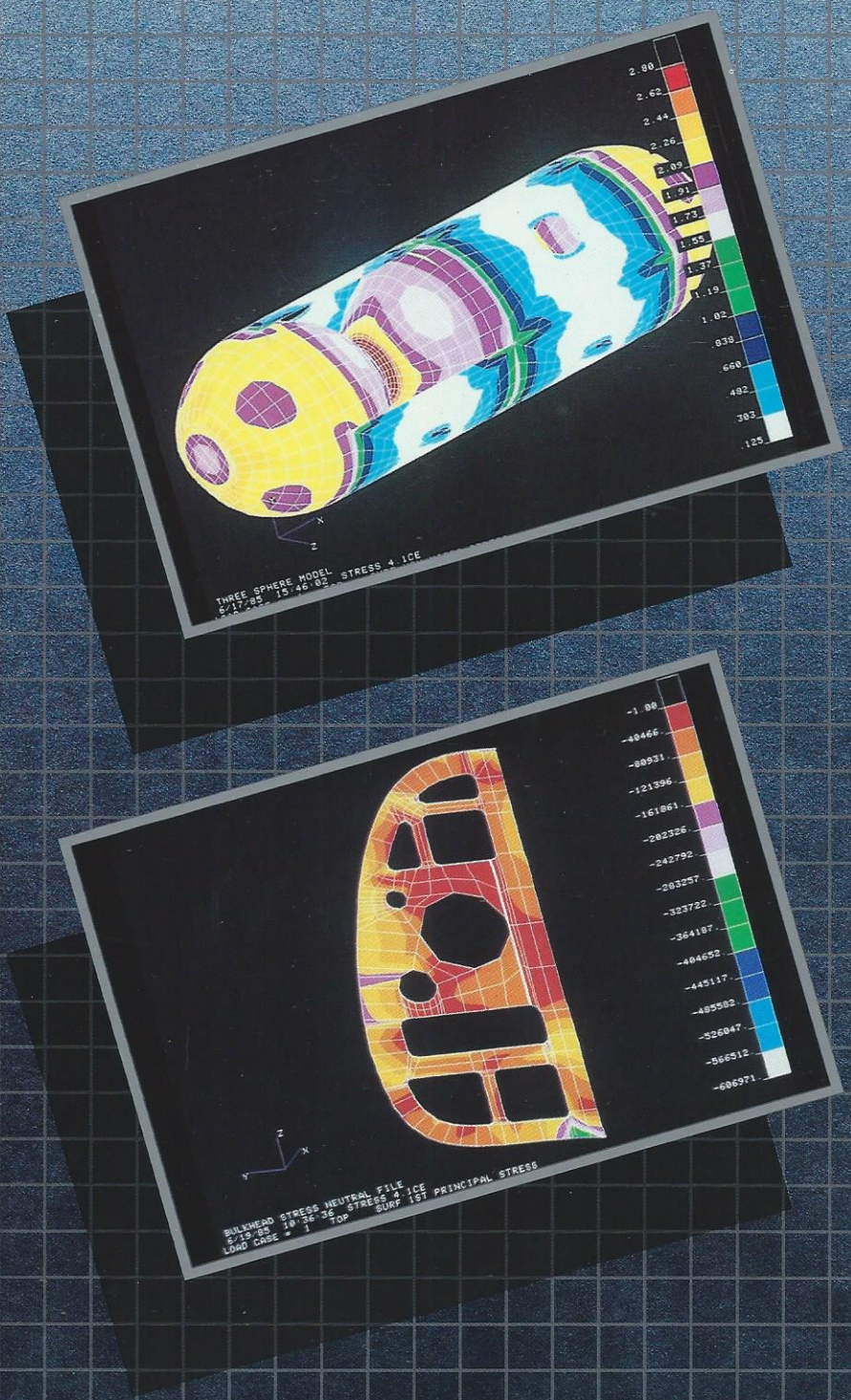
The Imagined Becomes a Reality ...



Interactive Structural Analysis

PATRAN is one of the most widely used interactive graphics pre- and post-processor for finite element modeling. As a pre-processor, it is flexible and responsive, (allowing the user to build increasingly complex finite element models.) As a post-processor, PATRAN can display the results of FEM/FDM calculation in a variety of ways. With the addition of the PATRAN STRESS module, the PATRAN user on the CRAY can take advantage of the computational power of the CRAY by spawning analysis jobs from his interactive PATRAN session and quickly getting FEA results without leaving his interactive session. Upon notification from the STRESS module that the analysis has been completed, the user may once again use the power of a CRAY to post-process the analysis data and clearly depict the response of the structure.

The model at the upper left is that of a three sphere pressure vessel. The model was generated using PATRAN 1.6A on a CRAY XMP/48. Analysis of the 18000 degrees of freedom, 3200 element model was accomplished with the PATRAN STRESS module and completed in a few minutes. Generation of the hidden line stress contour plot required only seconds in 24 elapsed seconds on the CRAY XMP/48. PATRAN on the CRAY today provides a new dimension in interactive engineering analysis.

The aircraft bulkhead model (lower-left) is a demonstration of the flexibility of the distributed processing capabilities of a CRAY computer system. The geometry data for the model was generated with CATIA on an IBM 4381. At the push of a CATIA function key, the geometry was sent off to the connected CRAY and a PATRAN database was automatically created on the CRAY. PATRAN was then run interactively on the CRAY through a VAX/VMS station, generating the complete finite element model on the previously defined geometry. A finite element analysis using the PATRAN STRESS module was then spawned from the interactive PATRAN session. Upon completion of the analysis post-processing was carried out with interactive graphics routed from the CRAY to a RAMTEK 9400 connected to the VAX frontend. Integrated design and analysis is becoming a reality on CRAY computers.

Making the Imagined a Reality ...

Making the imagined a reality has become commonplace using CRAY computers. Previously insoluble problems in the aerospace, petroleum and automotive industries, in science, engineering, and graphics are being solved today using the power and flexibility of CRAY computer systems. In each of these disciplines, the CRAY is used to simulate a real-world process with a computational model in less time and at less cost.

To support these applications, a wide range of graphic software systems is offered for CRAY computers. Device-independent line drawing systems like DI-3000 from Precision Visuals, Inc., TEMPLATE from Megatek, Inc., and DISSPLA from ISSCO, Inc., are being used now on many CRAY computers.

Systems for CAD/CAM and pre- and post-processing like PATRAN from PDA Engineering and MOVIE.BYU from Brigham Young University support a variety of engineering design activities. In those cases where photographic quality scene generation is the objective, the designers, artists, scientists, and movie-makers are turning to CRAY systems to do what could not otherwise be done.

If your application or graphics task requires extraordinary computer power . . . if the problems you ***can*** do are much smaller than the problems you ***would like*** to do . . . if you need a general purpose powerhouse to run a variety of simulation, engineering or scientific codes . . . you need a CRAY!

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