Ultra.news

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Getting Started...

As you may have noticed, the "Frequently Asked Questions" portion of our newsletter is most often the largest. This is because at Ultramarine, we feel that if one of our clients has questions, others may one day ask the same or similar questions, and we would like to save you the inconvenience of stopping in the middle of your work to call us. However, some questions concern *all* of our clients, regardless of the software purchased or leased. The following question/answer takes a certain precedence over others in this issue, and we certainly hope it will clear the air for you.

We have chosen to distribute our reference manuals electronically, on the same medium you use to receive your software. For our first time users, we provide a printed reference manual, a Verification Document, a Theoretical Manual and a Software Release Document. For our established clients receiving an update or new release, the only printed material we provide is the Software Release Document, and the procedure for printing the reference manual is outlined here. However, some of our users have been experiencing difficulty printing a reference manual for our software.

To print a reference manual, change the doc_devi and gra_devi variables in /ultra/data/local/product.cus to suit your printer. Here, "product" refers to the software product you have, such as MOSES or OSCARII. Then, run the product (i.e., MOSES manual), and type .manual followed by &fini. The document will be in a file root.doc, which is manual.doc in the above example. The sketches will be in a file root.gdv, and both these files are formatted according to your settings in the custom file. Send these files to the printer in their *original* form, without the use of any extra commands or printcaps.

One of the underlying motivations behind our procedure for distributing manuals is that we like trees. With this method, you not only save trees, but you can customize the manual to your liking. You can specify A4 or 8.5" X 11.0" paper size, along with font style and size. This method also guarantees you the most recently updated version of the reference manual to go with your software. And if you experience any difficulty, we are just a phone call away.

Our Feature Presentation

In this issue, we would like to introduce our Vice President, Curtis R. Owens. While many of you may already know him, we believe that there is a side of him that no one quite knows... until now.

Curtis was raised in the small Texas town of Poteet. Poteet's claim to fame is their Strawberry Festival held every year in the Spring. He grew up there on a farm raising cattle. He attended Poteet High School where he played football and ran track.

Curtis went to the University of Texas at Austin and in 1976, earned a Bachelor of Science degree in Civil Engineering. He began working for Ultramarine thirteen years ago.

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In the News...

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Curtis worked in the Houston office for five years and has worked for eight years in our Jourdanton office, which is near his home.

Many people see Curtis as stubborn and hard-headed. They're right. Fortunately for us, he does have a better half. Her name is SueAnn. Curtis and SueAnn have been married for nineteen years. They have two boys, Brenton, who is nine and Travis, who is seven.

Carrying on family tradition, Curtis still lives on a farm in south Texas and he still raises cattle.

Those of you who have tried calling our office in Jourdanton may have noticed a difficulty in reaching Curtis. This all goes back to the stubborness factor. It is amazing to us at Ultramarine that someone who is so advanced in the knowledge of computers and software would be this reluctant to change. We at Ultramarine are proud to say that we have dragged Curtis kicking and screaming into the world of modern, household technology. He now has an answering machine.

We do hope that this has given you a better look into the life of our vice president. He is unique, to say the least, but we couldn't get along without him. Thank you Curtis, for all you have brought to the company. We wouldn't be here without you.

Next time - The woman you love to hate:
Ann Nachlinger, Bill Collector!

Recent Projects using Ultramarine software

- Shell Offshore's Mars TLP - Slated to be installed this year, MOSES was used to perform maneuvering studies for the installation of the tendons. This was a complicated analy sis involving the SSCV Balder and moorings, hawser connections, the Mars TLP and several tugs connected. Optimization routines were developed to determine a best move philosophy: changing tug force/direction or changing mooring line tensions.

- Shell Offshore's Mars and Ram/Powell TLP's - MOSES was used to provide stability calcula tions for the stability booklets submitted to the U.S. Coast Guard for approval. The software was also used on-site during the loadout of various modules for Mars to calculate ballast requirements.

- Rapid Deployment Base for the U.S. Navy - Hudson Engineering is using MOSES to investigate the seakeeping of an assemblage of semi-submersibles over 4000 ft. in length. To accomplish this task, Ultramarine made several enhancements, including structural dynamics, to MOSES.

- Shell Offshore's Enchilada Platform - Scheduled for installation near the end of this year, MOSES was used to analyze several aspects of this unique two piece project. Be sides the usual transportation analyses, the software was used for docking of the base section over predrilled wells, and for docking the top section with the base section. Also, a two crane uprighting analysis was performed.

- Motions analysis for the conversion of a drill ship to a Floating Production System.

- Two body tanker motions - This analysis involved sizing the hawser between a production tanker and a shuttle tanker for a Floating Production and Off-loading System.

- Chevron Cabinda Project - AMEC Process & Energy has used MOSES extensively for both the South Shanda and North N'Dola platforms, located in 222 and 267 feet of water respectively. Analysis of barge motions, jacket upend and jacket docking motions have been undertaken.

Frequently Asked Questions

Q. Why do my connectors have no load in the frequency domain, yet indicate load in static equilibrium?

A. The RAO command was executed prior to the EQUI command.

Q. Why does the &CMP_BAL command allow compartments to fill below the minimum specified with the -LIMITS option?

A. The -LIMITS option applies to compartments specified *after* the option. Therefore, the correct syntax is &CMP_BAL BNAM -LIMIT 40 100 :TNAM to specify a minimum of 40% and a maximum of 100%. The order of the options on a command is important, and many options act on the data following the -OPTION on a command line.

Q. Why do I apparently get a different value for KMt from the &STATUS report as compared to CFORM results? This seems to happen for equilibrium conditions that have trim.

A. If you have zero trim, the program will provide the same result from both methods. This difference also occurs if the vessel origin is placed at midships. The reason for this is the axis transformation that takes place from the global to the vessel coordinate system. The GMt value we report in &STATUS is the derivative of the roll restoring moment (with respect to roll angle) divided by the displacement in vessel coordinates. The value we report for KMt with the CFORM command is the traditional naval architecture type value, in global coordinates.

Q. How can I represent a Pierson-Moskowitz or Bretschneider spectrum?

A. All the various spectral types can be described with one general equation. For instance, a JONSWAP spectrum with a gamma of 1.0 is the same as an ISSC spectrum. To represent a Pierson-Moskowitz spectrum, use an ISSC spectrum with a mean period that gives a wave steepness of 23.27. This steepness is what the Pierson-Moskowitz spectrum assumes. Therefore, one needs to choose the proper mean period:

$$Hs/(gT^2/2\pi) = 1/23.27$$

so

$$T = \sqrt{23.27 * Hs * 2\pi / g}.$$

Q. Is there a way to obtain the wave velocity for a wave slamming problem?

A. No, not at this time. On our list of things to do is to develop a reasonable method for dealing with wave slam.

Q. What is #DRAG?

A. This is a linear drag matrix applied at some specified point on a body. This is normally found in a barge definition in our library of barges, along with the #AMASS command. Without these commands, drag and added mass of the barge would not be included in a jacket launch.

Q. Is the stiffness matrix (hydrostatic and connector) used in the program a 3 X 3 matrix with coupling terms, using the assumption of small motions?

A. No, this stiffness matrix is a 6 X 6 matrix. In the frequency domain, it is assumed to be constant. In the time domain, it is computed correctly at each time step.

Q. When performing an upend analysis, do the upend slings influence the floating position if they have no tension?

A. No, the sling assembly for upending has no weight.

Q. Where is the assumed center of rotation for vessel motions?

A. Our software does not assume a center of rotation for vessel motions, since there really is no such thing. This question normally arises from the old pendulum motion techniques, assuming 20 degrees roll in 10 seconds for instance. Sometimes this question also stems from supplying accelerations for use in a structural software package. Some of these packages require not only a center of rotation, but also angles, to calculate the g*sin(theta) effect. When using the Statistics of Forces report from our software, this effect is already included.

Q. I have described a compartment with non-rectangular shape in the bow of my barge. Why do I get a strange vertical center of gravity when I fill this compartment half full?

A. You did not use &COMPARTMENT -SLOSH. Without the -SLOSH option, the program uses an average depth of the tank to find the vertical center of gravity.

Q. When using #TANKER why do I sometimes get current and wind forces in a direction opposite of what I expect?

A. This is a function of the OCIMF data. #TANKER uses the curves proposed by the Oil Companies International Marine Forum (OCIMF) which were based on extensive wind tunnel and tank tests on typical tankers and published in the book, "Prediction of Wind and Current Loads on VLCC's" (now in its second edition, 1994). We have incorporated digitized versions of these curves into MOSES; therefore, what is derived is essentially what was measured. The question now becomes why are these forces in a direction which surprise you - the answer is probably lift, but this depends on your expectations. The hull will behave like an aerofoil where the flow does not separate immediately at the bow (and particularily if it is cylindrical as far as wind loads are concerned). As a consequence, the longitudinal force components may be "negative"; i.e. up current or upwind, for some directions. Rest assured, however, the resultant force is always downweather - there is a net drag!

Revisions to MOSES

Rev. 5.03 due out this Spring

Rev. 5.03 started out to be a minor release, but somewhere along the way became something quite a bit more substantial. The major new feature is the capability to extract structural modes and, as an extra cost option, use them as generalized coordinates in a standard MOSES analysis. Thus, the effects of flexibility and the deformation inertia can be directly incorporated into any MOSES analysis.

A by-product of this development was a refinement of virtually every algorithm. Rev. 5.03 will produce better answers with the same model and time step, or equivalent answers with a coarser model and time step.

Also included are a host of new features: Mooring line fatigue, new ways to control ballast in compartments, seas from different directions and a joint crushing code check. We are excited about these new features and are looking forward to hearing your comments.

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