

February 2015

AEROSPACE

A M E R I C A



Remembering
AIAA's
Jim Harford/page 4

SAVE BILLIONS\$ ON YOUR FLEET
Stop wasting time and parts on no fault found Page 28

USAF's Otto on
ISR planes/24



Small sats, big plans/40

Virgin Galactic moves forward with space tourism plans

After a fatal test flight failure that destroyed its suborbital space plane in October, Virgin Galactic is continuing toward its goal of building a space tourism business.

George T. Whitesides, chief executive officer of Virgin Galactic and The Spaceship Company, told an AIAA audience that the accident that destroyed SpaceShipTwo and took the life of copilot Michael Alsbury was “the toughest thing we could undergo,” but “we are turning the corner and looking toward the future — our team and investors remain committed to the goal of opening space for all.”



George T. Whitesides

Work on a second SpaceShipTwo is underway, Whitesides said. The Spaceship Company, the Virgin-owned manufacturer, is “two-thirds done on the systems, and while we have a lot of work to do, ‘weight on wheels’ is now in sight,” he said.

The current build will factor in any recommendations from the National Transportation Safety Board stemming from its investigation of the accident,

Whitesides said. In initial findings, investigators determined that, shortly after SpaceShipTwo was released from its carrier plane, Alsbury prematurely unlocked the twin tail booms, which were designed to rotate upward and slow the vehicle. The booms rotated after being unlocked, even though a separate command was supposed to be necessary to move them, and aerodynamic forces tore the craft apart. Pilot Peter Siebold was thrown clear of the damaged craft and survived.

Construction of a third space plane will begin later this year, Whitesides said.

“We want to give our engineers a chance to learn as they go through the vehicles,” he said. “We want to build them quickly but we want to build in lessons from One and Two into Three.”

The company is also proceeding with development of the LauncherOne small-satellite launch vehicle, which, like SpaceShipTwo, would be deployed from the WhiteKnightTwo dual-fuselage jet aircraft. Using a two-stage liquid oxygen RP-1 engine, LauncherOne “is designed to have the lowest discrete cost of any U.S. [launch] vehicle,” Whitesides said.

Discussing the role of risk in developing new aerospace systems,



The Virgin Galactic WhiteKnightTwo aircraft carries the SpaceShipTwo space plane during a test flight.

Virgin Galactic

Whitesides said “many of the public and press seemed to misunderstand the nature of testing. We test to understand and improve new systems. Failure is not fortunate, and in our case tragic, but it’s part of the deal.”

Minimizing risks means putting together diverse teams, he said, with a liberal sprinkling of “graybeards who have a sense of where and when it’s OK to take risks.”

If the risks are often great, so are the potential benefits.

“Understanding space is crucial to save our planet, to solve its greatest challenges, and bringing people into space will help connect people to the Earth in ways not possible now,” Whitesides said. “We will also see advances in vehicles, which are the key to the solar system. We are undeterred in our commitment to these goals. We have another spaceship at hand and we are hard at work on LauncherOne. And we will succeed.”

Duane Hyland
duaneh@aiaa.org

NASA sees an autonomous future for aviation

The next 20 years will see operations in the increasingly complex National

Airspace System relying more heavily on autonomous systems — in cockpits, in air traffic control towers and on board unmanned aircraft.

Assured autonomy, as NASA calls it, will allow operations that would otherwise exceed the limits of human cognitive performance, said John Cavolowsky, director of the Airspace Operations and Safety

Program at NASA’s Aeronautics Research Mission Directorate.

“Autonomy overcomes the limits and enables performance that will exceed our abilities,” he said. “We know this from the history of technology.”

Autonomous aircraft could be certified for operations in the NAS by 2035, said Doug Rohn, director of the Transformative Aeronautics Concepts Program at the mission directorate.

Over the next two years, NASA



NASA's Ikhana unmanned aircraft conducts a sense-and-avoid system test.

NASA