

November 4, 1996  
G-1151-SJA-96-668

Document Control Desk  
United States Nuclear Regulatory Commission  
Washington, D.C. 20555

- Reference: a) Boeing Letter G-1151-RSO-92-365 dated August 31, 1992; R. S. Orr to the NRC Operations Center
- b) NRC Letter Docket No. 99901227 dated August 12, 1992; L. J. Norrholm to R. S. Orr; Subject: Response to 10 CFR 21 Inquiry

**BOEING**

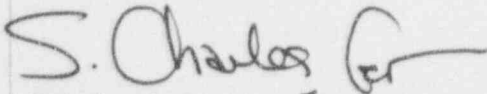
Dear Sir or Madam:

In accordance with the referenced correspondence and 10 CFR 21, Boeing is sending the NRC the attached error notice(s) received from our former software suppliers. Because of unknown current addresses, the following former customers were not notified:

Reactor Controls, Inc.  
Echo Energy Consultants, Inc.  
Nuclear Applications and Systems Analysis Company (Japan)  
Nuclear Power Services  
Tenera Engineering Services  
Gibbs & Hill, Inc.  
Holtec International

Error notices have been sent to our other former customers.

Very truly yours,



Sandra J. Andrews  
Nuclear Administrator  
Phone: (206) 865-6248  
FAX: (206) 865-4851  
Mail Stop: 7A-33, or  
e-mail: Sandra.Andrews@PSS.Boeing.com

Enclosure(s): ANSYS Class3 Error Reports 96-42, 96-43, 96-44, 96-45, 96-46  
ANSYS QA Notices QA96-09 and QA96-05R1  
ANSYS Support Coordinator Bulletin SCB96-01

120070

9611130129 961104  
PDR QA999 EECBOEC  
99901227 PDR

IC 20 1/1  
ID 36-13 vendor incp  
(99901227)



ANSYS, Inc.  
201 Johnson Road  
Houston, PA 15342-1300

Telephone 412.746.3304  
Facsimile 412.746.9494

October 24, 1996

NOV 04 1996

CONTRACTS

Dear Class3 Error Recipient:

Enclosed you will find ANSYS Class3 Error Reports 96-42, 96-43, 96-44, 96-45 and 96-46. Also, enclosed are ANSYS QA Notices QA96-09 and QA96-05 R1.

QA96-09 has been issued to alert users of SOLID62 and SOLID97 that the normal component of the magnetic vector potential must be discontinuous across material interfaces of differing permeability.

QA96-05 R1 has been reissued to notify users of the full scope of the error reported in QA96-05. This error has been fully described in Class3 Error Report 96-43 which is attached.

Finally, enclosed is ANSYS Support Coordinator Bulletin SCB96-01. It includes information pertaining to the ANSYS 5.3 Second Release and known, non-Class3 errors in ANSYS Release 5.3.

In the past year ANSYS has initiated the posting of all Class3 Errors and QA Notices on ANSYS's Internet Homepage whose address is <http://www.ansys.com>. Class3 Error Reports and QA Notices are located in the ANSYS Zones section of the Homepage under Customer. The username to enter this area is "customer" and the password is "ainlfm" (ANSYS is number 1 for me). Since 1994, ANSYS has been providing error notices via email to all customers with maintenance who have requested electronic mailings. These emails are transmitted and posted within 2 working days of final approval of Class3 Error Reports and QA Notices. We encourage all of our customers to take advantage of these methods for quickly obtaining Class3 Error Reports and QA Notices. Beginning November 1, 1996 Class3 error notification mailings to customers with maintenance will be performed on a quarterly basis. If you require notification sooner please make use of our Internet or email services. To register for email notification of Class3 errors, simply send an email request including your email address, company name/address and ANSYS agreement number to [bpodolek@ansys.com](mailto:bpodolek@ansys.com). Quality Assurance Service Agreement customers are not affected by this change.

Sincerely,

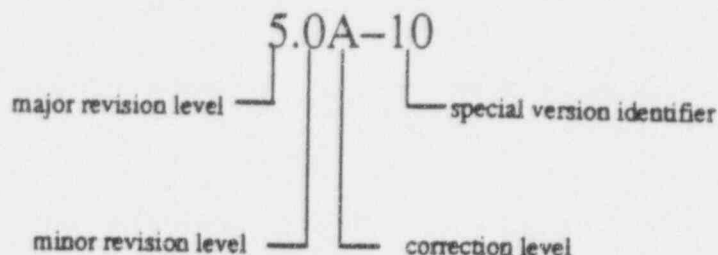
ANSYS, Inc.

William J. Bryan  
Quality Assurance Manager

enclosures

## ANSYS Revision Identifier Description

ANSYS revision identifiers consist of a major revision level, a minor revision level, a correction level, and occasionally a special version level. An example of how this is constructed is shown below:



Major revision level changes indicate that new features have been added to the program and that some level of program architecture change and/or file structure has occurred. Minor revision level changes also indicate that new features have been added to the program, but files are upwardly compatible. All known error fixes are included in both minor and major revisions. Changes to the correction level indicate that it is primarily an error correction release. Special version identifiers indicate that one or more additional minor changes have been made to the program, normally to circumvent an error. Special versions are not general releases to all ANSYS licensees, since they typically represent errors occurring only on one system, a subset of our customers who have specific graphics devices, etc.

The ANSYS revision identifier(s) shown under "corrected in" on the front side of this Class3 Error Report indicates the first possible revision that could contain the correction. A major program change needed to fix an error can dictate that the next minor or major revision will contain the fix rather than the next correction level. For example, when errors were being reported while Rev. 4.3A was the latest production version, most Class3 error reports indicated that 4.3B was the "corrected in" revision. Others requiring significant code restructuring were reported as fixed in 4.4. Rev. 4.3B was never released, but Rev. 4.4 contained all error corrections noted as fixed in 4.3B.

An identifier indicated under "corrected in" does not guarantee that a general release of that revision of ANSYS will occur. It does indicate that the correction is known and implemented in the coding that would be part of that general release.

## Equivalent Product Identifiers

The ANSYS family of products occasionally undergoes name changes between revisions and/or changes in the functionality of derived products (such as ANSYS-PC/LINEAR). To minimize the potential for confusion in these areas, the important product name equivalences (similar program functionality and error content) are listed below.

ANSYS/ED	contains all errors shown for	the full ANSYS product, starting at Rev. 5.0, and beyond, unless otherwise noted.
PC/LINEAR	is equivalent to	WS/LINEAR at Rev. 4.4A, and ANSYS/LINEAR starting at Rev. 5.0.
PC/THERMAL	is equivalent to	WS/THERMAL at Rev. 4.4A, and ANSYS/THERMAL starting at Rev. 5.0.
PREPOST	contains relevant errors shown for	the full ANSYS product, for included pre- and postprocessing functionality

# ANSYS® CLASS3 ERROR REPORT

ERROR NO: 96-42

KEYWORDS:    CONSTRAINT EQUATIONS            MODAL            ITERATIVE SOLVERS

## DESCRIPTION OF ERROR:

If a model contains constraint equations (CE command) at two or more nodes of any single element, the results may be incorrect if one of the following are true:

1. A modal analysis was performed (ANT <sup>POE</sup>MODAL) using the block Lanczos method (MODOPT,LANB) or the subspace method (MODOPT,SUBSP) with the Frontal solver option (EQSLV,FRONT [default]) or the JCG solver option (EQSLV,JCG).
- or 2. An analysis was performed with the ICCG solver (EQSLV,ICCG).
- or 3. An analysis was performed with the JCG solver (EQSLV,JCG) in which the matrices were unsymmetric (such as in piezoelectrics, acoustics, and other multiphysics applications).

Separate constraint equations typically occur when two components are tied together using constraint equations (CEINTF command) or with modal cyclic symmetry (MODCYC command).

## FIRST INCORRECT VERSION(S):\*

Release 5.3  
Component Products Release 5.3

## CORRECTED IN:\*

Release 5.4  
Component Products Release 5.4

## SUGGESTED USER ACTION FOR RUNNING ON UNCORRECTED VERSION:

If possible, replace the constraint equations with coupling, if the meshes align. Alternatively:

For 1. Use the reduced method (MODOPT,REDUC) or the PowerDynamics method (MODOPT,SUBSP with EQSLV,PCG).

For 2 and 3. Use the Frontal solver (EQSLV,FRONT).

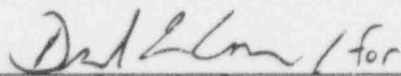
## COMMENTS:

The correction, currently available upon request from your ASD, fully accounts for the cross-coupling of all the constraint equations. This may increase the wavefront by as much as a factor of 3.

For modal analyses where there is insufficient memory to run with this correction, an option is provided to allow it to solve with longer run time.

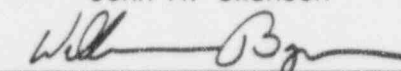
A similar correction will also be made for the block Lanczos method and will be available at a later date to all customers through a downloadable file from the ANSYS HomePage <http://www.ansys.com/ServSupp/>.

AUTHOR/CORRECTOR:

  
John A. Swanson

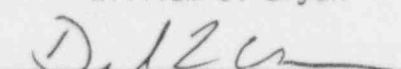
DATE:    October 22, 1996

REVIEWED BY QA:

  
William J. Bryan

DATE:    October 22, 1996

APPROVAL:

  
David Conover

DATE:    October 22, 1996

# ANSYS® CLASS3 ERROR REPORT

ERROR NO: 96-43

KEYWORDS: MATRIX50 SUPERELEMENTS COUPLED DEGREES OF FREEDOM  
NONZERO CONSTRAINTS

## DESCRIPTION OF ERROR:

Results are incorrect in a superelement (MATRIX50) use run if there is coupling (CP, CPINTF commands) involving the superelement degrees of freedom (DOF) and the following are true:

1. A nonzero constraint (D command) is applied to the coupled DOF;
- and 2. The nonzero constraint is not explicitly specified (e.g., through a D command) on the superelement DOF of the coupled set.

FIRST INCORRECT VERSION(S):\*

Rev. 5.0

CORRECTED IN:\*

Release 5.4

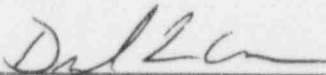
## SUGGESTED USER ACTION FOR RUNNING ON UNCORRECTED VERSION:

Apply the nonzero constraint at all the nodes of the coupled set.

## COMMENTS:

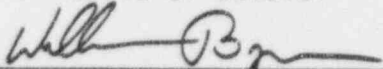
This Class3 Error Report details the error originally reported in QA Notice QA96-05, which is superseded by this Class3 Error Report.

AUTHOR/CORRECTOR:

  
David L. Conover

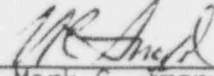
DATE: October 22, 1996

REVIEWED BY QA:

  
William J. Bryan

DATE: October 22, 1996

APPROVAL:

  
Mark C. Imgrund

DATE: October 22, 1996

\*If a product name is not included in the "first incorrect version", the full ANSYS program is implied. For products not listed, this error does not apply, but see the reverse side for equivalent product designations.

Unless noted otherwise, this error report also applies to all revisions after the first incorrect one and prior to the corrected revision. All revisions after "corrected in" are corrected. Manual corrections are included in on-line documentation as appropriate. Please see the reverse side of this sheet for additional information on ANSYS revision identifiers.

# ANSYS® CLASS3 ERROR REPORT

ERROR NO: 96-44

KEYWORDS:    SAVE                    LOADS                    INITIAL CONDITIONS                    /EXIT

## DESCRIPTION OF ERROR:

Initial conditions applied with the IC command are not saved with the default specified in the exit dialog box EXIT (Utility Menu>File>Exit>Save Geom+Loads), or with the /EXIT,MODEL or /EXIT Command.

## FIRST INCORRECT VERSION(S):\*

Rev. 5.1  
Component Products Rev.5.1

## CORRECTED IN:\*

Release 5.4  
Component Products Release 5.4


## SUGGESTED USER ACTION FOR RUNNING ON UNCORRECTED VERSION:

Select <Save Everything> from exit dialog box (or use /EXIT,ALL).

## COMMENTS:

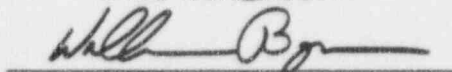
Note that initial conditions are saved if either the <Save Geo+Ld+Solu> option (/EXIT,SOLU) or <Save Everything> option (/EXIT,ALL) is selected from the exit menu. The SAVE command issued from the command line will also save initial conditions.

AUTHOR/CORRECTOR:

  
Mike Normanse

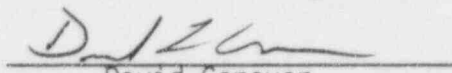
DATE: October 22, 1996

REVIEWED BY QA:

  
William J. Bryan

DATE: October 22, 1996

APPROVAL:

  
David Conover

DATE: October 22, 1996

\*If a product name is not included in the "first incorrect version", the full ANSYS program is implied. For products not listed, this error does not apply, but see the reverse side for equivalent product designations.

Unless noted otherwise, this error report also applies to all revisions after the first incorrect one and prior to the corrected revision. All revisions after "corrected in" are corrected. Manual corrections are included in on-line documentation as appropriate. Please see the reverse side of this sheet for additional information on ANSYS revision identifiers.



# ANSYS® CLASS3 ERROR REPORT

ERROR NO: 96-45

KEYWORDS: FASTSOLVER EQSLV,ITER LSSOLVE RAMPING

## DESCRIPTION OF ERROR:

When using the LSSOLVE command with the fastsolver option active (EQSLV,ITER) the surface and body force loads will erroneously be ramped from zero for each load step instead of from the previous load step values.

## FIRST INCORRECT VERSION(S):\*

Release 5.3  
Component Products Release 5.3

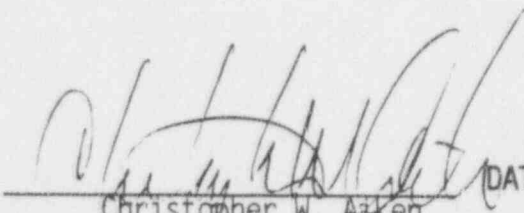
## CORRECTED IN:\*

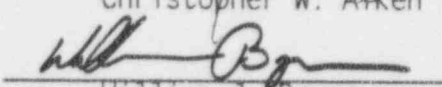
Release 5.4  
Component Products Release 5.4

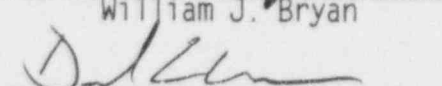
## SUGGESTED USER ACTION FOR RUNNING ON UNCORRECTED VERSION:

Use a series of SOLVE commands instead of the LSWRITE and LSSOLVE commands.

## COMMENTS:

AUTHOR/CORRECTOR:  DATE: October 22, 1996  
Christopher W. Atken

REVIEWED BY QA:  DATE: October 22, 1996  
William J. Bryan

APPROVAL:  DATE: October 22, 1996  
David Conover

\*If a product name is not included in the "first incorrect version", the full ANSYS program is implied. For products not listed, this error does not apply, but see the reverse side for equivalent product designations.

Unless noted otherwise, this error report also applies to all revisions after the first incorrect one and prior to the corrected revision. All revisions after "corrected in" are corrected. Manual corrections are included in on-line documentation as appropriate. Please see the reverse side of this sheet for additional information on ANSYS revision identifiers.

# ANSYS® CLASS3 ERROR REPORT

ERROR NO: 96-46

KEYWORDS: CFD THERMAL EXPANSION FLUID141 FLUID142

## DESCRIPTION OF ERROR:

For FLUID141 and FLUID142, the coefficient of thermal expansion (input using the FLDA,TURB,BETA command) is ignored in any analysis. The print file (file.pfl) reports a value for this quantity, but incorrectly lists the bulk modulus value (FLDA,BULK,BETA) for the fluid instead.

FIRST INCORRECT VERSION(S):\*

CORRECTED IN:\*

Rev. 5.1  
ANSYS/FLOTRAN Rev. 5.1

Release 5.4

SUGGESTED USER ACTION FOR RUNNING ON UNCORRECTED VERSION:

## COMMENTS:

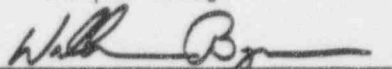
This only affects turbulent analysis with significant buoyancy effects. Even though the results appear correct, the source term in the k-e model due to gravitational effects is zero.

AUTHOR/CORRECTOR:

  
Deepak Gaoj

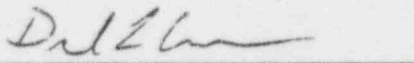
DATE: October 22, 1996

REVIEWED BY QA:

  
William J. Bryan

DATE: October 22, 1996

APPROVAL:

  
David Conover

DATE: October 22, 1996

\*If a product name is not included in the "first incorrect version", the full ANSYS program is implied. For products not listed, this error does not apply, but see the reverse side for equivalent product designations.

Unless noted otherwise, this error report also applies to all revisions after the first incorrect one and prior to the corrected revision. All revisions after "corrected in" are corrected. Manual corrections are included in on-line documentation as appropriate. Please see the reverse side of this sheet for additional information on ANSYS revision identifiers.



## ANSYS QA NOTICE

NOTICE NO: OA96-05 R1

SUBJECT: *MATRIX50 SUPERELEMENTS COUPLED DEGREES OF FREEDOM*

### DESCRIPTION:

This QA Notice originally described a potential Class3 error for which the full scope had not been determined. The full scope of this error has now been determined and is reported in Class3 Error Report 96-43 which supersedes the originally issued QA Notice QA96-05.

AUTHOR/CORRECTOR:

  
Kenneth G. Podlaszewski

DATE: October 22, 1996

REVIEWED BY QA:

  
William J. Bryan

DATE: October 22, 1996

APPROVAL:

  
David Conover

DATE: October 22, 1996

## ANSYS QA NOTICE

NOTICE NO: QA96-09

SUBJECT:      ELEM62      ELEM97      MAGNETICS

### DESCRIPTION:

Our internal theoretical investigation of the three-dimensional nodal-based magnetic vector potential formulation (used for SOLID62 and SOLID97) has determined that the normal component of the magnetic vector potential must be discontinuous across material interfaces of differing permeability. This behavior has not been published in any technical journals that we are aware of. The present formulation is implemented assuming continuity of the vector potential in the whole domain.

The formulation works well for axisymmetric type three-dimensional models with azimuthal currents where the magnetic vector potential is predominately tangent to the surface of material discontinuities. It also works well for completely homogenous problems (i.e., constant permeability everywhere). Two-dimensional problems using PLANE13 or PLANE53 are not subject to any accuracy problems of this nature.

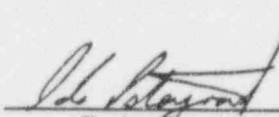
The formulation does not provide accurate solutions for general three-dimensional problems containing materials of differing permeability. More specifically, accurate solutions will not be produced in permeable domains where the normal component of the magnetic vector potential is significant across the material interfaces.

AFFECTED VERSIONS:    Revision 4.4A through Release 5.3

### COMMENTS:

For general static magnetic field analysis, use the scalar potential formulations offered in elements SOLID5, SOLID96 and SOLID98.

AUTHOR:

  
Dale Ostergaard

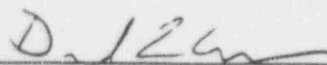
DATE: October 22, 1996

REVIEWED BY QA:

  
William J. Bryant

DATE: October 22, 1996

APPROVAL:

  
David Conover

DATE: October 22, 1996

## ANSYS Support Coordinator Bulletin

This Support Coordinator bulletin consists of two sections. The first section contains information pertaining to the ANSYS 5.3 Second Release. The second section provides information about known, non-Class3 errors in the ANSYS program and information regarding workarounds.

### ANSYS 5.3 Second Release

ANSYS 5.3 Second Release (identified by build number UP100396) is now available. This special version includes the new IGES capabilities for the hardware systems that did not contain the capabilities in the initial release of ANSYS 5.3. These systems are the Digital Alpha Unix, Digital Alpha Windows NT, Silicon Graphics R8000 and R10000. This special version also contains numerous corrective enhancements, some of which are listed below by category.

#### PREPROCESSING

- Areas represented by high order NURBS surfaces now mesh properly.
- A problem with area meshes with large transitions producing inverted elements has been corrected.
- Meshing without smartsizing has been improved to reduce the resultant mesh coarseness.

#### SOLUTION

- Nonlinear transient thermal analyses using the Pre-conditioned Conjugate Gradient (PCG) solver no longer use more iterations than necessary.
- Pressure PSD spectrum analysis without a load vector scale factor specified (LVSCALE) no longer terminates with a confusing message.
- Modal analysis (ANTYPE,MODAL) of a model with separate constraint equations at two or more nodes of an element, performed with the block Lanczos method (MODOPT,LANB) or the subspace method (MODOPT,SUBSP) with the Frontal solver option (EQSLV,FRONT [default]) or the JCG solver option (EQSLV,JCG) now works correctly. This error is reported in Class3 Error Report 96-42.
- Analysis of a model with separate constraint equations at two or more nodes of an element performed with the ICCG solver (EQSLV,ICCG) now works correctly. This error is reported in Class3 Error Report 96-42.
- Analysis of a model with separate constraint equations at two or more nodes of an element performed with the JCG solver (EQSLV,JCG) in which the matrices are unsymmetric (such as in piezoelectrics, acoustics, and other multiphysics applications) now works correctly. This error is reported in Class3 Error Report 96-42.
- Artificial stress concentrations are no longer produced in Solid92 and Plane2 elements with curved edges  $1 \times 10^{-3}$  or less in length. This error is reported in Class3 Error Report 96-50.
- Erroneous fluxes are no longer produced in Solid87 elements with curved edges  $1 \times 10^{-3}$  or less in length. This error is reported in Class3 Error Report 96-50.

## MISCELLANEOUS

When archiving a model (CDWRITE command) that has the Pre-conditioned Conjugate Gradient (PCG) solver activated, the resultant file now contains the correct command for activating the PCG solver.

Specifying uniform contour values for displays (/CONTOUR command) now works properly in ANSYS/Thermal and ANSYS/Emag.

The status report that prints out after an IGES transfer is completed is now the same as in Revision 5.2.

The messages produced when there is not enough memory for the Block Lanczos solver now reports the correct values for memory available and memory required.

## GRAPHICS

A problem with the GUI operating slowly on some PCs has been corrected.

A legend now appears when surface loads are displayed.

Modal animation on the PC has been corrected to animate forward-reverse-forward since the media player has a forward only limitation. This permits animation of the full mode cycle.

Animation now works correctly on PCs using minimum required colors.

## ANSYS DISPLAY Utility

In the DISPLAY Utility on the Windows NT and Windows 95 versions, the "cancel" button in the "Open Color Map File" and "Save Graphics File (Color Sorted)" windows now works properly.

## ANSYS/LS-DYNA

The EDLOAD command now correctly transfers rotation nodal degree of freedom nodal loads (Lab=ROTX, ROTY or ROTZ). This error is reported in Class3 Error Report 96-48.

All cases of rotated nodes are properly error trapped preventing their use in LS-Dyna (which does not support nodal rotations). This error is reported in Class3 Error Report 96-49.

The GUI now properly handles the entering of real constants for the COMBI165 element.

## Reported Errors and Possible Workarounds

The following list provides information about some significant errors that have been reported and describes workarounds where possible.

**KEYWORDS:**            *USER INTERFACE*            *S-N TABLE*

**DESCRIPTION:** In the General Postprocessing Fatigue S-N Tables, the alternate stress vs. cycles tables are set up. When the "Apply" or "OK" button is picked, the "entire table", and not just the user's input, is sent to ANSYS in the form of "FP" commands. If the entire table is not filled, the locations are sent as blanks or zeros. When POST1 interprets the GUI generated "FP" commands, a "zero" value will replace the value in "STITM" locations 1, 7, 13, 19, etc. if the user did not fill these locations. The "FP" documentation does indicate that the value of zero will be used in the "STITM" location if a "blank" or "zero" is input; however, this is an unexpected behavior when the data is coming from the GUI table setup.

**AFFECTED VERSIONS:** Rev. 5.1, Rev. 5.2, Release 5.3

**WORKAROUND:** Issue an FP command for each value to be deleted. For example use FP,-7 to erase the value in location 7 in the S-N Table.

**KEYWORDS:** *USER INTERFACE* *MATRIX27*

**DESCRIPTION:** The real constant dialog for MATRIX27 displays incorrect values for the following items when editing an existing real constant set:

C25, C26, C27

If you are creating a new set or editing an existing one, the values input will be correctly sent to ANSYS.

**AFFECTED VERSIONS:** Rev. 5.1, Rev. 5.2, Release 5.3

**WORKAROUND:** If you use the dialog box for editing purposes, be sure to set C25, C26, and C27 to the correct values before choosing OK.

**KEYWORDS:** *FLOTRAN* *POST1* *RESUME*

**DESCRIPTION:** FLOTRAN results are not saved from POST1. Issuing a SAVE and RESUME or just a RESUME will cause some results to be unavailable.

**AFFECTED VERSIONS:** Rev. 5.1, Rev. 5.2, Release 5.3

**WORKAROUND:** Issue a SET command in POST1 after a RESUME.

**KEYWORDS:** *SOLID MODELING* *IGES* *CDWRITE* *CDREAD*

**DESCRIPTION:** Doing a CDWRITE,ALL may produce a .cdb file that does not contain parameter data. When a CDREAD,ALL is done, warning messages may result, caused by the missing parameter data.

**AFFECTED VERSIONS:** Rev. 5.2

**WORKAROUND:** None

**KEYWORDS:** *SOLID MODELING* *MESHING* *IGES*

**DESCRIPTION:** The aspect ratio checking for bricks is limited in the mesher. CHECK,ESEL,WARN does not perform this checking.

**AFFECTED VERSIONS:** Rev. 5.0, Rev. 5.0A, Rev. 5.1, Rev. 5.2, Release 5.3

**WORKAROUND:** Limit the element sizes along the edge so that they stay within a reasonable aspect ratio using good engineering judgment.

**KEYWORDS:** *SOLID MODELING* *MESHING* *IGES*

**DESCRIPTION:** When meshing an area containing many tessellations, a large amount of time may elapse due to the geometry of the area. An example of these geometries may be a large number of holes in the area.

**AFFECTED VERSIONS:** Rev. 5.1, Rev. 5.2, Release 5.3

**WORKAROUND:** Reduce the number of holes (<15) in the affected areas. This can be done by splitting the area into a number of smaller areas. Another way to decrease the amount of time spent meshing is to turn off color shading if running interactively.

**KEYWORDS:** *SOLID MODELING VROT ARSYM*

**DESCRIPTION:** Performing a VROT after an ARSYM may generate an incorrect element and nodal pattern in the resultant volume.

**AFFECTED VERSIONS:** Rev. 5.1, Rev. 5.2, Release 5.3

**WORKAROUND:** After the ARSYM and before the VROT command, issue NUMMRG,KP and NUMMRG,NODE to merge any coincident keypoints or nodes.

**KEYWORDS:** *SOLID MODELING VEXT CSYS*

**DESCRIPTION:** In a non-Cartesian coordinate system, the VEXT command will locate the end face of the volume based on the active coordinate system and the extrusion will be along a straight line between the end faces. This is not an error, but it may not produce the result you expect.

**AFFECTED VERSIONS:** Rev. 5.0 Rev. 5.0A, Rev. 5.1, Rev 5.2, Release 5.3

**WORKAROUND:** A user may perform an extrusion along a "curved path" by performing a sequence of VEXT operations along a piecewise linear line that is a good approximation of the curved line. Its success can not be predicted easily and depends on the model and the choice of the approximated piecewise linear line.

**KEYWORDS:** *SOLID MODELING VEXT AREAS*

**DESCRIPTION:** When doing a VEXT on a set of areas, if an area that is parallel to the line of extrusion is selected, the extrusion will be done on all the areas including the parallel area. However, any resulting volume calculations will be incorrect based on the fact that the parallel area was selected.

**AFFECTED VERSIONS:** Rev. 5.0, Rev. 5.0A, Rev. 5.1, Rev. 5.2, Release 5.3

**WORKAROUND:** Make sure that all selected areas are not parallel to the line defining the extrusion direction.

**KEYWORDS:** *SOLID MODELING LARC*

**DESCRIPTION:** When performing an LARC command with a large radius and a small arc angle, a complete circle may be produced.

**AFFECTED VERSIONS:** Rev 5.0, Rev. 5.0A, Rev. 5.1, Rev. 5.2, Release 5.3

**WORKAROUND:** Use a straight line to connect the two keypoints.

**KEYWORDS:** *SOLUTION GP LSWRITE/LSSOLVE*

**DESCRIPTION:** Having gap conditions (GP command) in a reduced or mode superposition analysis and using the LSWRITE and LSSOLVE commands will produce erroneous results. The gaps are not supported properly in the solution.

**AFFECTED VERSIONS:** Rev. 5.0, Rev. 5.0A, Rev. 5.1, Rev. 5.2



**WORKAROUND:** Use the SOLVE methods of specifying multiple load steps. Refer to Basic Analysis Procedures Guide, Chapter 3 (ANSYS 5.3) or the Procedures Manual, Chapter 10 (ANSYS 5.2 or earlier).

**KEYWORDS:** SOLUTION BEAMS PIPES TORSIONAL

**DESCRIPTION:** Beams and Pipes have no extra torsional resistance in their stress-stiffness matrix. No torsional resistance is added by turning stress stiffening (SSTIF) on. This is documented, but does not work as may be expected.

**AFFECTED VERSIONS:** Rev 5.1, Rev. 5.2, Release 5.3

**WORKAROUND:** Use 3-D solids.

**KEYWORDS:** SOLUTION BEAM3 NLGEOM

**DESCRIPTION:** BEAM3 with large deflection (NLGEOM) turned on and under a large axial load may not converge properly.

**AFFECTED VERSIONS:** Rev. 5.1, Rev. 5.2, Release 5.3

**WORKAROUND:** Turn on stress stiffening to aid convergence.

**KEYWORDS:** SHELL150 CP MID-SIDE NODES SOLUTION

**DESCRIPTION:** In SHELL150 (p-element), coupling of midside nodes (CP command) is limited to translational d.o.f.s only. Any midside node rotation d.o.f. that is part of a CP command will be ignored from the coupled set.

**AFFECTED VERSIONS:** Rev. 5.2, Release 5.3

**WORKAROUND:** None

**AUTHOR:**

Michael F. Michalski  
Michael F. Michalski

**DATE:** October 21, 1996

**AUTHOR:**

Kenneth G. Podlaszewski  
Kenneth G. Podlaszewski

**DATE:** October 21, 1996

**REVIEWED BY QA:**

William J. Bryan  
William J. Bryan

**DATE:** October 21, 1996

**APPROVAL:**

David Conover  
David Conover

**DATE:** October 21, 1996