

PRATT & WHITNEY
Engineering Division South

Jim,
FYI

INTERNAL CORRESPONDENCE

To: D.L. Deptowicz
From: James P. Southard
Subject: SLA Users Group Conference Trip Report
Date: April 19, 1989
Copy To: R.F. Aubin, C.H. Borgmeyer, R.E. Davis, C.D. Head, M.R. Nys,
J.H. Penick, R.R. Sellers, F.W. Steinbauer, R.J. Tetreault, File D

HIGHLIGHTS

During the week of April 10th, 1989, Mike Nys of Computing & Data Acquisition Systems and I attended the Stereolithography Users Group Meeting in Irvine, California. Also in attendance were representatives from Pratt & Whitney North (1), Ford Motor Co. (2), Volvo (2), Baxter Healthcare Inc. (2), Johnson Controls Inc. (2), Swiss Wire EDM (2), Dupont (2), Digital EQT Corp (3), IBM (2), TRW (1), Pitney Bowes (2), Procter & Gamble (2), Plynetics Corp. (2), Eastman Kodak (1), General Motors (8), Shiley Inc. (2), Apple Computer (1), Depuy (1), BOC-Lansing (2), Johnson & Johnson Orthopaedics (2), General Electric Aircraft Engines (3), Laser prototypes, Inc. (1), Carnegie Mellon University (1), Acustar (1), Aries Tech. (1), and 3D Systems (10).

3D Systems releases a new resin (XB5081) and discusses the benefits of the new resin over previous resins released by Desoto.

3D Systems response to inquires on the SLA-250 upgrade indicated several months delay in delivery.

Building techniques and file manipulating procedures were exchanged between participants to facilitate the development of Stereolithography.

The SLA-500 is still in development and no release date has been established.

Demonstration of the SLP-20 indicated extensive improvement over current software release.

DISCUSSIONS

A Stereolithography Users Group meeting was held at the Embassy Suites Hotel in Irvine California on April 11th - 12th for all SLA

owners. Ray Freed, CEO for 3D Systems explained the merger of 3D Systems with Ciba-Geigy. The new board of Directors will consist of 2 members from 3D Systems, 2 members from Ciba-Geigy, and 2 members from an outside source, who are yet to be determined. The 3D founders have retained 30% of the company, with Ciba-Geigy controlling 37%, and the remaining 33% to the public. At this time 3D Systems has 135 people on board and has hired a new Vice President of Engineering from Israel, Dr. Yehoram Uziel. At the present time, 3D Systems is having to reexamine their patent rights after being challenged in court by Dupont. 3D Systems feels that they are secure in their position but clearly realize that others, (especially the Japanese) are attempting to infiltrate their area of expertise. 3D Systems major priority is to make the entire system faster and more efficient by exploring more powerful lasers and faster processors, and they will be devoting much of their time to this endeavor.

Chuck Hall, President of 3D Systems, spoke on the latest breakthrough in resin research and announced the development and availability of XB5081. The new resin, marketed under the name "Cibatool" was produced by 3D Systems and Furane Products Company in Los Angeles. Furane Products Company is a Ciba-Geigy affiliation and the product will therefore be sold exclusively by 3D Systems. Cibatool resin has a very high green strength, low curl factor, low post processing distortion, easy to clean with solvents, and is tack free. 3D tests show no distortion when a minimum of .050" wall thickness is maintained. Drawbacks for this resin are its high viscosity, limited shelf life, and combustibility in its liquid state. The resin can be stored for only six months, and the building chamber of the SLA must be heated to 35 degrees Celsius to lower the viscosity for optimum building consistency. Future development of resins is striving for less viscosity, tougher materials (less brittle), and 3D expects to release samples by the 4th quarter of '89.

The retrofit package to upgrade the SLA-1 to a SLA-250 is being released to 3D System's in-house machines only. 3D's explanation for this is that they would rather "Alpha" test the package and incorporate any minor changes before releasing the retrofit to the public. This will take about two months, but 3D will be able to set a date for the retrofit by May. Only those companies who have "production" models will be able to utilize the 10K retrofit package. Those of us with "Beta" models cannot be upgraded and therefore require our units to be "swapped-out" for a SLA-250. Although we will actually acquire a SLA-250, the companies getting the upgrade package will be receiving only those changes that give the SLA-1 the capability of a SLA-250. Wiring and circuitry of the upgrade will be different from that of the production model SLA-250.

Several formalized presentations were presented to the Users Group by associated modeling companies. The computing company, Aries Technology presented their latest solid modeling capabilities that are soon to be released in a software change, and from Prodesign and Tarton Tooling(both subdivisions of the 3M Corporation) on their capability to "clone" Stereolithography models. The exchange of information during our round table discussions proved extremely useful in saving of time and money in our building techniques. Simple manipulation of various files within the build computer can save the operator considerable time in building different size models of the same part. 3D Systems warned

the group that while these manipulations may work with the current software, they would not guarantee that future changes would conform to these work-arounds.

The SLA-500 is still not operational. Problems in its development are still being addressed by 3D. Tom Vorgitch, Vice President/Computing, reported in confidence to the BETA users that even the existence of the SLA-500 had not been released to the general public, and that we should treat any information we have as company confidential. No information exists on a release date for the SLA-500, and 3D research is continuing.

The SLP-20, which replaces the NEC386 slice computer was displayed and shows a remarkable improvement over the current software capabilities. The workstation is not only five times faster in slicing, but will have the capability to create simple support structures independent of the CAD file supplied and will greatly reduce the turn-around-time in producing parts.

The next Users Group meeting will be sponsored by P&W Florida at EPCOT center in Orlando, sometime in late September or early October. Plans and arrangements are being formulated at this time, and the agenda will be promulgated as soon as the reservations have been finalized. 3D Systems has requested that at least one meeting a year be held in Los Angeles in order for the the majority of their personnel be involved in the user group's proceedings.

The user group continues to be a major, indispensable step in the development of Stereolithography. The common lessons learned by each of us in our individual research studies, when shared with one another, saves considerable time, money and aggravation, and I strongly recommend our continued support and participation in the Users Group.



James P. Southard, Ext. 4600
Current Engines Turbine Durability
Component Design Technology

JPS:jps