

NASA's Next Move Human flight?

NASA has released its 2011 strategic plan. It looks into the future for the next 10 years. As the shuttles retire, federal budgets shrink, and our national priorities change, what role will humans take in spaceflight?

NASA Administrator, [Charles Bolden](#), has released a game plan for the agency's next ten years and beyond. The plan for human space missions in the near future is to sustain the operation and full use of the [International Space Station](#) (ISS). NASA says we should utilize the ISS as a National Laboratory for scientific, technological, diplomatic, and educational purposes. It should also act as a base for supporting future objectives in human space exploration.

Bolden wants to Develop competitive opportunities for the commercial community to provide best value products and services to low Earth orbit and beyond. This could open the door for more people to have quick and easy means to space. Long term, NASA needs to develop an integrated architecture and capabilities for safe crewed and cargo missions beyond low Earth orbit. While NASA is no longer planning for a mission to the Moon or Mars, they have not totally ruled it out. Only time will tell.



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The Aerospace Education Newsletter of Bakersfield Composite Squadron 121

the **ROCKET** >>>

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current topics >>>

Cracks found in fuselage of airliners. How safe?



When cracks were found in 737 aircraft earlier this year, the focus was on planes, used by airlines around the world, that make frequent takeoffs and landings.

The government is particularly concerned about older 737-300, 737-400 and 737-500 jets that have taken off and landed more than 30,000 times.

more inside >>>

Shuttle Atlantis Last to Go Could final Shuttle land in Kern County?

NASA has officially set a launch date of June 28 for the very last space shuttle flight. The mission will be the third shuttle flight of 2011. Called [STS-135](#), the mission will be flown by space shuttle [Atlantis](#) before it and NASA's two other orbiters, [Discovery](#) and [Endeavour](#), are retired for good.

Atlantis' final mission is an extra flight to deliver more space station supplies and spare parts. Those are expected to help the space station continue operations through 2020.

After NASA's shuttles are retired, astronauts headed to the station will have to rely on Russia's [Soyuz](#) spacecraft for transportation. Fresh supplies will be delivered by unmanned Russian, European, Japanese and possibly U.S. commercial spacecraft.

Atlantis' mission, which will be the 135th space shuttle flight, will carry four astronauts and a host of cargo to the station. Shuttle commander [Christopher Ferguson](#) will lead veteran astronauts [Douglas Hurley](#), [Sandra Magnus](#), and [Rex Walheim](#) on the trip, which will also include one spacewalk.

When the shuttle returns, it will bring back a broken ammonia coolant pump that failed on the station last year.

It's possible that the return to earth by Shuttle Atlantis could happen in Kern County at Edwards Air Force Base. It's happened before when Atlantis returned in 2009 following the [Hubble Telescope](#) repair mission.



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From the Editor >>>

We hope you enjoy the new look and feel of "your" Aerospace Education Newsletter. I put the emphasis on "your" because this is a publication by and for you the members of Squadron 121. Kern County, California, is particularly rich in aviation history, and a leader in shaping the future of aviation. You are a part of that legacy as a member of Civil Air Patrol.

We picked the name "the Rocket" as a starting point. We want our cadets to name this publication. Very soon you'll hear more about a contest to name this newsletter with a chance to win a prize. Start thinking now about a winning name!

The information in this newsletter does not stop on the page. Sprinkled throughout are clickable active links to additional information on the web. Be careful what you click. You might yourself reading about aviation for hours and we sure hope you do.

I'm a student of Aerospace, it's fascinating. My work as a reporter and photographer have allowed me to get close to the Space Shuttle program before, during, and after the Challenger accident. I've had the chance to fly in multiple aircraft. I've talked to the Space Shuttle and International Space Station with personal radio equipment. I can't wait for you to share your stories of aviation excitement here.

2nd Lt. [Dave Kalahar](#)—Assistant AEO

UPCOMING EVENTS

- **May 15th—Registration Deadline for Group 6 Aviation Camp** in Tehachapi. This is one summer event you don't want to miss.
- **May 16th (or later) Shuttle Flight Launch STS134 Endeavour** from KSC.
- **June 9th (or later) —Aquarius Launch** from [Vandenberg AFB](#).
- **June 11th—Hemet/Ryan Air Show**—9am to 3pm at Hemet Airport
- **June 28th (or later) Shuttle Flight Launch STS135 Atlantis** from KSC. Final Space Shuttle mission
- **July 30th—Pacific Region Aerospace Education School**—March Air Reserve Base, Riverside CA.
- **July 28th—Delta Aquarids Meteor Shower**

They Called him "Lucky Lindy" — The Lone Eagle

In May of 1927, Charles Augustus Lindbergh did what no man did before - fly nonstop from New York to Paris solo. It took 33 and a half hours to do it.



The Flight

Burdened by its heavy load of 450 gallons of gasoline and hampered by a muddy, rain soaked runway, Lindbergh's plane gained speed very slowly as it made its takeoff run from Roosevelt Field, but

but its [J-5C radial engine](#) still proved powerful enough to allow the *Spirit* to clear the telephone lines at the far end of the field. He landed at Le Bourget Airport at 10:22 PM on Saturday, May 21. A crowd estimated at 150,000 spectators stormed the field, cheering him and the feat.

Fame

Lindbergh relentlessly used his fame to help promote the rapid development of U.S. commercial aviation. In his later years, [Lindbergh](#) became a prolific prize-winning author, international explorer, and inventor.



Spirit of St. Louis

Dubbed the Spirit of St. Louis, his "partner" was a fabric covered, single-seat, single-engine "[Ryan NYP](#)" high-wing monoplane. It's now on display in the [Smithsonian Air & Space Museum](#) in Washington D.C.

Boeing's Overachiever The 737 Jetliner

The 737 series is the best-selling jet airliner in the history of aviation. So many have been made, two 737's depart or land somewhere every five seconds.



Boeing's 707 and 727, the 737 has developed into a family of nine passenger models with a capacity of 85 to 215 passengers. The 737 is Boeing's only narrow-body airliner in production, with the -600, -700, -800, and -900ER variants currently being built. Originally envisioned in 1964, the initial 737-100 first flew in 1967, and entered airline service in February 1968. It was followed by the lengthened 737-200, which entered service in April 1968. In the 1980s, Boeing launched the -300, -400, and -500 models, subsequently referred to as the Boeing 737 Classic series. The 737 Classics added capacity and incorporated [CFM56 turbofan](#) engines along with wing improvements.

The [737](#) has been continuously manufactured by [Boeing](#) since 1967 with 6,638 aircraft delivered and 2,186 orders yet to be fulfilled as of December 2010. 737 assembly is centered at the Boeing Renton Factory in Renton, Washington.

Originally developed as a shorter, lower-cost twin-engine airliner derived from

In the 1990s, Boeing introduced the 737 Next Generation with multiple changes including a redesigned wing, upgraded cockpit, and new interior. The 737 Next Generation comprises the four -600, -700, -800, and -900ER models, ranging from 102 ft (31.09 m) to 138 ft (42.06 m) in length.



current topics >>>

737 Cracks — No such thing as perfect

All planes eventually crack, and planes are designed to withstand that kind of structural damage, says [Dr. Robert Fredell](#), a metal corrosion expert and senior member of the American Institute of Aeronautics and Astronautics: "Every airplane has defects in it? There's no such thing as a perfect plane."

Cracks found in fuselage of airliners. How safe?

The plane being inspected is a Boeing 737-300, it's 15 years old, and Boeing says that model should withstand many more than the roughly 40,000 takeoffs and landings, or flight cycles, that this particular plane had completed.

Much of the stress that [flight cycles](#) place occurs around a part of the plane called the [lap joint](#), which connects thin sheets of metal that form the skin of the aircraft. On a 737, adjacent sheets of metal are bolted together where they overlap, forming the joint. The entire plane experiences pressure changes as it takes off and lands, again and again, with the most wear and tear occurring at the seams. In any case, the 737-300 planes designed with lap joints meet [Federal Aviation Administration](#) standards. In fact, the emergency landing in early April can be seen, in a sense, as an example of the design working well.



ask the experts >>>

Q: What is a Turbofan?

A: A type of air breathing jet engine that is very typically employed for aircraft propulsion.

The second generation of 737s replaced the rather loud [Pratt & Whitney](#) JT-8 engines with the more economical and quieter CFM-56 engines, resulting in the unique squashed [nacelle](#) slung under the wing.

Aerospace where you live >>>

Kern's Space Connection—Edwards

It's in our own backyard. Edwards Air Force Base has been the site of many aviation breakthroughs. A huge landing area, combined with excellent year-round weather, makes the base perfect for flight testing and space shuttle landings.

The base is next to [Rogers Dry Lake](#), a salt pan whose hard dry lake surface provides a natural extension to Edwards' runways. The lake is a National Historic Landmark.

Notable occurrences at Edwards include [Chuck Yeager's](#) flight that broke the sound barrier in the [Bell X-1](#), test flights of the North American [X-15](#), the first landings of the Space Shuttle, and the 1986 around-the-world flight of the [Rutan Voyager](#).

Space Shuttle Atlantis and its 747 carrier aircraft taxied on Edwards Air Force Base flightline in March of 2001.



Air View of Edwards Air Force base in Kern County, CA.

On Location!

The Air Force Flight Test Center at Edwards Air Force Base is the center of excellence for test and evaluation of aerospace systems for the United States.

Edwards is also home to the [U.S. Air Force Test Pilot School](#) and supports non-military government agencies like NASA.

For more information go to www.edwards.af.mil