

FEATURE

Building bridges

Fabrication Flight spans the gap between engineers and enlisted

Staff Sgt. Raymond Padgett
315 AW Public Affairs

The craftsman slowly shapes the space-age polymer onto the precisely cut mold. The safety of future motorists may well depend on his efforts today. John Young is not a Department of Transportation engineer or a NASA scientist, Air Force Reserve Master Sgt. Young is a structural repair craftsman here, whose normal duties are the repair and upkeep of the C-17 Globemaster III.

The fabrication flight, expanding on the same composite technologies used to repair the C-17, is building a scale model bridge to compete in the Society for the Advancement of Material and Process Engineering Technical Conference contest, May 23, in Long Beach, Calif.

"This is a conference that we need continued participation in if we expect to stay current with today's and future composite technology," stated Master Sgt. Paul Childers, the noncommissioned-officer-in-charge of the 437th Maintenance Squadron's structural maintenance element.

As enlisted maintainers prove their skill with composites, Technical Orders are being rewritten to allow them more repairs that used to be depot level. "We were limited to minor Band-Aid fixes on the B-2, C-17, and the F-22," said James Clayton, a civilian employee with the structural maintenance element. Now these professionals can make repairs as large as 20 by 24 inches and still maintain the strict engineering tolerances.

"We aren't engineers, but if you work with something long enough you find out what works and what doesn't," Young said.

SAMPE is an international professional member society that provides information on new materials and processing technology either via technical forums, journal publications, or books in which professionals in this field can exchange ideas and air their views. As the only technical society encompassing all fields of endeavor in materials and processes, they provide a unique and valuable forum for scientists, engineers, and academicians.

Young, of the 315th Maintenance Squadron, Childers and Clayton formed a three-man team that competed in last years competition, where Team Charleston took second place beating out the likes of Boeing and NASA teams.

The contest rules dictate that the bridge dimensions be a minimum of 24 inches in length and between four and six inches wide. The materials are provided in a kit from SAMPE.

This years entry is made mainly out of carbon, carbon cloth, resins, and a nomex core. A major design change is the addition of a curvature to the bridge, but Childers said there are other modifications the team is keeping secret until after the competition.

Entries are judged based on the weight they will bear in proportion to their own weight. A load is applied to the center of the bridge until the structure fails or deflects



photos by Staff Sgt. Raymond Padgett

Staff Sgt. Jeffrey A Houseman, a metals technology journeyman with the 437th Fabrication Flight, shapes the mold that will be used to form the bridge.



one inch.

Young said it's critical to keep the weight of the structure down. All grease and finger oils are removed chemically, and the team will vacuum pack the bridge to avoid moisture absorption on the way to the competition.

Childers said this year the entire flight including the nondestructive inspection, metals technology, structural maintenance and life support elements have all volunteered off-duty time to work on the project.

The bridge, still under construction, will have the roadbed attached to the superstructure with polymers and resins.