

J S C * S S H I N I N G S T A R**Sinking to salvage: *Liberty Bell 7***

By John Ira Petty

On July 21, 1961, Marine Corps pilot Jim Lewis fought the weight of a flooded Liberty Bell 7 and impending failure of his UH-34D helicopter's engine to save the Mercury capsule. After agonizing minutes seen by millions of TV viewers, he was forced to disengage the cable.

The capsule sank in almost 16,000 feet of water northeast of the Bahamas.

In the predawn hours of July 20, 1999, that pilot, now more formally known as James L. Lewis, Ph.D., chief of the Space Human Factors Branch in Johnson Space Center's Flight Projects Division, watched Liberty Bell 7 emerge from the dark Atlantic waters. It was hoisted onto the deck of the recovery ship, *Ocean Project* owned by Oceaneering International, for return to Cape Canaveral on July 21, the 38th anniversary of its launch.

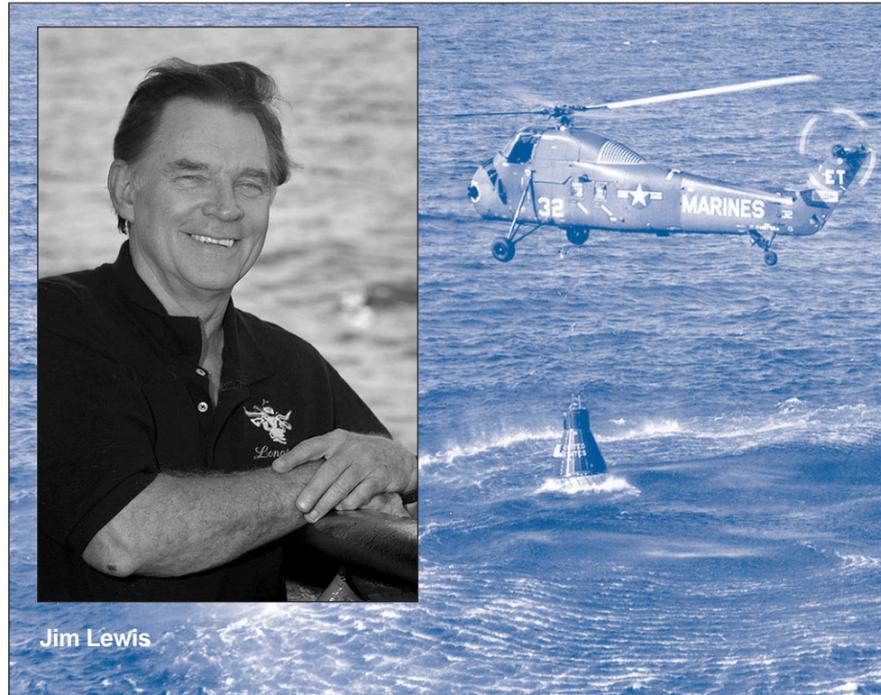
Lewis was able to land his crippled helicopter on the USS *Randolph*, and the backup helicopter recovered Grissom, whose flight suit was flooding through a hose connector.

Later, a reporter asked Lewis if that had been one of the worst days of his life. "No," I told him, "it was one of the best days of my life, because all our contingency procedures worked – all our NASA and Marine Corps training paid off."

Lewis was born in Shreveport, La., but his family moved to Houston in 1947, when he was 10. He graduated with a degree in math, physics and psychology from the University of Houston, then joined the Marine Corps. After a stint as a helicopter pilot in the Far East, he got into the Marine helicopter unit assigned to recover spacecraft.

Lewis' helicopter lifted off the deck of the carrier about the time Liberty Bell 7 was launched. The impact was close to the predicted area. Lewis and his crew saw the capsule descending under its parachutes.

Once the capsule was in the water, Lewis talked to astronaut Gus Grissom by radio. Grissom asked for about five



A U.S. Marine Corps helicopter attempts to lift the Liberty Bell 7 spacecraft from Atlantic waters. Gus Grissom was safely pulled from the water, but attempts to retrieve the spacecraft were unsuccessful and it sank to the bottom of the ocean.

minutes to finish his closeout checklist. While the helicopter was making its approach to the capsule, the capsule's hatch blew unexpectedly.

"It was almost under water when we got there," Lewis said. "I had to put the helicopter's wheels in the water" to enable the copilot to hook a cable to it.

When they were securely attached, they found themselves with a water-filled capsule that weighed about 1,500 pounds more than their helicopter could lift. They also had a "chip detector" warning light in the cockpit, indicating there were metal fragments in the helicopter's oil. Engine failure could be expected in perhaps five minutes.

Lewis ordered the copilot not to lower the hoist for Grissom, and called the backup helicopter to pick up the astronaut. Lewis' helicopter towed the capsule away to provide clearance for the backup aircraft.

They almost succeeded in getting the

capsule out of the water – Lewis had decided to remain attached to Liberty Bell 7 until he saw cylinder head temperature increase and oil pressure decrease. When that happened, he detached the cable.

After Lewis left active Marine Corps duty in September of 1961 (he remained in the Reserves until he retired as a major with 20 years service), he joined the Space Task Group. "That was the first time in my life I really knew what I wanted to do."

They sent him back to the University of Houston for a master's degree. In 1979 he earned a Ph.D. there in human factors engineering.

"Having been a pilot," he said, "I knew, like every pilot that's ever flown, that I could design a cockpit better than whoever did it. It became a mission of mine."

He's still doing that, along with looking at just about every other interaction between flight crewmembers and their hardware and software. "And the people

who do the flying still think they could design it better. They're probably right, because budget, weight and schedule constraints often compromise what pilots consider optimum design."

One fallout from his early contact with the astronauts was a stint driving Formula V racecars. He said that stopped when he and his wife Ghislaine started raising a family.

Lewis said he has loved coming to work every day of his career. "Not many people can say that. I've had great people to work with and great things to work on. It's really been a fun ride."

Married and the father of two sons, both of whom hold chemical engineering degrees from the University of Texas at Austin, Lewis enjoys skiing, golf and bowling in his spare time.

The Discovery Channel interviewed Lewis for its coverage of the Liberty Bell 7 recovery effort, and subsequently invited him aboard the recovery ship. An attempt to recover the capsule in May failed when a cable broke, resulting in the loss of a robotic submersible.

The second attempt was suspenseful. The remote submersible with its cameras had to be brought back aboard before they could begin hoisting the capsule. No one was sure the capsule was still attached to the cable during the six hours it took to reel it in.

"When it finally broke the surface, there was a lot of yelling and cheering," Lewis said. It was 2:30 a.m. and everyone had been up more than 24 hours.

Looking back, Lewis says that on the day the capsule sank, two things happened against huge odds, and they happened minutes apart. The helicopter was the best the squadron had, and the engine problem (which began right after the capsule was snagged but before the aircraft tried to lift it) was totally unexpected.

So was the hatch blowing. Lewis says he's convinced Grissom wasn't responsible for the hatch opening.

The Discovery Channel's special on Liberty Bell 7 is scheduled to air on the night of December 12. ■

Martial arts class offers new form of defense

Something different is happening on the second floor of the Gilruth Recreation Center every Tuesday and Wednesday evening. Men and women are dressed in white uniforms with cloth belts tied around their waists. Each belt is a solid color, either white, green, brown or black. They talk quietly as they ready themselves for class. They are members of the NASA Aikikai or "School of the Way of Harmony." They come together twice a week to learn the traditional Japanese martial art, Aikido (literally "the way of harmony").

The head instructor of NASA Aikikai is Leon Blum, who also works as chief of staff in the ISO 9000 Office. Blum began his martial arts training in Korea where he learned the karate style, Tae Kwan Do (or "the way of the hand and foot"). Over the years he studied different martial arts including Ju Jitsu, fencing, and Tai Chi. When his judo instructor unexpectedly had to leave to follow a job, Blum began to learn Aikido because "it was the only martial arts class which fit my schedule." Blum is a now fifth-degree black belt in Aikido and is ranked in several other martial art styles. He started teaching Aikido at the Gilruth Center in 1990.

Aikido is based on the idea that you don't have to injure your opponent to prevent him or her from hurting you.

The class does an exercise called "the walk" which takes them through a progression of increasingly complex movements.

Then students, in pairs, practice exercises that teach the concepts of balance, redirection of energy and motion, and controlling another person's force. Blum says that all of the techniques and principles can be explained in terms of sciences like physics and anatomy. "There are some styles that stress the mystery and spiritual reasons for why techniques work. Here we like to break techniques down by scientific investigation. Since many of my students are physicists, mathematicians, and engineers, it is easier to explain things according to scientific principles of gravity, leverage, and kinetics."

People always ask if Aikido works in real life, says Blum. "I tell them about two of my students. One of them is an emergency medical technician. On the job one night, a man

with a baseball bat attacked her. Even though he was twice her size, she was able to throw him to the ground, take away his bat and hold him until the police arrived, without either one of them being injured. (The man was bruised). A car hit the other student while he was riding his bicycle. As he was thrown over the car to the ground, he avoided injury by rolling out just like he was taught to fall in class. I'm just as proud of both students because they know that Aikido works "for real."

Every year, Blum also teaches hundreds of men and women during his one-hour seminars on "Women's Self-Defense." That class has been held all across Harris County to such groups as the Texas Aggie Mother's Club, B'nai Brith Women, United Space Alliance and at Total Safety and Health Day. Blum teaches the class for free to stress the strategies of defense rather than the physical aspects that he teaches in his regular class. "If you are prepared for what the criminal is going to do, you are better able to avoid becoming a victim," says Blum. ■



Instructor Leon Blum demonstrates Aikido technique to students.

NASA JSC Photo S99-11093 by Bill Stafford