

[Siemens PLM Software]

S O F T W A R E
F I E L D
B U L L E T I N

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SUBJECT: NX Nastran 8.1 is now available

Dear Siemens PLM NX Nastran Customers,

NX Nastran 8.1, is now available by download. A full installation is required, the details for which can be found in the README.txt file with the download.

A complete list of improvements and their details can be found in the NX Nastran 8.1 Release Guide. The release primarily contains maintenance improvements - a total of 36 corrections were made and are listed below. One enhancement of note is:

- Added an option for multi-body dynamic interface (MBDEXPORT) to export flex bodies to SIMPACK file format.

The list of corrections for NX Nastran 8.1 are:

PR	Description of Problem that has been fixed
--	The PBEAML Z-section warping constant computation has been enabled for use in SOL 200. While this property was previously computed, it was not linked to SOL 200 runs.
--	Several issues with the use of "integrated responses" for the objective function DESOBJ in SOL 200 have been cleared. For a definition and use of "integrated responses" (certain mathematical functions), see Remark 20 under DRESP1 bulk data in the NX Nastran Quick Reference Guide.
--	An overflow condition in the optimizer "DOT" which occurred with larger memory requests, and which resulted in the issuance of a request for even more memory, has been fixed.
--	See also the fix for PR 6542326 below, relating to combinations of MAT8 and other MATi related design variables.
--	The torsional constant calculation for the cross-section types "CHAN1" and "H" on the PBARL/PBEAML bulk entries has been corrected. The torsional constant is now computed using the first three terms of the following infinite series summed up over rectangular (2a x 2b, a > b) segments of the cross-section.
1846008	When nodes on a glued surface had a displacement CS (CD field on the GRID entry) and were fixed with an SPC, the constraint equations generated for glued surfaces were not correct. The software now handles this situation correctly.
1846056	When PUNCH output was requested on the GROUNDCHECK case control command, no punch file was created and no data was stored for GROUNDCHECK. The software now stores and writes GROUNDCHECK output to the punch file when requested.
1846474	A specific model which included CQUAD4 and CTRIA3 elements

- failed to converge in a SOL 106 solution. A change has been made to CQUAD4 and CTRIA3 transverse shear correction factors in the stiffness calculation so that the solution now converges.
- 1846484 Inaccurate ply stress results were found from a model with CQUAD4 and CTRIA3 elements running SOL 106. A change to CQUAD4 and CTRIA3 transverse shear correction factors in the stiffness calculation now results in accurate ply stresses from SOL 106.
- 1849048 Including an RBE2 together with PARAM,AUTOMPC lead to wrong results with superelements. Specifically, the problem could occur in cases when a rigid element was attached from a superelement internal grid to a boundary grid. This situation is now correctly handled.
- 1849102 When running SOL 601,106 on windows 64, a very large model failed to solve with stack overflow errors. This model will now solve.
- 1853305 The Tsai-Wu strength ratio output was incorrect when solving with the ILP-64 executable. This has been corrected.
- 1856339 If there were several subcases having a BOLTLD card in a linear analysis and the element iterative solver was requested using ITER=YES and ELEMITER=YES, the solve would fail with USER FATAL MESSAGE 1126 (GNFIST). This model will now solve with the element iterative solver.
- 2176023 A fatal error occurred when the element iterative solver was used with multiple boundary conditions. A second issue when using the element iterative solver is that displacement output printed to the .f06 file was in basic coordinates by default rather than global coordinates. Both of these issues have been resolved.
- 6410215 Temperature results were inaccurate on CQUAD4 elements in a SOL 153 analysis. To correct the issue, the software now computes temperature and heat flux at the Gauss points instead of the corner points.
- 6492773 When doing a dynamic reduction, if the number of q-set dof was arbitrarily more than necessary, the problem size would increase unnecessarily which led to performance problems. The software is now improved so that unused q-set dof are removed from the output transformation matrices. This has improved both clock and disk usage performance issues.
- 6496487 A large model which used the SPCD method of enforced motion in SOL 112 took much longer and used much more disk space as compared to the large mass method of enforced motion. Performance issues were discovered and corrected with the MPYAD module and the DSAR module (extracts displacements, velocities, accelerations, and dynamic loads from the transient solution matrix).
- 6524312 Incorrect results were produced from SOL 601 if the grid point connectivity of plane stress or plane strain elements was in the clockwise direction. This issue has been resolved.
- 6526495 When the CBUSH1D was used in SOL 601, if the direction of the X-axis was not consistent with the direction of GA pointing to GB (this occurred when CID was not equal to 0), the results were incorrect. This issue is now fixed.
- 6542326 In SOL 200, certain combinations of MAT8 and other MATi related design variables resulted in zero sensitivities with respect to some of the design variables. This issue has been resolved.

- 6545369 The model supplied with this PR contained XYPEAK requests for PSDF for both stress and strain at the identical grid ID and item codes. The XY processing code failed to recognize the difference between stress and strain PSDF data when the grid ID/item code combinations were the same. The XY processing code would process the data corresponding to the first grid ID/item code encountered. Since the PSDF data contains stress results followed by strain results, the stress data was always found. If the model was changed to request a different grid ID for strain, the correct XY strain results were then obtained. The problem has been corrected.
- 6549455 The failure index results for STRN failure theory were incorrect when thermal strains were present. To resolve the issue, the allowables on the MAT1 card are now always interpreted as STRESS values (the software converts them to STRAIN values using the elastic material properties). In addition, when the STRN failure theory is specified, the failure index calculation now uses the mechanical strain (total - thermal) and NOT the total strain.
- 6554520 Format error occurred as a result of a FREQ bulk entry defined with large field format. A workaround to the problem in releases before version 8.1 is to have the last FREQ data value occur in the last data field of the last continuation. This issue is now fixed in the software.
- 6554978 A model with density=0.0 failed to solve in SOL 701, but the reported errors were not specific to the lack of density (mass) so were not helpful in troubleshooting. Now the density=0.0 condition is trapped with an appropriate error message.
- 6562034 GROUNDCHECK was not producing A-SET output. This issue has been resolved, and GROUNDCHECK output is now produced successfully for the A-SET. Adding GROUNDCHECK(SET=ALL) = YES can be used as a work around in releases before version 8.1.
- 6562476 In NX Nastran 8.0, when the CTETRA element is used with the element iterative solver, the corner stress values stored are incorrectly the same as the center stress value. When the sparse solver is used, the results are correct. This problem is now fixed in NX Nastran 8.1 and the 8.0mp1 maintenance pack.
- 6565622 In NX Nastran 8.0, a more efficient search and pairing algorithm for contact and glue was introduced, but the use of search distances in the pairing algorithm was inconsistent with prior releases. The new method used the maximum contact search distance for pairing the source and target. In the PR model, the maximum search distance entered was 0.0, which led to a failure in finding any target faces and thus no contact elements were generated. Now the use of search distances in the pairing algorithm is consistent with the prior releases.
- 6566853 A SOL 159 model which included radiation loads was submitted with this PR. After an investigation, it was found that the model had a number of grid points which were connected. When running without radiation, the matrix was symmetric, and during decomposition, the software entered "1.0" on the diagonal to prevent singularities. When running with radiation, the matrix became unsymmetric, the software could no longer enter 1.0 on the diagonal during decomposition, and a "rank deficient" error message was reported. The resolution of this PR was to improve the error message.
- 6574708 A model with rigid element dependent DOF on a superelement boundary failed to run although PARAM,AUTOMPC,YES was included. The error was reported before the program could perform the AUTOMPC function. Now the AUTOMPC function will make sure the

dependent DOF are not on the superelement boundary.

- 6576419 In a SOL 601 creep analysis with a time dependent temperature load selected with a DLOAD case control, a TEMPERATURE(INIT) in the case control which selected temperatures for temperature dependent material properties caused the time dependent temperature loading to be ignored. The software now correctly uses the temperature load.
- 6579586 The grid point force matrix generated by the EXTSEOUT command did not work if more than one grid had mass connected to it via an RBE2. The run produced a warning message and did not generate the matrix. The software will now generate the grid point force matrix.
- 6580582 A two subcase model which included PARAM,AUTOMPC,YES running SOL 106 failed to converge in the second subcase. After investigation, it was found that the problem was related to the multiple subcases and PARAM,AUTOMPC,YES. This issue is now resolved and the solution successfully completes.
- 6580991 When solving a model with SOL 106, when SORT2 displacements were requested, SORT1 was written to the OP2. Now when SORT2 is requested in SOL 601, both SORT1 and SORT2 datablocks are written to the OP2 file.
- 6582964 Incorrect results were obtained for frequency-dependent analyses in SOLs 108 and 111 using the absolute method of enforced motion. The default constraint mode method of enforced motion in SOL 111 produced correct results. This issue is now resolved.
- 6592196 When creating an external superelement with the EXTSEOUT case control command, although VELOCITY and ACCELERATION case control commands were present, no displacement output transformation matrix (OTM) was generated. This has been corrected.
- 6600598 Results may be incorrect if a model has surface-to-surface or edge-to-surface glue, a displacement coordinate system defined (other than basic) on grids in the glue surface regions, and the element iterative solver is used.