

*The Successful Failure***Apollo 13 EVENTS****Apollo 13**

left: Fred W. Haise lunar module pilot; center: James A. Lovell, commander; right: John L. "Jack" Swigert, command module pilot.

On April 11, 1970, three astronauts launched from Kennedy Space Center on a mission to the moon. Jim Lovell, Fred Haise and Jack Swigert were part of the third mission to land on the moon, tasked with exploring the *Fra Mauro* formation and gathering geological samples with hopes of discovering more about the deep surfaces. Little did mission control and the crew know, a planned lunar landing was not going to happen for Apollo 13.

Approximately two days after launch, on April 13, the journey to the moon quickly evolved into a journey of survival. All hopes of a moon landing were lost as a faulty electrical system led to an explosion and loss of all power to the Command Service Module's oxygen tanks. Command Module Pilot Jack Swigert called down to the ground support, "Houston, we've had a problem here."

Mission control had to work under extreme pressure to come up with a solution for the crew. Recalculating and revisiting the capsule in Houston, under the direction of Flight Director Gene Kranz, kept the crew focused on returning the astronauts home safely. Finally, it was decided that the crew was to use the Lunar Module as a lifeboat. The astronauts were instructed to power down the Command Module and board the Lunar Module, powered by silver-zinc batteries with enough materials that, if utilized sparingly, would keep the astronauts alive during their journey home.

Using the moon's gravity and multiple firings of the descent engine, the crew was able to align their course for the return trip to Earth and landed safely in the Pacific Ocean on April 17, 1970. ★

**Forty years later**

you can celebrate this mission with the men who actually lived it. Friday, April 9, through Saturday, April 10, 2010, Kennedy Space Center Visitor Complex will commemorate the historic mission with a celebration including a special schedule of activities with the Apollo 13 astronauts.

**Astronaut Encounter with Apollo 13 Astronauts**

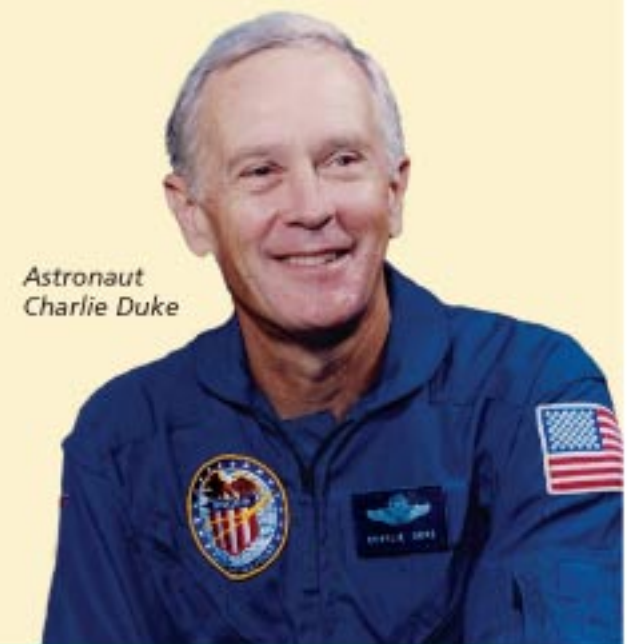
Come face-to-face with the heroes of Apollo 13, Jim Lovell and Fred Haise, during a special Astronaut Encounter on Saturday, April 10 at 10:30 a.m., included with your annual pass.

To view the 10:30 a.m. presentation, please arrive to the Visitor Complex no later than 9:00 a.m. in order to be processed through security.

**Apollo Astronaut Charlie Duke Book Signing**

Back-up Lunar Module Pilot for Apollo 13 and Apollo 16 astronaut Charlie Duke will be signing copies of his book "Moonwalker" at The Space Shop on Friday, April 9 at 3:30 p.m. Books will be available for purchase onsite at The Space Shop prior to the signing.

Book autographs only, please. ★



Astronaut  
Charlie Duke

# 2010 U.S. Astronaut Hall of Fame Induction – Saturday, June 5



Astronaut  
Guion S. Bluford, Jr., Ph.D.  
Colonel, USAF, Ret.



Astronaut  
Kenneth D. Bowersox,  
Captain, USN



Astronaut  
Frank L. Culbertson, Jr.  
Captain, USN, Ret.



Astronaut  
Kathryn C. Thornton, Ph.D.

**Guion S. Bluford, Jr., Kenneth D. Bowersox, Frank L. Culbertson, Jr. and Kathryn C. Thornton** will join an elite group of American space heroes as they are inducted into the U.S. Astronaut Hall of Fame during a public ceremony at Kennedy Space Center Visitor Complex on Saturday, June 5, 2010. They will join the ranks of legendary space pioneers like Neil Armstrong, John Glenn, Alan Shepard, Jim Lovell, Sally Ride and John Young – all distinguished members of this unique Hall of Fame.

Between this year's four inductees, 16 missions have been flown and many unique tasks have been accomplished. This is the ninth group of space shuttle astronauts named to the U.S. Astronaut Hall of Fame. The addition of **Bluford**, the first African American to fly in space; **Bowersox**, pilot of the first maintenance mission to restore the crippled Hubble Space Telescope; **Culbertson**, commander of the first space shuttle night landing at Kennedy Space Center; and **Thornton**, a mission specialist during the first three-person spacewalk, will bring the number of space explorers enshrined in the Hall of Fame to 77.

**Guion Bluford (Ph.D., Colonel, USAF, Ret.)** assisted with the procedural development for operating at night aboard STS-8, as he was aboard the first mission that would launch and land in the dark. He flew four missions during his 15-year career with the astronaut corps. A five-time space shuttle astronaut, **Kenneth Bowersox (Captain, USN)** piloted the first mission to repair the Hubble Space Telescope aboard STS-61. Five spacewalks were needed to capture and repair the telescope.

**Frank Culbertson (Captain, USN, Ret.)** flew with the astronaut corps from May 1984 to August 2002 aboard three missions. He commanded STS-51, successfully deploying a satellite that was the first shuttle payload controlled from Kennedy Space Center.

**Kathryn Thornton (Ph.D.)** participated in the repair of the Hubble Space Telescope aboard STS-61, with fellow inductee Ken Bowersox, as a mission specialist. She flew four missions during her 12-year career with the astronaut corps.★



## SPECIAL PACKAGE RATES for ANNUAL PASSHOLDERS

The U.S. Astronaut Hall of Fame Induction Ceremony is included with your annual pass to Kennedy Space Center Visitor Complex (KSCVC). A limited number of special Induction weekend ticket packages are available to annual passholders with an active pass at a discounted rate of \$32 plus tax for adults and \$22 plus tax for children and include the following:

- *Hear first-hand accounts of experiences from a Hall of Fame astronaut on a guided bus tour of Kennedy Space Center*
- *Reserved seating at the Induction Ceremony*
- *Commemorative poster of the 2010 Inductees*

Call the KSCVC reservation department at 877-313-2596 to make your reservation for this extraordinary event!

# NASA's Universal Presence

What do modern-day convenient check-out systems, more efficient hospital software, sensors capable of detecting early biological hazards and perfect fishing spots all have in common? The answer is the space program. Many tools we use on a day-to-day basis, many we are not aware of, have evolved from NASA and the space program.

**The Apollo Program:** More than 40 years ago, the Apollo Program put men on the moon. The same computer programs that once served as the administrative log for each Apollo system, as it was tested throughout launch preparation, is being utilized now for your convenience in supermarkets.

**Health and Medicine:** Software created to efficiently manage the Hubble Space Telescope's time-consuming tasks is now utilized in hospitals. On-Cue™ reports in real time and is programmed to maximize the resources of the medical center and reallocate staff when needed.

**Public Safety:** Sensors were originally developed in the early 2000s to detect biological traces of substances on Mars. These sensors are now used to sample water, significantly reducing the result time. The sensors are currently used by agricultural workers for cattle and by food and beverage companies to ensure the purity of their products.

**Recreation:** Using NASA's Earth Observing System (EOS), a tool that provides satellite observations for climate, atmosphere and oceanic conditions, FishByte™ was created. FishByte is a GPS-type resource that comes pre-programmed with popular fish species and uses satellite assistance to help locate the best fishing areas.

For more details about space-based program benefits, visit: [www.KennedySpaceCenter/CommandersCorner](http://www.KennedySpaceCenter/CommandersCorner).★



On-Cue™ originated from software built by engineers to manage operations on the Hubble Space Telescope. Photo: NASA

## Curator's Corner

By Daniel Gruenbaum

Early on the chilly morning of February 8, 2010, the launch of STS-130 space shuttle Endeavour lit up the Florida coast carrying the Tranquility node and the seven-windowed Cupola, the new "bay window" of the International Space Station. The delivery of this new addition on one of the final space shuttle missions is steering the space station toward completion, one of the shuttle's primary responsibilities. Many people aren't aware of what a marvel the space station is and its impact on our daily lives.



Astronaut Kathryn Hire, STS-130 mission specialist, at the windows in the Cupola of the International Space Station. Photo: NASA

The space station is the largest multinational peace time project in history, with 16 nations working in harmony to build a world class laboratory. Actually, it is a collection of world class laboratories. What has been accomplished in these laboratories? A few advancements include:

- Vital medical research such as the development of improved methods for delivering medicines.
- Advances in the fight against food poisoning.
- Improvements in communications technology.
- Better materials for living in the harsh environment of space.

It is research science – pure science. The greater accomplishment of the space station is that the construction and on-going research is not the triumph of one nation or culture — it is the accomplishment of many nations. The fact that former adversaries, both on a governmental level and for some on a personal level, have joined together for the benefit of all. The space station provides a hope and a plan for the future exploration of the universe. For years to come, science will continue to advance and build on the knowledge learned in the station laboratories.

The bottom line is this: the International Space Station is almost complete and is teaching us new things everyday. Finally, we, as mankind, have taken our place among the stars.★



Apogee StarNews is published exclusively for Commander's Club Annual Passholders at Kennedy Space Center Visitor Complex.

Call 321-449-4359 or email: [apogeestar@dncinc.com](mailto:apogeestar@dncinc.com) for photo submissions, permission to reprint articles or questions. Visit our website: [www.KennedySpaceCenter.com/CommandersCorner](http://www.KennedySpaceCenter.com/CommandersCorner).

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## LAUNCH SCHEDULE

- **STS-131** *Discovery* targeted for April 5 at 6:21 a.m. ET
- **STS-132** *Atlantis* targeted for May 14 at 2:28 p.m. ET
- **Delta IV** GPS 2F-1 targeted for May 17 at 3:19 am-3:37 a.m. ET
- **STS-134** *Endeavour* targeted for July 29 at 7:51 a.m. ET
- **Atlas V** AEHF-1 targeted for July 30 (Time TBD)
- **STS-133** *Discovery* targeted for September 16 at 11:57 a.m. ET

All rocket and space shuttle launch times and dates are subject to change.



Share this Commander's Club Newsletter with a friend and watch for upcoming events.

For annual pass information, call 877-313-2596 or visit our website: [www.KennedySpaceCenter.com](http://www.KennedySpaceCenter.com)

## Sudoku Puzzle

Fill in the grid so that every row, every column and every 3x3 box contains numbers 1 through 9. There is only one solution to the puzzle. For answers, visit: [www.KennedySpaceCenter/CommandersCorner](http://www.KennedySpaceCenter/CommandersCorner).

	2	5	9		4	7	8	
3	7	9		8				
			6					3
		3			1			9
				2	5			
		8		4			6	7
	1	4	8					
	3	6			2	4		

### Special Commander's Club Member Offer:



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