppMenu

The following methods have been modified:

- feFilePictureSave
- feFileNew
- feFileOpen
- feFileReadNeutral
- feToolUnitConvert
- feVectorUnit
- feDeleteAll

The following methods have been added:

- feFileClose
- feToolUnitConvertFactors
- feAppSetModel
- feAppGetModel
- feAppSetModelByName
- feAppCountModels
- feAppGetAllModels
- feAppRegisterAddInPane
- feAppManageToolbars
- feAppManagePanels
- feAppManageStatusBar
- feAppManageGraphicsTabs
- feGetToolbars
- feGetToolbarCommands
- feGetToolbarSubCommands
- feAddUserCommand
- feGetUserCommands
- feDeleteUserCommand
- feGetMenuCommands
- feGetMenuCommand
- feSetToolbarVisible
- feSetToolbarCommandVisible
- feSetToolbarCommandTitle
- feResetToolbar
- feAddToolbar
- feDeleteToolbar
- feAddToolbarCommand
- feAddToolbarUserCommand
- feSaveToolbarLayout
- feLoadToolbarLayout
- feGetToolbarCommand
- feSetToolbarCommandBitmap
- feAppGetActiveView
- feAppSetActiveView
- feAppGetAllViews
- feAppEmbed

Graphics

- Corrected a problem that caused contour vector orientations and magnitudes to change when render model was turned on and off.
- Corrected a problem displaying offsets for Mass elements when the offsets have been defined in a local coordinate system.
- Corrected a problem that caused FEMAP to crash in certain instances when contouring results in a model with contact segments.

On-Line Help System and Customer Support