



A publication of the Massachusetts Air and Space Museum

The Massachusetts Air and Space Museum inspires new generations to explore, experience, and pursue interests and opportunities in science and technology

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Massachusetts Air and Space Museum 200 Hanscom Drive Bedford, MA 01730 www.massairspace.org

Message from the Chairman:

To our friends, volunteers and past visitors:

We are all struggling to deal with the effects of the Covid-19 pandemic. The Massachusetts Air and Space Museum's Hyannis facility has been closed since self-isolating recommendations were put in place to combat the pandemic. Our volunteer staff, officers and directors are managing well; staying home and social distancing. But all of us here at MASM hope that the recipients of this issue of Horizons are holding up well and complying with all precautions.

Where and when possible, Bob Segal, Keith Young, and Barbara Jagla have continued to plan for exciting new exhibits to be placed on display in Hyannis. All of us are watching news casts and having virtual meetings with other Cape area museums and attractions to keep abreast of developments that may lead to a timely reopening of the museum. MASM is dedicated to protecting both visitors and staff at all times and will only consider reopening our museum when it is recommended by professional advisors and in accordance with all government recommendations.

Until that time, we at MASM want all our readers to stay safe and keep others safe by observing all guidelines and health advisories. Please continue to visit our web site for up to date news (www.massairspace.org). As you can imagine, our expenses continue even while our museum is closed. Therefore, we welcome any support you can offer at this time.

Thank you all for your past support. Be well!

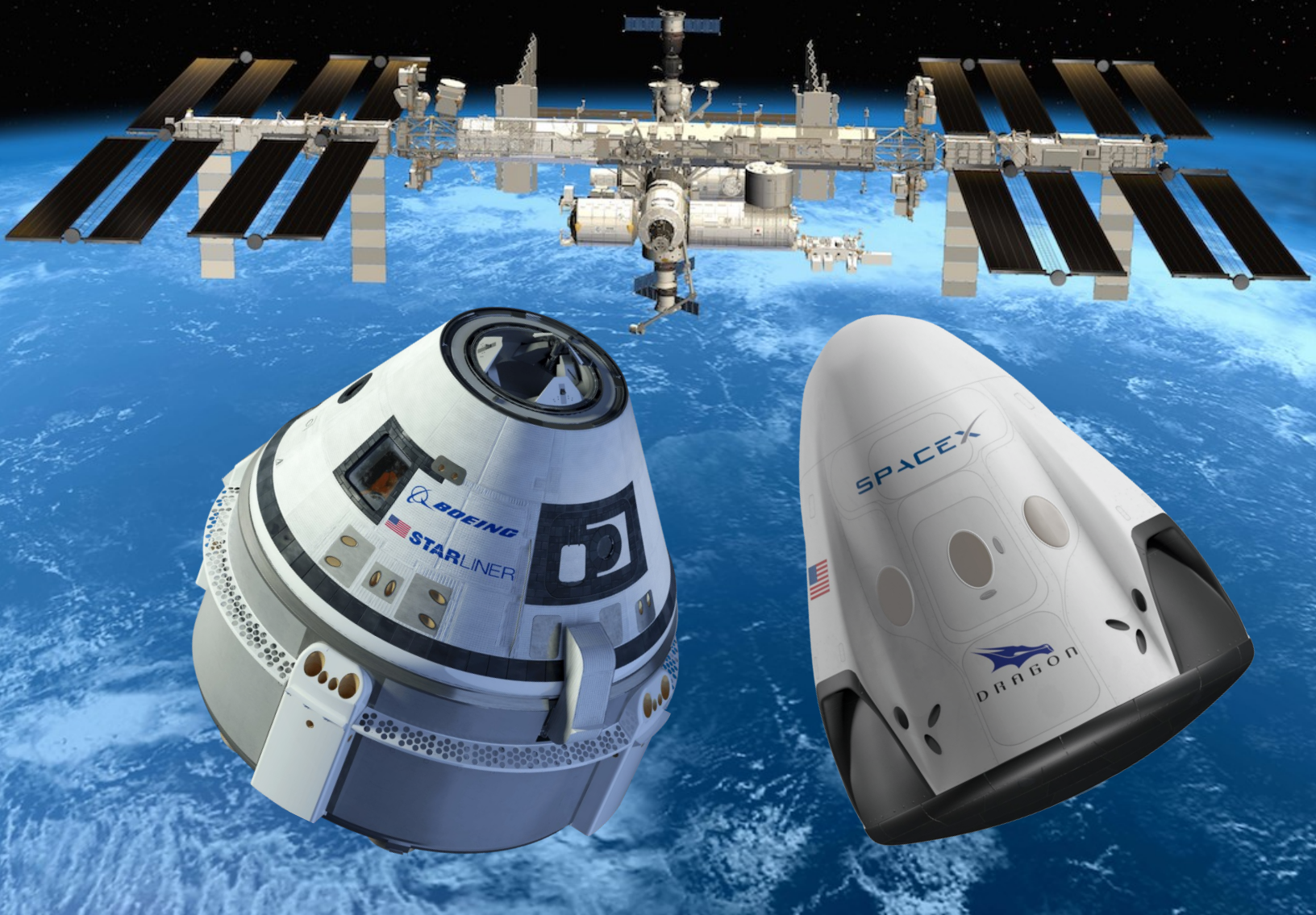


Joseph Dini
Chairman of the Board

STAR WARS

THE COMMERCIAL SPACE RACE

IS ON!





In 2011, the United States and NASA launched its last manned space mission from U.S. soil. Since that last shuttle mission, American astronauts have reached space and the *International Space Station (ISS)* through the efforts of the Russian space agency, *Roscosmos* aboard *Soyuz* spacecraft.

On that final mission, STS-135, *Shuttle Atlantis* and two American astronauts delivered a small American flag to the space station and attached it to a bulkhead where it remains today. The mission commander was *Chris Ferguson* and the shuttle pilot was *Doug Hurley*. During the years since their return to earth, both astronauts have been working and training for a return to the *ISS*, but not as a team. Ferguson has been working closely with the Boeing Corporation, while Hurley has been affiliated with SpaceX. The two companies are engaged in a joint-venture with NASA to provide the first civilian space taxis to the space station. While the primary objective is to provide repeated transportation for resupply and personnel changes, the first mission to the ISS has an additional objective. The competition turned into a real-life game of capture the flag. With the May 30th launch of the SpaceX *Crew Dragon 2* spacecraft aboard a *Falcon 9* rocket from launch complex 39A at NASA's Cape Canaveral, Doug Hurley was catapulted from the earth, making him the first of the pair of astronauts to return to space. He is positioned to bring home that flag.

But that doesn't mean the race is over. SpaceX may have won the race for the flag, but Boeing will soon be launching its *CST-100 Starliner*. The Boeing *Starliner* is designed to be compatible with the *Atlas V*, the *Delta IV*, the *Falcon 9*, and the *Vulcan* rockets. Like the *Crew Dragon 2* spacecraft, it is designed to carry up to seven astronauts, and it is reusable. Both Boeing and SpaceX are poised to provide manned lift capabilities as circum-terrestrial space becomes commercialized. Companies like Bigelow Aerospace have plans for commercial space stations as soon as reliable taxi services to and from space can be arranged. This will also provide NASA with duplicate sources of transportation for both personnel and cargo. 🚀



BOEING

SPACEX



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DRAGON

Starliner spacecraft on mission

Boeing's first crew capsule to depart Cape Canaveral set for the International Space Station

- ▶ Scheduled takeoff: December 20
- ▶ Will dock with the ISS after a 25 hour flight

- ▶ Mission is an unmanned test flight, carrying a dummy called Rosie

- ▶ Duration: 8 days
- ▶ Expected return to Earth: December 28



Atlas V rocket

Built by the United Launch Alliance
Flying since August 2002

Missions flown: over 70

Height: 60 m

Mass at liftoff: 590,000 kg

Lift Capability to low Earth orbit: 18,850 kg

Thrust: 10,600 kN



Diameter: 4.5 m

CST-100 Starliner

Can accommodate up to seven passengers, or a mix of crew and cargo

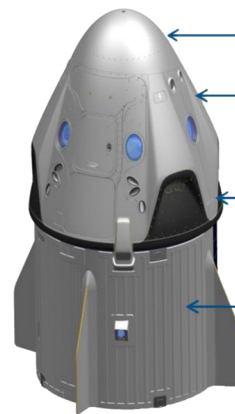
Weldless structure, reusable up to 10 times

Completely autonomous, features WiFi and tablet technology

Designed for land-based returns, uses parachute and airbag system to land

Return to Earth will follow a four-hour rapid descent in the New Mexico desert

Source: Boeing, NASA, AFP



Nosecone

Pressure Section

Service Section (Unpressurized)

Trunk (Unpressurized)

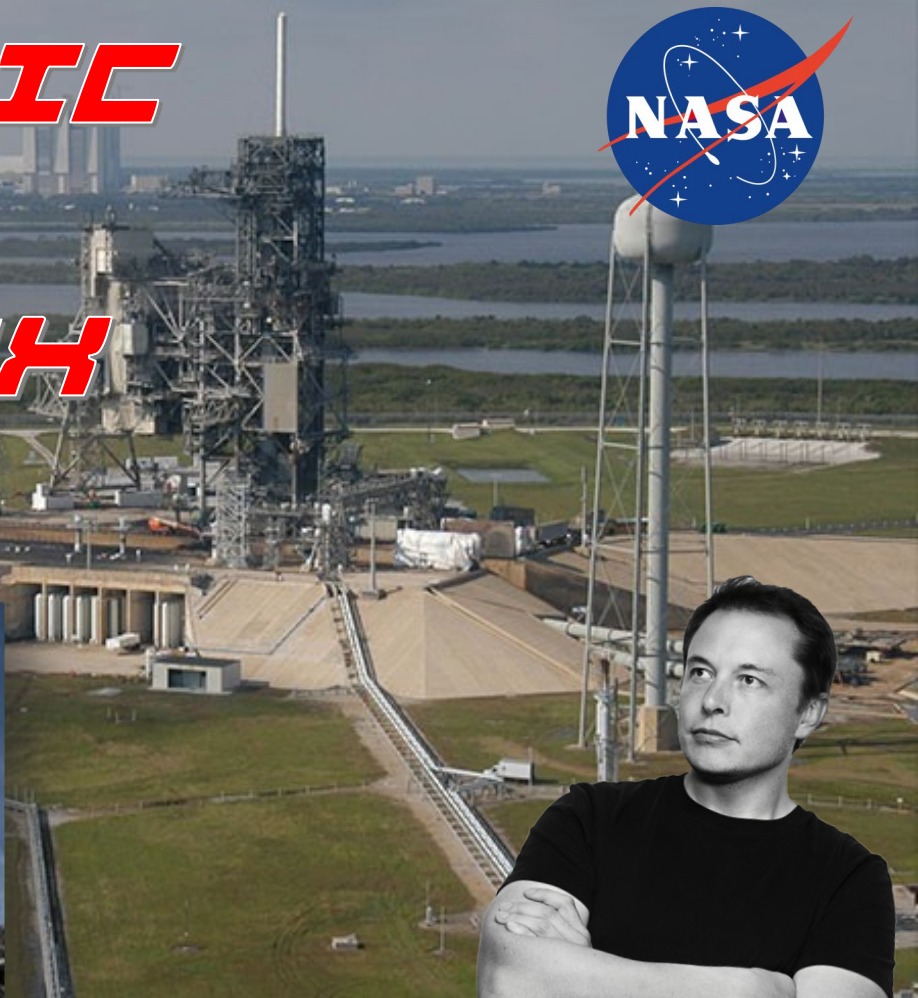
FALCON 9



HISTORIC LAUNCH COMPLEX 39A



Falcon 9 Rocket



Elon Musk

NASA's Launch Complex 39-A is a storied location on Cape Canaveral, Florida. It was originally built for launching the manned-space missions associated with the Saturn V Rocket, the first launch being that of Apollo 11 in July 1969. After Armstrong and Aldrin took that giant step for mankind on the moon, the complex continued as the launch site for the remaining lunar missions. After the Apollo program was cancelled, Launch Complex 39-A was reconfigured and became the primary launch facility for the Space Shuttle missions. The sister site, Complex 39-B, was later used for some of the shuttle missions as well.

Today, NASA has leased Launch Complex 39-A to SpaceX and they have reconfigured it again to accommodate that company's Falcon 9 Rockets. Not only does it serve for launching platform for the rocket, it serves as the primary recovery site for the initial stages that return to earth and make pin-point landings on pads not all that far from where they took off.

It's all part of the new diverse initiative that NASA has undertaken called the Commercial Crew Program. Instead of NASA doing all the heavy lifting, commercial ventures like SpaceX and Boeing are developing space taxis to deliver people and cargo to the International Space Station and beyond. Plans are on the books for human beings to return to the lunar surface, including the first woman to set foot on the moon, and for the first interplanetary mission to Mars. 🚀

Ann Wood-Kelly (1918-2000)



Ann Wood-Kelly was an American aviator who flew with the British Air Transport Auxiliary (ATA) in the Second World War. During her time as a ferry pilot with the ATA she flew more than 900 aircraft of 75 different types ranging from the single-engine Supermarine Spitfire fighter to the four-engine Avro Lancaster, the B-17 Flying Fortress and the B-24 Liberator heavy bombers. The Air Transport Auxiliary was a British civilian organization set up to ferry new, repaired and damaged military aircraft between factories, assembly plants, transatlantic delivery points, maintenance units, scrap yards, and active service

squadrons and airfields. It also flew service personnel on urgent duty from one place to another and performed some air ambulance work. Notably, some of its pilots were women, and from 1943 they received equal pay to their male co-workers, a first for the British government. In 1946, she was awarded the King's Medal for Service in the Cause of Freedom for her services to the United Kingdom. After the war she became an assistant to the United States Air attaché in London before she returned to the United States. She became the first woman president of the Aero Club of New England. Ms. Wood-Kelly became Northeast Airlines public relations manager, then special assistant to the president, and later assumed the role of chairman of the board. Northeast Airlines, the offspring of the Boston and Maine Railroad, and Boston Maine Airways, was based in Boston, Massachusetts. Ann later worked for Pan American Airways, becoming their first female vice-president. As Pan Am faltered, she became assistant to the president of Air New England.



CAVU.

Most people familiar with aviation know that the abbreviation “CAVU” stands for “*Ceiling and visibility unlimited.*” In this recurring feature of *Horizons*, your ability to see clearly into the history of aviation will be tested through identification of flying machines that once were. The first reader who submits the correct answer will be entitled to bragging rights and have their name and answer published in the subsequent edition of *Horizons*. Submit your name, the name of the aircraft, the type or version (if applicable), and the country where it was manufactured to the editor-in-chief of *Horizons* at: horizons@massairspace.org

Here is your challenge for this edition:



March 2020 Edition's Answer:

Vickers VIMY—Great Britain

Twin engine bomber—**Max. speed:** 103 MPH (166 km/h)

Ceiling: 7,000 ft **Range:** 900 miles (1,448 km)

Dry weight: 7,104 lb (3,222 kg) **Max. take-off weight:** 10,884 lb (4,937 kg)

Dimension: Wing span: 68 ft 1 in (20.75 m); length 43 ft 6.5 in (13.27 m); height 15 ft 7.5 in (4.76 m); wing area 1,318.0 sq ft (122.44 m²)

Powered: two 360 hp (268 kW) Rolls-Royce Eagle VIII inline piston engines

Armaments: two 0.303 in (7.7-mm) machine guns on trainable mounts, and up to 2,476 lb (1,123kg) of bombs carried externally





Current Resident or:

The Massachusetts Air and Space Museum has come to life in Massachusetts on Cape Cod. Your help is still needed to keep this vision alive and growing. Send your *tax-deductible* contribution to:

Massachusetts Air and Space Museum 200 Hanscom Drive Bedford, Massachusetts 01730

Your donation of \$25.00 or more will automatically enroll you as a Member of MASM with the benefits as outlined on our web site (www.massairspace.org). You will receive our electronic newsletter "Horizons" which will be emailed to all friends of the museum free of charge. This publication is informative and interactive, and viewing it online you will find links that will connect you to an entire world of aviation and space history. You will also receive periodic electronic updates through the "Air-Mailer."

If you want to join us in supporting the museum right now, go to: <https://www.massairspace.org/join/> Fill out the form, including your email address, and start enjoying the benefits of membership right now. Your personal information stays with the museum and used only to bring you news and information about museum activities. *Join us today!*



VIDEO PAGE

This page is only available to those who read Horizons on-line. Click the buttons below to visit other websites, or to see videos. Also, as an added bonus, behind every photograph in each publication, you'll find a link to a related story, site or video. Don't forget to click the photo on the flat-screen TV.



C.A.V.U. ANSWER—VICKERS VIMY



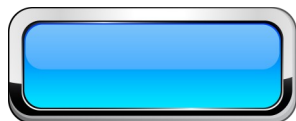
The War Boats



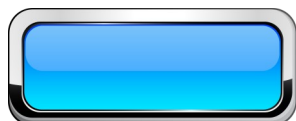
SPACE X VS BOEING



NASA'S X-33 PROGRAM



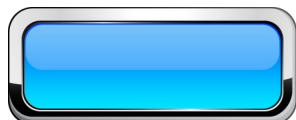
12 Abandoned Airplanes



The Ercoupe Story



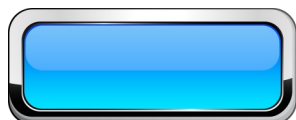
The Shuttleworth Collection



QATAR B747-8 CARGO PLANE



A Woman's Place: Is In the Cockpit!



THUNDERBIRD & BLUE ANGEL FLYOVER