

# Noran Engineering, Inc.

## Maritime News

Newsletter October

Volume 2

Editor: David Branch



### *Noran Engineering, Inc.*

Thank you for taking the time to stay updated of our progress in the CAE market and for your suggestions of how to make our support material more valuable to you.

One often overlooked aspect FEA is the value of training. Even experienced users are commenting that our training classes give new and better ways to approach analysis problems, be more creative, save time that gives you more tools to help you get higher returns on your FEA investment.

We also receive custom training requests. These training sessions have become quite popular due to their flexibility and broad range of topics covered. They are also extremely productive since we can customize them to the customer's specific needs. We have annual onsite training scheduled to keep everybody in the engineering department in the loop and know the additional tools they have available with each upgrade of NEiNastran.

As always, we look forward to comments or suggestions you may have to make this newsletter a valuable source of information. We are here to help and support.

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## **First Newsletter was a Success**

The positive response to our first maritime newsletter was overwhelming and will help to focus future articles to your specific interests. Our intent was to better inform our user community about the news, events and technology happening at Noran Engineering and the response was much better than expected.

Most of the feedback was directed to Dr. Nastran and an overall appreciation for the content of the newsletter.

So we have decided to release a new newsletter every 4 to 5 months. The most difficult problem with a newsletter is selecting topics that are of interest to the reader. With that said I am asking all readers to assist me with information that would be informative to our maritime customers and opportunities.

We appreciate any information that you feel would be informative to the NEiNastran user community

and I will do my best to make this information available in the next newsletter.

Once again all the employees of Noran Engineering want to thank you for the support of this newsletter and look forward in sharing your ideas and stories.

*David Branch - Editor*

## **Noran Engineering, Inc. Launches New Web Site**

The web site boasts a more organized layout that helps customers find information quickly. The site also features improved up-front information including general advice and guidelines on selecting finite element analysis software, guidelines for selecting Noran's products, and a new 90-second demo on the technology.

Noran Engineering is focusing on using part of the web site to allow new users to gain the information

needed to assist them in purchasing the right products for the right applications. The web site contains many more animations, demonstration videos, and interactive tutorials than previously. The site also contains better organized product features documents and a new product feature matrix to help customers make decisions.

"We have launched a great new tool", says Dave Weinberg, President. "Our industry specific section can assist new users in particular

industries to see specific features that pertain to them. We have added sections for New to FEA, Existing Nastran Customers, Existing Customers, and a new section for Universities. Our section for testimonials drives home our commitment to Customer Driven Solutions."

[www.NENastran.com](http://www.NENastran.com)

Welcome New  
Maritime  
Customers

  
*Northrop Grumman  
Electronic Sensors and  
Systems*



*CDI Marine*



*NSWC  
Underwater Explosions  
Research Department  
&  
Combatant Craft Dept*

## SAVIAC Annual Symposium October 17<sup>th</sup> – 22<sup>nd</sup>



Once again we are very excited to participate in the Shock & Vibration Information Analysis Center (SAVIAC) annual symposium October 17<sup>th</sup> – 22<sup>nd</sup> in Virginia Beach, VA. We will be holding two tutorials (DDAM Analysis using NEiNastran and Nonlinear Methods for Shock and Vibration

Analysis using NEiNastran) and presenting a paper relating to whole ship dynamic analysis techniques. Our participation with SAVIAC has been extremely rewarding and we look forward to having you drop by our booth during the week to say hello or discuss the software with Tony Abbey, our senior technical

representative. I have complimentary exhibit hall visitor passes for anyone interested in just attending the exhibit hall.

Please contact Wil Weisenburg, Noran Engineering for additional information and tickets.

## Noran Engineering to Release NEiWorks

NEiWorks is a design analysis tool fully integrated within the SolidWorks® 3D modeling environment which can work with any Nastran FE solver, including NEiNastran, NX NASTRAN or MSC.Nastran. This makes NEiWorks the first design analysis tool that offers upward and downward compatibility with industry standard solvers. This breakthrough will allow designers to send usable data directly to the analytical engineers.

“We have built a solid reputation for customer driven solutions with our flagship NEiNastran product and we have carried that tradition forward to NEiWorks”, said Tony Abbey, Technical Director. “We intend to impress Design Engineers with the ease of use and power of this tool. The concept and layout is a direct result of focusing on what Design Engineers have told us they need in a product like this, combined with our many years of

experience in FE Analysis. Beta testers have already shown excitement about the unique approach we have taken in giving them a comfortable and familiar SolidWorks environment which harnesses the power, reputation and compatibility of Nastran.”

“This breakthrough product is tightly integrated with SolidWorks® so the analysis data is seamlessly updated when geometry is changed” commented Sisira Jayasinghe, Director of Software Development. “The state-of-the-art finite element mesh generation and display technology are used with innovative user interface to assist the designer and the analyst alike. The ability to create solid and surface elements in the same mesh sets NEiWorks apart from all other design analysis tools.”

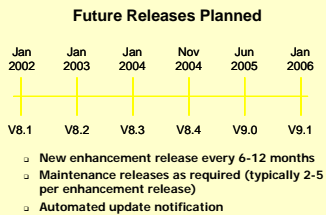
Early in the development plan to deliver a new tool/technology to such an advanced industry, one thing became abundantly clear:

most of the technology needed to drive the efforts of simplifying a difficult process for the design engineers lies in the user interface. The missing link was in allowing these tools to interface with the many industry standard solvers. NEiWorks is the only design analysis tool that clearly protects the investment currently made by customers using Nastran solvers. Moreover, it will allow design departments and analytical departments the ability to communicate more effectively.

“This is an exciting new development within our industry, said Dennis Sieminski, Director of World Wide Sales. We are very excited about the future and will be releasing another press release later next month regarding distribution. We will be seeking a new network of dealers that can assist customers with cost cutting technology.”

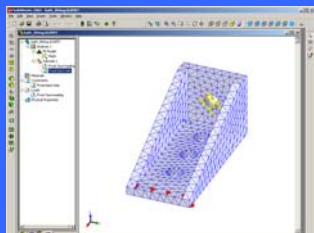


The above image is a shot of the new web site for Noran Engineering.



The above image is a snap shot of our NEiNastran release schedule

The below image is a screen shot of NEiWorks



## Maritime Users Conference?

Over the past eighteen months, Noran Engineering has experienced tremendous growth in the Maritime Market. While supporting over 125 users in this market it is important to Noran Engineering to make sure we listen to the needs of these users. Keep in mind that over 90% of all new enhancements in NEiNastran come from our customer base and we will be starting on the next release in early 2005. We believe that the

user base within Maritime could now support a users group meeting tailored to that market.

We are considering having a NEiNastran Users Conference next year.

If you are interested in attending a user's conference geared toward the Maritime industry please email your contact person at NEi or [info@noraneng.com](mailto:info@noraneng.com) with the following information:

Name, company, how many attendees, preferred length, and if you would like to present a paper:

The above information will be used to determine length of conference, best location, and number of attendees. If this is something you like to see, then please do contact us. Thanks.

## NEiNastran Release 8.4 Enhancements

We are currently in V8.4 beta test mode and finalizing the additional functionality that will be included over the list at right.

This version brings many powerful new features into NEiNastran as well as continuously improving performance.

Dynamic analysis is boosted with the addition of an automatic set of Modal Checkout tools via the editor, automatic Modal Correlation with 2D/3D plots, Craig-Bampton method for accurate substructuring and Residual Vectors to reduce modal truncation.

Nonlinear analysis introduces Arc Length methods for snap through and buckling, along with many other improvements.

- Reduced memory requirements when using PCGLSS solvers allowing models over 7 million DOF to be solved
- Enhanced CQUAD4/CQUADR element for handling warping over 10 degrees in linear and modal solutions
- Underwater Shock Analysis program support
- Modal Assurance Criterion (MAC) checks with 3D Editor plot support
- XGENERATE Command for automated ASET and ESET generation
- CPU time and current program version information
- Enhanced material nonlinear analysis
- Better Lanczos solver performance for models with over 100 modes
- Better nonlinear performance when the PCGLSS Direct solver mode is selected (only performs decomposition when needed)
- Better modal frequency response analysis performance for large models using a large number of modes
- Customized real-time XY plot generation in the Editor and .CSV file from commands in the Case Control
- NASA LaRC02 composite failure criteria based on Hashin and Puck
- Craig-Bampton reduction
- Arc-length methods in nonlinear analysis
- Enhanced Editor Graphics and post processing
- Enhanced CWELD element
- Compiled on latest Intel V8 Fortran 95 and C/C++ version (better performance)
- Residual vectors and mode acceleration techniques
- Linear version of tension-only element
- Expanded verification and example problem set
- Planned release date is 2004/2005



# Technical Tips From Dr. Nastran

## Using the MODALDATABASE and MODESET Features in NEiNastran

### Introduction

“We are very pleased to introduce our revamped website at [www.NENastran.com](http://www.NENastran.com). Along with a new support center, we plan on adding a message board where our customers can post questions and answer other users’ questions. We think this will help bring the NEiNastran community closer together.”

### Meet our Support Staff

Anca Timmermans provides technical and sales support for NEiNastran, tests new software versions and updates, and writes documentation. Anca has previously held a similar position at MSC.Software in USA and Compumod in Australia. She has over 15 years experience in the field of civil and structural engineering, with almost 7 years of FEA and customer support. Ms. Timmermans earned a MS in Civil Engineering from Romania and a MS in Structural Engineering from Australia.



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Solutions**

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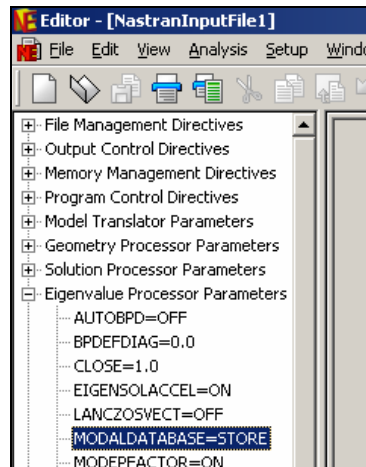
[www.NENastran.com](http://www.NENastran.com)

The MODALDATABASE feature in NEiNastran is designed so that the user can export a database file that includes the results of a modal analysis. This is a useful tool if the user is performing a modal transient or frequency response analysis and does not want NEiNastran to calculate the modes each time the dynamic analysis is run. The MODESET feature allows a reduced modal set to be generated that selects modes based on a criteria or selection. Users can define this modal set based on top modal effective mass contribution, a percent of modal effective mass, or by simply calling out the specific modes using a SET command.

Using these two features together can greatly save analysis time and expand flexibility.

### Using the MODALDATABASE Feature

To have NEiNastran produce a modal database, open your .nas file (setup for a normal modes analysis) in the NEiNastran Editor. Then open the Eigenvalue Processor Parameters and double click MODALDATABASE. Select Store and hit OK. This is shown in Figure 1. After you run the analysis, a file will be created with the same name as the .NAS file but with an .MDB extension (this is the modal database). Now when you run your modal dynamic analysis you can use this database by setting MODALDATABASE=FETCH. Note that NEiNastran will look for an .MDB file with the same name as the .NAS file you are running, so you will need to rename the .MDB so it matches.



### Using the MODESET Feature

The MODESET feature is a Case Control command that must be typed in manually. To see the specific options of the MODESET entry, open the NEiNastran Reference Manual and go to page 3-53. If, for example, we type in **MODESET, PERCENT, 2.5** in the Case Control this will direct NEiNastran to only consider the modes that exceed 2.5% of modal effective mass when performing the dynamic analysis solution.

### Combining the Features

For large dynamic analyses you can run a normal modes analysis with a full range of frequencies you might expect and store this modal database. Then, you can use the MODESET command to run your dynamic model and look at the response of your structure based only on certain modes, or a criterion of modes (i.e., highest modal effective mass). In this way, you can gain valuable insight as to how your structure responds with minimal analysis time.

## About Our Organization...

Established in 1991, Noran Engineering Inc. (NEi) was created with the idea of bringing a true Nastran analysis tool from the mainframe to the desktop. The company has experienced steady and consistent growth from the beginning, based primarily upon customer loyalty, referrals, cost factors and a true commitment to customer enhancements.

These concepts shape the way everyone at NEi does their job. In a small flexible organization it is possible to implement methods and processes that are infeasible in larger, stratified and compartmentalized companies. Working in this way, NEi has established a diverse customer base in its short history.

Over the years, NEi is becoming one of the most respected mechanical engineering service providers within the CAE market. By sticking to their core principles and growing their skill and technology base, the company has positioned itself to continue providing the best solutions, at the best price in the best time.