

Local Man Helping Ready Experiment For Space Shuttle Flight Next Year

A N.C. State University senior from Brunswick County is working at the NASA Johnson Space Center in Houston, Texas, helping prepare a student invention for flight aboard the Space Shuttle *Orbiter* as early as mid 1992.

Michael A. Norton, who was valedictorian of his 1987 class at West Brunswick High School, is one of two NCSU engineering students assigned to the National Aeronautics and Space Administration as co-ops with the Calibration Spheres Project. A mechanical engineering major, he is the son of Bobby L. and Linda G. Norton of Route 2, Supply.

The invention—the Orbiter Ejector—came about as part of a unique partnership between NASA and the university's Mars Mission Research Center. It will help scientists keep track of orbiting debris in space.

"Perhaps the most unique aspect of the project is that the Orbiter Ejector has been designed and fabricated entirely by North Carolina State undergraduate engineering students," said Larry Silverberg, the professor who heads the project.

The center was awarded the contract to construct the Orbiter Ejector for NASA. The device is part of the Get Away Special Calibration Experiment. It will fly on the Space Shuttle *Orbiter* and eject six calibration spheres into precise orbits.

These pairs of 5-, 10- and 15-centimeter spheres will be tracked by ground-based radars and optical systems and used to more accurately determine the quantity and size of smaller objects in space, particularly orbiting debris left over from satellites and rockets.

Presently observers cannot see much of the debris less than 10 centimeters and it is not known how many fragments there are, said Silverberg.

The Mars Mission Research Center was awarded the contract to build the Orbiter Ejector flight hardware after students at N.C. State completed a related conceptual design study in the spring. The study was part of a special engineering design course. Of the 84 undergraduates in the aerospace, mechanical and electrical engineering programs that applied for the class, 40 were accepted.

They were divided into four competing design teams of eight students each and one orbital safety team. Each design team developed its own design and built a prototype to demonstrate their concept.

As a member of Team I, Norton was involved in mechanical design and analysis of the structure, as well as CAD drawings and technical documentation.

The orbital safety team was responsible for digesting the maze of safety regulations that must be satisfied before the orbiter ejector exper-

iment could be certified for flight.

Following a review in Houston, the university received the contract to build two of the student designs, including that of Team I.

One of these Orbiter Ejectors will be placed in a special canister, called the Get Away Special canister or GAS for short, which is located in

the shuttle's cargo bay. The motorized door assembly or lid on the GAS can will open. At the command of a mission specialist the spheres will be ejected into their precise orbits.

Norton is one of 10 students involved in the building of the Orbiter Ejector. Seven are involved in fabri-

cation at N.C. State and another is working on orbital mechanics. Norton and Robert Trask were assigned to the space center, where they are working under the direction of John F. Stanley, deputy manager, Space Science Branch.

The two will continue to work at NASA with the Calibration Spheres

Project until its shuttle flight. They will complete all safety analyses and testing verifications for the hardware, as well as supporting documentation of all safety issues for flight approval.

Silverberg said the project's flight on the Space Shuttle *Orbiter* is expected to take place in August 1992.

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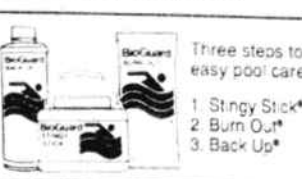
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