

Student marketeers heading into space

United Press International
WASHINGTON — Three young men who looked into private investment in space while they were students at the Harvard Business School two years ago have formed a company to develop a commercial upper stage rocket for the space shuttle.

Their Orbital Systems Corp. signed a cooperative agreement with the National Aeronautics and Space Administration April 18.

NASA will provide technical monitoring and advice and the corporation will proceed with the rocket development, expected to cost about \$30 million, at no cost to taxpayers.

A similar endeavor led to the manufacture of a smaller rocket stage that successfully pushed two communications satellites into orbit last November after being carried into space by the shuttle Columbia.

But the maker of those rockets is the McDonnell Douglas Corp., an aerospace giant that has built rockets and spacecraft since the 1950s.

The Orbital Systems Corp. has eight people on the payroll. It was formed last year by David W. Thompson, 29, Scott L. Webster, 30, and Bruce W. Ferguson, 28.

Their plan, Webster said, is to serve as "fund-raisers and marketeers" for commercial ventures in space operations while contracting out the actual systems development work to aerospace companies with proven technical know-how.

Orbital Systems Corp. signed a preliminary agreement in January with the Martin Marietta Corp. Martin is to design and build the stages and Orbital Systems will finance and direct their development and sell them for

\$16 million and \$20 million each.

The rockets are designed to propel relatively large satellites, weighing between 2,800 pounds to 6,800 pounds at their final station, from the low orbit where they are left by space shuttles to an elliptical orbit reaching 22,300 miles high.

Smaller rockets in the satellites themselves will then be fired to propel them into the circular 22,300-mile-high path where a satellite's orbital speed matches Earth's rotation and the spacecraft remains over one point.

Thompson said his rocket stage, called the transfer orbit stage, will fill a gap in the ability of NASA's space transportation system to push large satellites toward the stationary orbits or beyond.

Corpus deepening channel

Project may revive port

United Press International
CORPUS CHRISTI — The Port of Corpus Christi will begin this spring to deepen its ship channel — a project long delayed by environmental objections — in the hope of becoming one of the busiest ports in the country.

The port is already second only to Houston among Texas ports and will be the deepest anywhere on the Gulf coast when the dredging project is completed in about six years.

The deepening project was opposed by environmentalists and commercial fishermen who did not want the goopy dredge material dumped in the warm, shallow waters of Nueces Bay, a prime spawning ground for shrimp.

The U.S. Army Corps of Engineers finally abandoned that plan in December and agreed to put the dredge on land at the port.

The channel, now 40 feet deep, will be dredged to 45 feet along a 10½ mile stretch from the Gulf of Mexico to the innermost turning basin, said Port Director Harry Plomarity.

That will make way for the largest oil tankers at a port where oil already accounts for 80 percent of the imports, he said.

The dredging is a key in a larger plan to attract more business at the port, Plomarity said.

With oil imports down 44 percent, tonnage at the port has dropped from a high of 61 million tons in 1978 to 43 million in 1982.

"When we saw the imports declining, the port commissioners decided to take a look at our marketing strategy," Plomarity said.

Now they are trying to diversify the cargo brought to the port by attracting more dry bulk and grain. A public grain elevator

that exploded last year should be back in operation by July, he said.

The new kinds of cargo would require more longshoremen, providing jobs in Corpus Christi, Plomarity said. About 38 percent of the city's jobs are already related to the port, ranking in importance with the military and tourism, he said.

Plomarity is hoping to appeal to shippers who are tired of congestion at the Port of Houston.

The port commissioners can compete with lower wharfage and docking charges, but they are fighting railroad rates that have become higher to the re-

mote coastal city since deregulation, he said.

Plomarity is also working with San Antonio Mayor Henry Cisneros on a plan to use Corpus Christi as a port of entry for Antonio cargo. San Antonio could then serve as a distribution center for six states and northern Mexico, he said.

Contracts will probably be awarded in May to build around the 2,000-acre site designated as a dump area for dredge, said Joe Trabasso, chief of the engineering and planning division at the Galveston District Corps of Engineers.

Surviving Liberty ship serves as war memorial

United Press International
SAN FRANCISCO — The last of the Liberty ships that formed America's "Bridge to Victory" in World War II has been turned into a national memorial by a crew of volunteers, many of them veteran seamen who dodged torpedoes and bombs on harrowing wartime runs.

The SS Jeremiah O'Brien is the last unaltered example of the 2,751 cargo ships built between 1941 and 1945 in 18 U.S. shipyards.

The veteran of the Normandy invasion was pulled out of mothballs after 33 years in the reserve fleet. Following extensive work, the 441-foot vessel sailed out of nearby Vallejo under its own power in 1979.

Today the O'Brien is open to visitors and even takes cruises on San Francisco Bay, including a big one in May when the ship sails out of the Golden Gate for ceremonies honoring those who died at sea.

"The ship's about 95 percent restored," says John Paul, a retired merchant marine captain who works aboard the O'Brien as a boatswain.

"Among other things, we have the barrels for 11 anti-aircraft guns but need other parts for them," said Paul, who survived the U-boat sinking of the Liberty ship Baton Rouge on one of his many World War II voyages.

It's hard to know where to begin in telling the story of the squat ships dubbed "ugly ducklings" by President Franklin D. Roosevelt when he was shown the first blueprints.

But if the story had to be summed up in one word it would be "Murmansk," the Soviet destination for so many ships and men that never came back.

The voyage was a gauntlet of submarine and air attacks in which 97 cargo ships went to the bottom. The convoys which got through delivered vital armaments including more than

22,000 planes and millions of rifles.

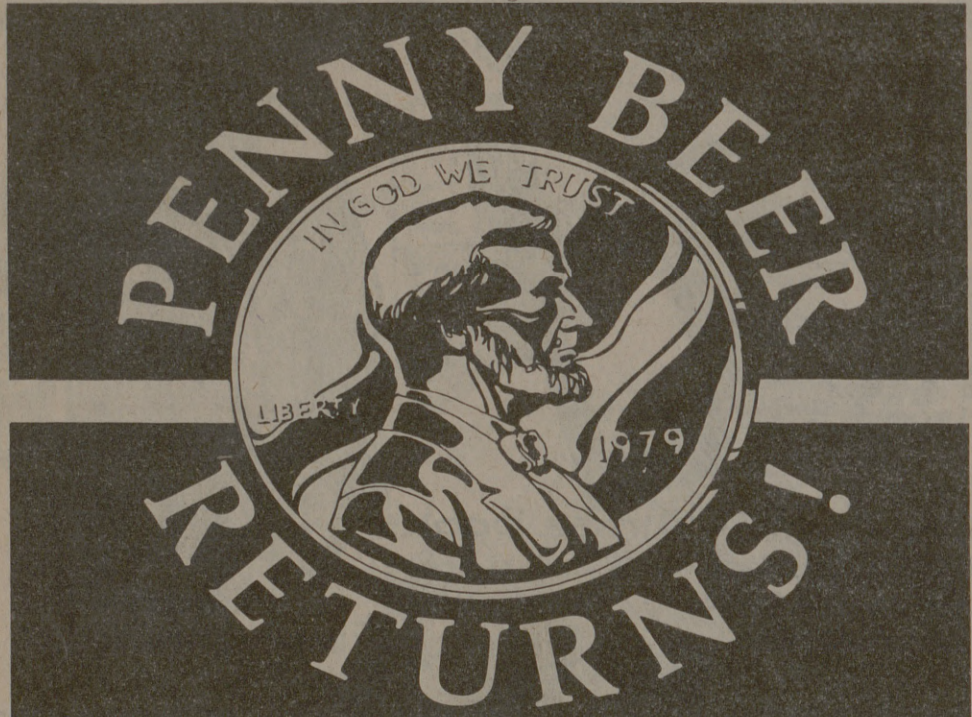
"Some of these ships were built in five days," said Harry Morgan, the O'Brien's chief engineer who came under seven air attacks while aboard Liberty on runs to Egypt. "If they made one trip they paid for themselves."

The ships' crews consisted of merchant marine sailors and Navy armed guard who manned the anti-aircraft guns and three- and five-inch guns at the bow and stern. At battle stations, civilian sailors served as ammunition handlers, passing shells to the Navymen.

Men who sailed the Liberty ships in the war often visit the O'Brien.

Paul says some veterans are surprised when they learn there's still a Liberty ship around.

"Several guys who sailed on Liberties found us just by chance," he said.



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