

Microcomputer Pre and Postprocessing
for
MSC/NASTRAN and MSC/pal2
using
mTAB Software

Structural Analysis, Inc. is taking this opportunity to announce the release of mTAB*PRE (formerly MICROTAB) Version 1.4 along with the new postprocessor mTAB*POST Version 1.0. The mTAB finite element pre and postprocessing software provides a low cost alternative for model development and postprocessing on IBM-PC compatible microcomputers.

mTAB*PRE is a general purpose, 3-dimensional model generation program with interface to MSC/NASTRAN AND MSC/pal2 via internal data format translators. Previously called MICROTAB, mTAB*PRE Version 1.0 was originally released in September 1985. With an ongoing program of code evolution currently reflected in the release of Version 1.4, mTAB*PRE has established an international reputation as a cost effective alternative to expensive mainframe and minicomputer finite element model generators.

mTAB*POST provides the capability to develop color shaded stress, thermal and displacement contour plots directly on your EGA graphics screen, or line contours to numerous digital plotters and printers. Static and animation plots of deformed geometries are also available. MSC/NASTRAN/pal2 postprocessor interfaces will be available by early summer 1987.

ADVANTAGES OF PRE/POSTPROCESSING ON PC's

The advantage of interactive processing on a personal computer versus a larger system are evident to anyone who has been held accountable for interactive mainframe processing, particularly on service bureau time-sharing systems.

Finite element model development and solution results postprocessing are functions that can be quite adequately handled by personal computers for even the more complex problem solutions. Advantages include:

- o Enormous savings in cost of computer equipment, time sharing expense and royalty fees.
- o Convenience of low cost personal workstation for the engineer.

- o Local graphic display and hardcopy of postprocessed results.
- o More thorough evaluation and design iteration due to reduced analysis costs - better products.
- o Available to a much wider range of design analysts.

DISADVANTAGES

The disadvantages associated with microcomputer preprocessing are slight. At present, the micro machine speeds do cause some delay in large numbers of coordinate rotations and other compute bound processes; however, near future improvements in micro CPU cycling and hard disk access will eliminate this as a consideration.

Remote postprocessing of mainframe analysis results on a microcomputer does have the disadvantage of time consuming data transmission for large solutions. Forseeable solutions to this will be found in:

- o Faster band rates for standard modems -- currently 1200 will range between 2400 and 17,200 baud.
- o Conversion of ASCII files to packed binary for transmission.

▣TAB*PRE FEATURES & OPTIONS

- o Menu selectable options with expensive "help" displays
 - o Common sense geometry generation options
 - o Node set replication / translation
 - o Scaling / mirror image
 - o Line / arc generation
 - o Curved surfaces
 - o 3-d volumetric generation
 - o Intersections of complex surfaces
 - o Node definition via screen cursor input
- o Real time display of model geometry during generation
- o 3-d coordinate rotations
- o Window zoom
- o Node and element numbering
- o Element shrink

▣TAB SYSTEM REQUIREMENTS

- o IBM-PC/XT/AT or compatible
- o DOS 2.0 or higher
- o Graphics adapters
 - o Enhanced graphics (640 x 350 pixels - 16 colors)
 - o Hercules Card (720 x 348 pixels - monochrome)
 - o IBM CGA (640 x 200 pixels - monochrome)
- o 640 K ram
- o Hard disk required
- o Arithmetic co-processor (*POST only)
- o Various plotters and printers

▣TAB/MSC ELEMENT COMPATIBILITY

The following table shows a cross reference for the element types available in ▣TAB and their application in MSC/NASTRAN and MSC/pal2.

▣TAB Element Cross Reference for MSC/NASTRAN and MSC/pal2

▣TAB	MSC/NASTRAN	MSC/pal2
o SPRING	CELAS2	Stiffness/damping
o TRUSS	CONROD	Beam type 1
o BEAM	CBAR	Beam type 1
o TRI3	CTRIA3	Triangular plate
o TRI6	CTRIA6	N/A
o QUAD4	CQUAD4	Quadrilateral plate
o QUAD8	CQUAD8	N/A
o PRI6	CPENTA	N/A
o PRI12	CPENTA	N/A
o PRI15	CPENTA	N/A
o HEX8	CHEXA	N/A
o HEX16	CHEXA	N/A
o HEX20	CHEXA	N/A
o AXISYM	CTRIARG, CTRAPRG, CTRIAX6	N/A

The figures on the following page are examples of pre and postprocessing plots developed with the ▣TAB programs.

- o Automatic or fixed scaling
- o Modular model development
- o Hidden line removal
- o Global and local coordinate systems
 - o Cartesian
 - o Cylindrical
- o Model data definition includes:
 - o Loads-element pressures, point forces & temps
 - o Restraints, BC's and concentrated mass
 - o Material / geometric properties
- o Save and restore of screen image file / animation
- o Hardcopy to many plotters and printers
- o Large model capability - limited only by hard disk storage capacity
- o Interface to a variety of FE codes on both micros and mainframes, including
 - o MSC/NASTRAN
 - o MSC/pal2
- o "Neutral" interface file for custom installations

▣TAB*POST FEATURES & OPTIONS

- o Easy to use menu options (only 2 menus)
- o Deformed geometry with superimposed undeflected grid
- o Color stress, deflection and thermal contour plots
- o Contour and deformed plots to external devices
- o Special stress calculations (von Mises', max shear, etc.)
- o Summary listing of maxima and minima data by material and element type
- o Image file saving / animation
- o "Neutral" data interface currently available -- direct data conversion for MSC/NASTRAN and MSC/pal2 by June, 1987

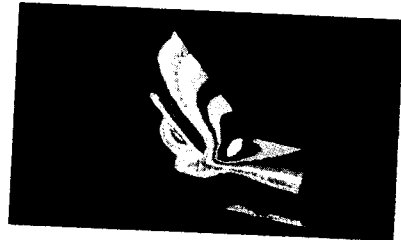
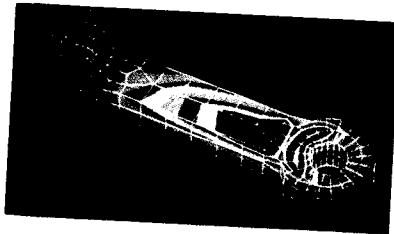
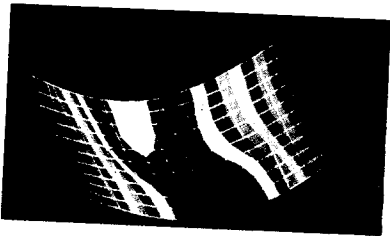
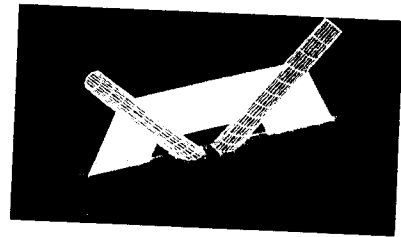
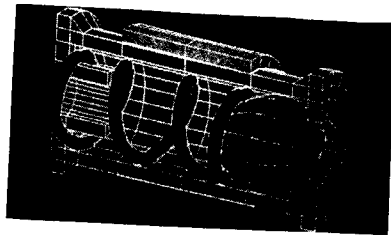
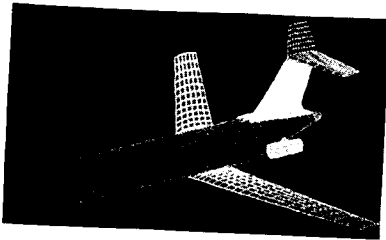
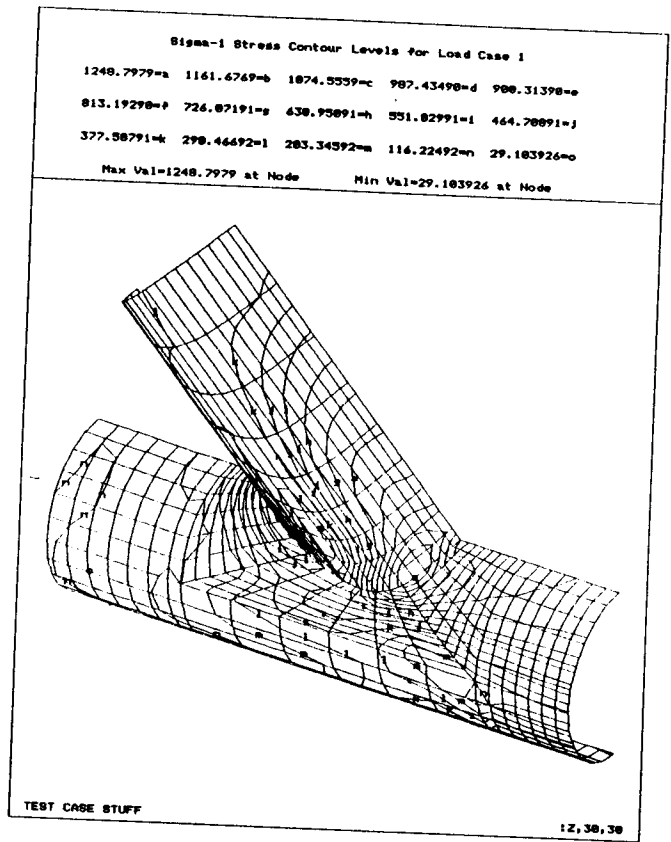
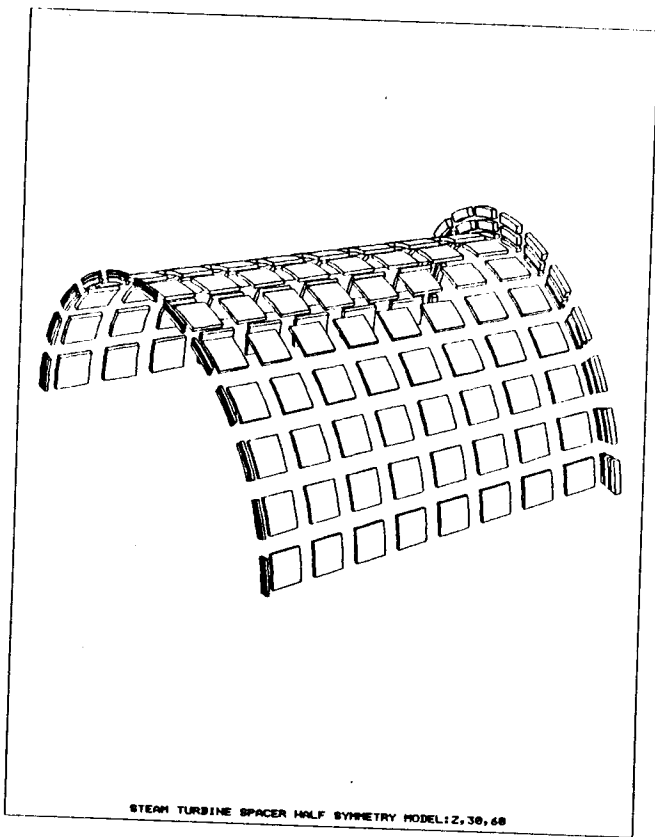


Figure 1. Examples of Pre and Postprocessing with mTAB