

P21 93060

January 14, 1993
G-1151-JMK-93-020

NRC Operations Center
United States Nuclear Regulatory Commission
Washington, D.C. 20555

- Reference:
- a) Boeing Letter G-1551-RSO-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

Dear Sir or Madam:

In accordance with the reference 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

URS/John A. Blume & Associates

Error notices have been sent to our other former customers.

Very truly yours,


J. M. Keithley
Nuclear Administrator
G-1151 M/S 7F-06
(206) 865-4438
/de

Attachment(s): ANSYS Class3 Error Reports 92-46, 92-47, 92-48, 92-49, 92-50, and reissued Error Report 91-33 R1.
Also QA Notices QA92-12 and QA92-13



ANSYS® CLASS3 ERROR REPORT

ERROR NO: 92-46

KEYWORDS: PLASTICITY EXTRA SHAPES PERFECTLY PLASTIC STIF42,43,45,65

DESCRIPTION OF ERROR:

Results from a plasticity analysis may be incorrect under the following conditions:

1. An element with extra shapes is completely plastic (all integration points are undergoing plastic straining, output quantity $EPEQ > 0$). The elements with extra shapes and plasticity capability are:
 - STIF42 (the 2-D isoparametric solid)
 - STIF43 (the plastic quadrilateral shell)
 - STIF45 (the 3-D isoparametric solid)
 - STIF65 (the 3-D reinforced concrete solid).

and 2. The tangent matrix is formed with the Newton-Raphson procedure, $KAY(9)=1$ or 2.

and 3. The element is in the perfectly plastic range (slope of the stress-strain curve is 0) at all integration points.

Perfect plasticity is encountered in the following situations:

- A. For the classical bilinear kinematic hardening option ($C13=10$), if any of the tangent slopes $E_T = 0$ ($C31$ through $C36$).
- B. For the multilinear kinematic ($C13=17$), isotropic ($C13=18$) or nonlinear elastic ($C13=-2$) options, if any of the tangent segments has a zero slope. Note: for these options, any strain which exceeds the maximum input strain on the curve will use a zero slope.
- C. For the anisotropic option ($C13=11$), if the tangent in the tensile x-direction $E_{T_{xt}}$ ($C13=22$) = 0.
- D. The Drucker-Prager option ($C13=13$) is always elastic perfectly-plastic.

FIRST INCORRECT VERSION(S):*
Rev. 4.3

CORRECTED IN:*
Rev. 5.0

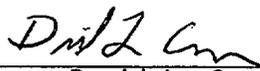
SUGGESTED USER ACTION FOR RUNNING ON UNCORRECTED VERSION:

Use a small non-zero slope on the input stress-strain curve or suppress extra shapes.

COMMENTS:

For most analyses encountering this error, the solution will diverge. At Revision 4.4, the full Newton-Raphson procedure is automatically invoked in this case. $KAY(9)=3$ or 4 results do not contain this error.

AUTHOR/CORRECTOR:


David L. Conover

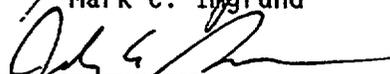
DATE: December 21, 1992

REVIEWED BY QA:


Mark C. Imgrund

DATE: December 21, 1992

APPROVAL:


John A. Swanson

DATE: December 21, 1992

*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. 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.

FORM SASI-QA25 DEC 19, 1988

ANSYS® CLASS3 ERROR REPORT

ERROR NO: 92-47

KEYWORDS: STIF13 TRANSIENT PRINT POST

DESCRIPTION OF ERROR:

STIF13 (the two-dimensional multi-field solid) has the following errors if the PRINT and POST element output options are simultaneously "off" (see comment below) for some iterations and the analysis is transient (TIME>0 and (KAN=4 or KAN=-1)).

- 1) If KEYOPT(1)=0 (MAG DOF), then the computed eddy and total current density (output quantities JE and JT) are incorrect.
- or 2) If KEYOPT(1)=6 (VOLT,MAG DOF), then the computed eddy, source and total current densities (output quantities JE, JS and JT) are incorrect.

The above mentioned element output quantities are incorrect for an iteration immediately after an iteration where PRINT and POST are simultaneously "off".

FIRST INCORRECT VERSION(S):*

Rev. 4.4
PC/MAGNETIC Rev. 4.4A

CORRECTED IN:*

Rev. 4.4B
PC/MAGNETIC Rev. 5.0

SUGGESTED USER ACTION FOR RUNNING ON UNCORRECTED VERSION:

Activate either the PRINT or POST output options for all iterations.

COMMENTS:

The PRINT option is "off" (at least some of the time) if:

- 1) INOPR on the ET command is set to 1 (ET,type,13 , , , , 1)
- or 2) NPRINT \neq 1 on the ITER command,
- or 3) PRSTR does not request printout for some iterations.

The POST option is "off" if:

- 1) KYPOST,-1 is active
- or 2) NPOST \neq 1 on the ITER command
- or 3) POSTR does not request post results for some iterations.

AUTHOR/CORRECTOR:


Tim Pawlak

DATE: December 21, 1992

REVIEWED BY QA:


Mark C. Imgrund

DATE: December 21, 1992

APPROVAL:


John A. Swanson

DATE: December 21, 1992

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FORM SASI-QA25
DEC 19, 1988

ANSYS® CLASS3 ERROR REPORT

ERROR NO: 92-48

KEYWORDS: AUX15 NASTRAN

DESCRIPTION OF ERROR:

The AUX15 NASTRAN translator will fail to issue the NROTAT command for a node translated from a NASTRAN GRID command if

- a) the generation coordinate system identification number (third command field) is equal to the displacement coordinate system identification number (seventh command field)

and b) these numbers are not equal to zero (i.e. global Cartesian coordinate system).

FIRST INCORRECT VERSION(S):*	CORRECTED IN:*
Rev. 4.3	Not Applicable**

SUGGESTED USER ACTION FOR RUNNING ON UNCORRECTED VERSION:

Check the GRID commands in the NASTRAN input file and compare the third command field value (coordinate system identification number) with the seventh command field value (displacement coordinate system identification number). If these two values are equal and non-zero, edit the ANSYS PREP7 input file created by the NASTRAN translator by adding an NROTAT command immediately after the N command that corresponds to the GRID command.

COMMENTS:

**The AUX15 NASTRAN translator is replaced at Rev. 5.0 by a standalone bi-directional translator. Availability information and further details will be provided in a forthcoming ANSYS News article.

AUTHOR/CORRECTOR: <u>Jim G. Delia</u>	DATE: December 21, 1992
REVIEWED BY QA: <u>Mark C. Ingrund</u>	DATE: December 21, 1992
APPROVAL: <u>John A. Swanson</u>	DATE: December 21, 1992

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ANSYS® CLASS3 ERROR REPORT

ERROR NO: 92-49

KEYWORDS: PREP7 N CE CESIZE

DESCRIPTION OF ERROR:

Node locations and rotation angles may be incorrectly defined at the time they are input if both the following conditions exist.

1. The nodes now being defined have non-zero rotation angles.
- and 2. Constraint equations are already defined and the size of the equations is greater than 14 (CESIZE command).

FIRST INCORRECT VERSION(S):*

Rev. 4.4
PC Products Rev. 4.4

CORRECTED IN:*

Rev. 4.4B
PC Products Rev. 5.0

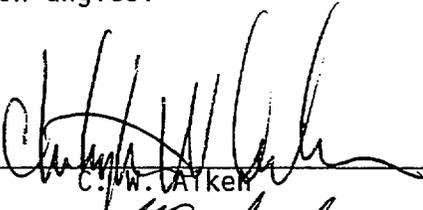
SUGGESTED USER ACTION FOR RUNNING ON UNCORRECTED VERSION:

1. Define any nodes with rotation angles before defining constraint equations.
- or 2. Keep the size of constraint equations less than or equal to 14.

COMMENTS:

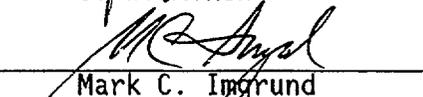
Nodes can be listed after definition (NLIST command) to verify their location and rotation angles.

AUTHOR/CORRECTOR:


C. W. Atken

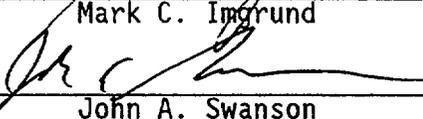
DATE: December 21, 1992

REVIEWED BY QA:


Mark C. Imgrund

DATE: December 21, 1992

APPROVAL:


John A. Swanson

DATE: December 21, 1992

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FORM SASI-QA25
DEC 19, 1988

ANSYS® CLASS3 ERROR REPORT

ERROR NO: 92-50

KEYWORDS: SOLID MODEL APSF ACVSF

DESCRIPTION OF ERROR:

Area pressures (APSF) or area convections (ACVSF) will be inappropriately applied to edge faces of non-shell area elements (such as STIF42 or STIF55) under the following conditions:

1. An area pressure or convection exists on an area which contains a non-shell area element;
- and 2. the area and the element are selected when solid model boundary conditions are transferred (SBCTRA, LWRITE, AFWRITE, or SFWRITE commands).

This incorrect transfer will overwrite any other pressures/convections applied to the edges of such non-shell area elements, including those transferred from line pressures (LPSF) or line convections (LCVSF).

FIRST INCORRECT VERSION(S):*

Rev. 4.3
PC Products Rev. 4.3

CORRECTED IN:*

Rev. 5.0
PC Products Rev. 5.0

SUGGESTED USER ACTION FOR RUNNING ON UNCORRECTED VERSION:

Before each occurrence of LWRITE, SFWRITE, or AFWRITE, do the following:

1. Unselect the non-shell area elements. Select the area(s) having APSF or ACVSF loadings applied.
2. Transfer the boundary conditions (SBCTRA).
3. Select the non-shell area elements.
4. Unselect the area(s) having APSF or ACVSF.

COMMENTS:

Area pressures and convections transfer correctly to shell or volume elements in addition to any incorrect transfer to non-shell area elements.

AUTHOR/CORRECTOR: F. S. Kelley DATE: December 21, 1992
F. S. Kelley

REVIEWED BY QA: Mark C. Inggrund DATE: December 21, 1992
Mark C. Inggrund

APPROVAL: John A. Swanson DATE: December 21, 1992
John A. Swanson

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ANSYS® CLASS3 ERROR REPORT

ERROR NO: 91-33 R1

KEYWORDS: STIF44 TORSION TAPER

DESCRIPTION OF ERROR:

STIF44 (the 3-D tapered unsymmetrical beam element) has an incorrect torsional effect in the mass matrix when tapered input is used. The area at end I (AREA1) is erroneously used at end J (AREA2).

FIRST INCORRECT VERSION(S):*

Rev. 2.0
PC/LINEAR Rev. 4.2

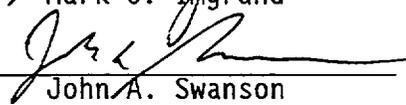
CORRECTED IN:*

Rev. 5.0
PC/LINEAR Rev. 4.4B

SUGGESTED USER ACTION FOR RUNNING ON UNCORRECTED VERSION:

Use more elements to represent the tapered region so that end areas are more similar, which reduces the effect of the error.

COMMENTS:

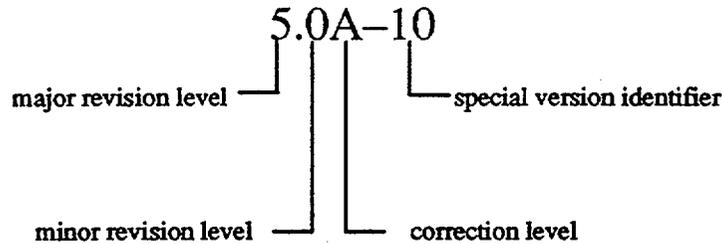
AUTHOR/CORRECTOR:	<u></u> Peter C. Kohnke	DATE:	December 21, 1992
REVIEWED BY QA:	<u></u> Mark C. Ingrund	DATE:	December 21, 1992
APPROVAL:	<u></u> John A. Swanson	DATE:	December 21, 1992

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FORM SASI-QA25
DEC 19, 1988

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.

ANSYS QA NOTICE

NOTICE NO. QA92-12

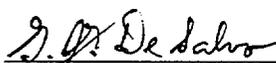
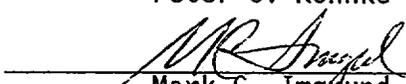
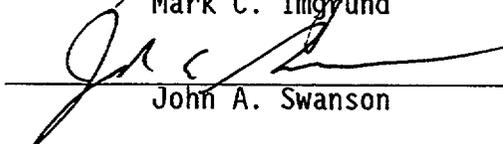
SUBJECT: STIF44 STIF54 THICKNESS DEFAULTS

DESCRIPTION:

This notice is to clarify the ambiguities in the documentation of real constant defaults for STIF44 and STIF54 elements (tapered unsymmetric beams).

For these elements, zero or blank thicknesses at the top of end 2 default to the corresponding thickness at the top of end 1 (and not to the bottom thicknesses at end 2). Specifically, for STIF44, TKZT2 and TKYT2 default to TKZT1 and TKYT1 respectively, and for STIF54, HYT2 defaults to HYT1.

FIRST AFFECTED VERSION: Rev. 2.0

AUTHOR:	 Peter C. Kohnke	DATE: December 21, 1992
REVIEWED BY QA:	 Mark C. Imgrund	DATE: December 21, 1992
APPROVAL:	 John A. Swanson	DATE: December 21, 1992

FORM SASI-QA3
AUG 29, 1990

