

///AMLS Version 5.0.r169
*Automated
MultiLevelSubstructuring*

Release Notes

March 25, 2014



Differences between 5.0.r144 and 5.0.r169:

These include the following:

1. Several AMLS error fixes/issues:

- a) Changed phase3 and phase5 memory allocation to provide some flexibility, in case the state of the machine's memory is not as assumed by the user. Under the new scheme, AMLS will attempt to allocate the amount of memory specified by the user (or the default amount, if an amount is not specified), and if the allocation is unsuccessful, AMLS will attempt to allocate an amount of memory that will allow the job to run, rather than simply letting the job fail.
- b) Fixed phase 3 bug associated with very small area matrices in coupled structure-acoustic analysis.
- c) Fixed phase 3 memory estimation errors.
- d) Fixed phase 5 memory estimation error associated with processing a very large model with thousands of modes and millions of DOF requested for output.
- e) Fixed qd_mod5 and fr_mod2 scripts so that they do not report an error if AMLS_MEM is not set.

2. Some users have had jobs die after spending significant time in AMLS because the jobs needed to check out a license for FastFRS and none was available. This issue has been addressed for Nastran users by scanning through the Nastran bulk data at the beginning of each job to determine what licenses will be needed. Then the job checks out all of the licenses for AMLS and FastFRS that it will need, and releases each license when it is no longer needed. If all of the licenses that will be needed for the job are not available at the beginning of the job, the job will not continue. This ensures that large amounts of computer and wallclock time will not be committed to jobs that cannot run to completion.



MSC and NX Delivery Data Bases (DDB):

On the CDH AMLS FTP site the following DDBs are stored:

MSC 2010.1.3, 2011, 2012.1, 2012.2, 2013.1 and NX8.5, and NX9.0

If there is a special need for an older DDB version, please contact:

support@cdh-ag.com.

It is highly recommended that the users consider using the latest MSC version 2013.1, because there are two important improvements, which relate to AMLS:

1. Handling of dense structural damping matrices, K4JJ, especially when there are a large number of MAT1 records with the same value of structural damping, Ge.
2. Very efficient sparse data recovery, specifically in the time spent in SDR2 module when there are thousands of solution vectors for very few DOFs (which happens quite often in NVH analysis).

Corrections to the previous DDB provided with 5.0.r120:

- 1) When DISP = ALL is specified, the user now gets output for all DOF.
- 2) If using ODS and requesting only 3 translations, and if any of the 3 DOFs are dependent (through MPCs), previously they were not correct.
- 3) If using ODS and specifying **param, ldfreqind, yes**, previously incorrect results were obtained.
- 4) If using ODS, previously some of the frequencies that were requested on **DTI, odsdti** were not processed.
- 5) It is no longer necessary to specify a dummy load on the structure if loads are only applied to the acoustic DOFs.
- 6) If using AMLSF, the fluid damping matrix, K4, is now properly handled.

- 7) If using **param, resvecb, yes**, the fluid viscous damping (CAABSF) DOFs are eliminated before calculating the structure residual vectors based on structure viscous damping.
- 8) If **param, ods, yes** is specified, it is no longer necessary to also specify **param, ffrs, yes**.
- 9) In the previous version of NX DDBs, if the user specified **param, amlsf, yes** (meaning that AMLS is used for extraction of fluid modes), there was confusion about whether METHOD(FLUID) or METHOD had to be used. If only fluid exists (no structure), then either definition can be used.
- 10) Residual vectors based on damping elements are now generated when creating an external superelement.
- 11) In the previous DDB for MSC V2013.1 there was an error (which is now fixed) in the low frequency responses (the higher frequency range was correct) if:
 - param, g** was specified,
Nastran generated an internal value of Ge, and
 - param, ffrs, yes** was specified