February 18, 1994
G-1151-RSO-94-052

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

BOEING

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

Error notices have been sent to our other former customers.

Very truly yours,

J. Francalangia/ for

R. S. Orr
Nuclear Administrator
G-1151 M/S 7A-33
(206) 865-6248

Attachment(s):   ANSYS Class3 Error Report 93-102 R1

IE20
1/1

ANSYS® CLASS3 ERROR REPORT

KEYWORDS: GP   NODE   COMPRESS   MERGE   OFFSET

DESCRIPTION OF ERROR:

Some of the user-defined gap conditions for reduced or mode super
position transients (GP command) will erroneously be deleted if the following
conditions occur:

1. Multiple gaps (GP command) are defined between the same nodes in
   either direction, with the same degree of freedom label (FX, FY,etc.)

and 2. A node compress (NUMCMP command), node merge (NUMMRG command), or
   a node offset (NUMOFF command) command is issued.

and 3. The above compress, merge, or offset command actually changed any
   of the defined nodes.

FIRST INCORRECT VERSION(S):*   CORRECTED IN:*

Rev. 4.4   Rev. 5.1
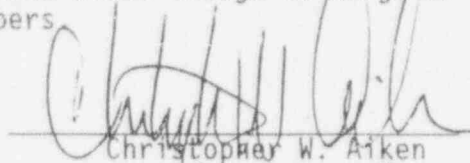PC Linear Rev. 4.4   ANSYS/Linear Plus Rev. 5.1

SUGGESTED USER ACTION FOR RUNNING ON UNCORRECTED VERSION:

Specify gap conditions (GP command) after all node compress, node
merge, or node offset operations.

COMMENTS:

If no action is performed by the node compress, node merge or node
offset then the above mentioned error will not occur. This can happen
if there are no nodes close enough to merge or there are no unused (or
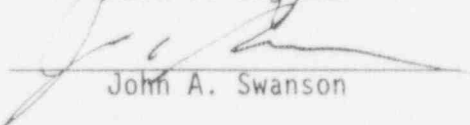skipped) node numbers.

AUTHOR/CORRECTOR: _____ DATE: February 1, 1994
                  Christopher W. Aiken

REVIEWED BY QA: _____ DATE: February 1, 1994
                Mark C. Imgrund

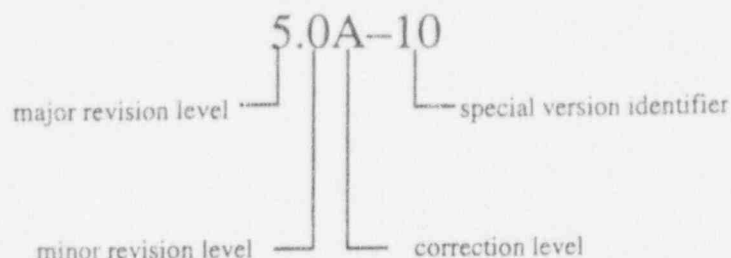APPROVAL: _____ DATE: February 1, 1994
          John A. Swanson

*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 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:

$$5.0A-10$$

major revision level ⌐ ⌐ special version identifier

minor revision level ⌐ ⌐ correction level

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 <u>first possible revision</u> 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 <u>not</u> 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 component 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 and ANSYS/LinearPlus starting at Rev. 5.0A.
PC/THERMAL	is equivalent to	WS/THERMAL at Rev. 4.4A, and ANSYS/THERMAL starting at Rev. 5.0.
PREPPOST	contains relevant errors shown for	the full ANSYS product, for included pre- and postprocessing functionality
PC/MAGNETIC is equivalent to		ANSYS/Emag starting at Rev. 5.0A

SUPPORT COORDINATOR BULLETIN

BULLETIN NO. SCB94-1

SUBJECT: *LOAD*   *RESTRT*   *POST1*   *MULTIPLE LOAD STEPS*

DESCRIPTION:

This Support Coordinator Bulletin covers the ANSYS database and its effect on multiple load steps and restarts.

This description is a reprint of an ANSYS Tips article by Krishna S. Raichur, Engineer, Education Group, which appeared in the third issue, 1993, of ANSYS News.

One of the most significant changes in the ANSYS program at Revision 5.0 is the use of a common database. All data are written to and read from the same database no matter where you are in the ANSYS program. The advantages of this are many. You can do plots, lists, selects, SAVE, RESUME, and other such utility operations at any time from anywhere in the program, be it Begin level, PREP7, SOLUTION, POST1, POST26, OPT, AUX12, AUX15, or RUNSTAT. However, the common database also causes a few side effects, especially in the context of multiple load steps and restarts. In this article, we will list three such cases and show you how to deal with the side effects.

Case 1

During postprocessing of multiple load steps, a listing or display of surface (SF), body (BF), and inertia (ACEL) loads always shows loads from the last solved load step rather than from the load step being postprocessed. (DOF constraints (D) and force loads (F) are okay.)

Reason: The reason for this is twofold: (1) for each load step, only D's and F's are written to the results file, and (2) when the last load step is solved, the loads for that load step are in the database. Thus, when you use the SET command in POST1 to read in results for a load step, only D's and F's are updated but the other loads retain their values from the last solved load step.

Solution: Verify the loads for each load step before solution. As part of the verification, identify each load step with a title that reflects the loading (/TITLE command). This will help during postprocessing, because when you read in the results for each load step, its title is also read in and becomes part of your results displays and listings. Alternatively, save the database for each load step and resume the appropriate database file during postprocessing.

Case 2

In a nonlinear or transient analysis with ramped loads, if a D or F load is deleted and respecified after the first load step, the new load values are ramped from zero instead of from the previous value. (Other loads ramp from previous values, as expected.)

Reason: When you issue DDELE or FDELE to delete DOF constraints or force loads, the program deletes not only the loads but also the previous history values of those loads. Therefore, if the loads are respecified, the new values are ramped from zero. Other loads ramp from their previous values because their previous history values are stored on the file Jobname.ESAV, not in the database.

Solution: Do not delete the loads, just respecify them to zero or near-zero values instead. Alternatively, use the LSWRITE-LSSOLVE procedure rather than issuing multiple SOLVE commands. The LSSOLVE macro has logic built into it to retain previous history values of D's and F's.

Case 3

Restarts may not work properly if a POST1 postprocessing session precedes the restart run.
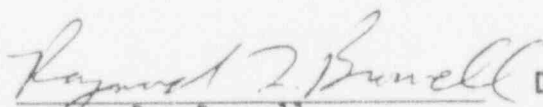
Reason: The SET command in POST1 overwrites existing D's and F's in the database with those from the results file. Therefore, a restart run may start with inconsistent boundary condition data.

Solution: If you run the solution interactively and you expect to do a restart, be sure to save the database on a named file before the postprocessing session (e.g., SAVE,Jobname,DBRE). You can then resume from that database file for the restart run. If you run the solution in batch mode, the ANSYS program will save the database upon exit (unless you used /EXIT,NOSAVE). Be sure not to overwrite this database file before the restart run. In fact, you might be well advised to rename the file to Jobname.DBRE or another similar name.

As you can see, these side effects can be handled by understanding how the program behaves and taking appropriate steps.
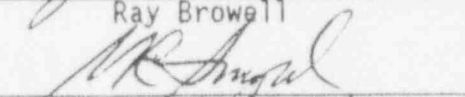
AFFECTED VERSION(S):   Revision 5.0 and beyond

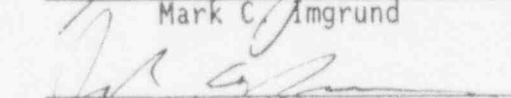AUTHOR: _____ DATE: February 1, 1994
                    Ray Browell

REVIEWED BY QA: _____ DATE: February 1, 1994
                    Mark C. Imgrund

APPROVAL: _____ DATE: February 1, 1994
                    John A. Swanson