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# MEMORANDUM

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Date: August 5, 2016

To: The Honorable Chair and Members  
Pima County Board of Supervisors

From: C.H. Huckelberry  
County Administrator

A handwritten signature in black ink, appearing to be "CHH", is written over the printed name "C.H. Huckelberry".

Re: **Additional Update on World View**

On July 13, 2016, I transmitted to the Board of Supervisors an update regarding World View activities; in particular, construction of their headquarters and SpacePort Tucson. I am now providing an additional update including the attached aerial photograph of the project site provided by World View (Attachment 1).

Recently, the Tucson Airport Authority (TAA) Board of Directors voted to support World View activities, and TAA's resolution is attached (Attachment 2).

World View has also made news in the *Wall Street Journal*. Attachment 3 is an article that appeared in the August 2, 2016 edition extensively quoting from testimony provided by World View to Congress regarding near space activities.

Finally, an article in today's edition of the *Arizona Daily Star* is Attachment 4. It highlights recent additional contracts World View has been successful in securing for unmanned, scientific, research-based balloon flights.

CHH/anc

Attachments

c: Dr. John Moffatt, Director, Economic Development Office

# ATTACHMENT 1

**WORLD VIEW AERIAL CONSTRUCTION PROGRESS VIEW – JULY 2016**



# ATTACHMENT 2

**RESOLUTION OF THE TUCSON AIRPORT AUTHORITY  
BOARD OF DIRECTORS  
AEROSPACE, DEFENSE AND TECHNOLOGY BUSINESS & RESEARCH PARK  
SPACEPORT TUCSON**

**WHEREAS**, the mission of the Tucson Airport Authority is to promote aviation and foster economic development by strategically planning, developing and operating the most effective, efficient and safest airport system for southern Arizona;

**WHEREAS**, Tucson International Airport is a vital tourism and transportation asset benefiting the economy of the entire southern Arizona region and generating \$3.2 billion annually in economic impacts;

**WHEREAS**, in May 2013, the Tucson Airport Authority adopted a Resolution of Support for Pima County's Economic Development Plan – Aerospace and Defense Corridor, supporting enhancement of the airport employment region and development of an aerospace and defense manufacturing, business and research park;

**WHEREAS**, in January 2016, World View Enterprises became the first tenant at Pima County's newly-established Aerospace, Defense and Technology Business & Research Park, and construction of its headquarters and manufacturing facilities, as well as the adjacent SpacePort Tucson, are underway. With this development, World View has committed to hire more than 400 new employees and is projected to have a \$3.5 billion economic impact in southern Arizona over the next 20 years;

**WHEREAS**, World View plans to use SpacePort Tucson for manned and unmanned high-altitude balloon launches and is consulting with the Federal Aviation Administration (FAA), TAA, as well as other key stakeholders at Tucson International Airport, to obtain the necessary licenses for spaceport operations;

**IT IS THEREFORE RESOLVED THAT** the Tucson Airport Authority supports Pima County's economic development plan that includes development of World View's headquarters and manufacturing facilities within the Aerospace, Defense and Technology Business & Research Park, and is committed to working with the FAA, World View and other key stakeholders in the FAA regulatory review and licensing process for SpacePort Tucson to ensure the safe and efficient integration of all aeronautical users in and around the Tucson International Airport.

Adopted this 3<sup>rd</sup> day of August, 2016.

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Tony Finley, Chair of the Board  
Tucson Airport Authority

# ATTACHMENT 3

## THE WALL STREET JOURNAL.

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<http://www.wsj.com/articles/faa-seeks-new-tools-to-track-spacecraft-1470130381>

BUSINESS

# FAA Seeks New Tools to Track Spacecraft

Effort comes amid the expected boom in commercial space launches



The SpaceX Falcon 9 rocket taking off from Cape Canaveral Air Force Station in Florida in May. Experts project there will be dramatic upticks in launch frequencies. PHOTO: CRAIG RUBADOUX/FLORIDA TODAY/ASSOCIATED PRESS

By ANDY PASZTOR

Aug. 2, 2016 5:33 a.m. ET

# ATTACHMENT 4



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The SpaceX Falcon 9 rocket taking off from Cape Canaveral Air Force Station in Florida in May. Experts project there will be dramatic upticks in launch frequencies. *PHOTO: CRAIG RUBADOUX/FLORIDA TODAY/ASSOCIATED PRESS*

By ANDY PASZTOR

Aug. 2, 2016 5:33 a.m. ET

After wrestling for months over how to allow unmanned aircraft to begin flying in U.S. skies, the Federal Aviation Administration is now grappling with a loftier challenge: keeping conventional aircraft safe amid an expected boom in commercial space launches.

Having played catch-up with the proliferation of drones, FAA officials are taking preliminary steps toward enhanced monitoring of space missions. They hope to eventually expand their management of the nation's airspace to include real-time tracking of rocket launches, suborbital flights and, further in the future, possible supersonic transcontinental passenger trips.

The moves have garnered interest among aerospace industry leaders and on Capitol Hill. The head of the FAA's space transportation office and industry officials have emphasized that the agency is laying the groundwork for new ways air-traffic systems and controllers will be able to follow space vehicles leaving or returning to Earth.

Currently, FAA controllers work with airlines and private pilots to ensure all aircraft are temporarily kept away from launch or re-entry areas—such as the airspace surrounding Florida's Kennedy Space Center—whenever space flights are scheduled.

Such restrictions have worked well, generally relying on 24-hour or 48-hour warnings for civilian air traffic to stay out of exclusion zones that can include many hundreds of square miles and in the case of Florida, extend dozens of miles offshore.

But with the number of commercial launchpads expected to increase nationwide in coming years—accompanied by what some experts project will be dramatic upticks in launch frequencies—the current techniques need to be updated.

If the burgeoning commercial space industry grows as expected, experts predict airlines won't be willing to spend the extra time or fuel to routinely divert around launch or landing sites.

George Nield, who heads up the FAA's effort in this area, recently told lawmakers work is under way to rely on “an automated process to take a space vehicle's real-time position and velocity and convert it into a format” that today's traffic control hardware and software can interpret and display. The long-term goal, he told a subcommittee of the House Committee on Transportation and Infrastructure, is to incorporate such launches, and the data they generate, into nationwide flight-management systems able to “directly show up on a traffic controller's screen.”

In prepared testimony to the panel in June, Mr. Nield also indicated another aim is to provide “near-real time error detection” of rockets or returning spacecraft that may have veered off course.

Without such safeguards, the vehicles could “run the risk of conflicts between airports, airlines and the commercial space industry,” according to Taber MacCallum, chief technology officer of World View Enterprises Inc., which proposes to transport space tourists and various Earth-observation sensors using high-altitude balloons.

The first airborne test of what the FAA calls its Space Data Integrator is slated for later this year, using an unmanned Space Exploration Technologies Corp. capsule as it returns to Earth, according to people familiar with the details.

“You need a different system that can track a lot more” spacecraft, according to Eric Stallmer, president of the Commercial Spaceflight Federation, the industry’s leading trade group.

Space-tourism companies Virgin Galactic LLC, founded by British billionaire Richard Branson, Blue Origin LLC, founded by Amazon.com Inc.’s founder, Jeff Bezos, and other startups are pushing ahead with plans to offer thrill rides at the edge of space. But some of these ventures also have raised the possibility of ultimately taking passengers on suborbital flights spanning the globe.

In his prepared testimony to the panel in June, Mr. Nield said spacecraft under development run the gamut from superhigh altitude balloons to capsules using parachutes for landings to spaceplanes with wings, designed to touch down on conventional runways.

As part of preparation for more suborbital traffic, Mr. Nield told the panel, the FAA has been talking to companies that eventually “would like to offer point-to-point travel that enables someone to take off from New York in the morning and land in Tokyo just a few hours later.”

Mr. Nield didn’t elaborate, and people familiar with the details said such discussions are still preliminary and no formal plans have been presented to the FAA.

But agency officials have sketched out a dramatic growth trajectory overall for the commercial space sector, both in the U.S. and overseas. Documents they presented last month to an FAA advisory committee, for example, identified 22 existing launch sites world-wide and listed three new “spaceports” proposed for the U.S.

Some industry estimates peg last year's global investment in commercial space at around \$2.7 billion, more than the total that was spent between 1990 and 2014.

Separately, FAA officials have played a prominent role, along with counterparts from the U.S. State Department and other federal agencies, in devising procedures to effectively give a green light to a California-based company, Moon Express, to send a lander intended to explore the surface of the Moon in 2017.

The decision is expected to become final in the next few days. If the company eventually also gets a formal FAA launch license to send its 20-pound package of scientific instruments toward the Moon, the venture would mark the first time private enterprise—rather than a governmental entity—has launched a mission aiming to go beyond Earth orbit.

Write to Andy Pasztor at [andy.pasztor@wsj.com](mailto:andy.pasztor@wsj.com)

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JASON GAY

MANAGEMENT & CAREERS

# ATTACHMENT 4

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PREVIOUS



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NEXT UP



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taken to the edge of space

## **NASA-funded experiments will take place on World View balloons**

By Tom Beal Arizona Daily Star Updated 6 hrs ago



World View, the near-space balloon company that will operate from a county-owned spaceport near Tucson International Airport, will participate in two recently announced NASA-funded space experiments.

One, conducted by Space Environment Technologies, will use one of World View's "stratolite" balloons to measure the radiation environment at altitudes up to 130,000 feet.

The other flight will be a test of World View's own technology for keeping its balloons nearly stationary by raising and lowering altitude with a proprietary air-ballast system.

W. Kent Tobiska, president and chief science officer of Space Environment Technologies, based in Pacific Palisades, California, said he will use his September 2017 "stratolite" flight to "measure the radiation environment from the ground up."

Tobiska has developed instruments that automatically report on three types of radiation incurred during high-altitude flight.

It's part of a program called Automated Radiation Measurement for Aerospace Safety (ARMAS), which has already collected information during 175 aircraft flights.

Those flights are limited to about 45,000 feet in altitude, he said, and he has proposals for satellites to measure radiation beyond Earth's atmosphere.

"Balloons are perfect for measuring this interim region," Tobiska said. Tobiska said his instruments measure three kinds of radiation: the cosmic galactic rays given off by the exploding stars and merging black holes, the flares given off by explosions on our own sun, and the energetic electrons caught in the Earth's electromagnetic field.

The planned balloon flight will take place during "solar minimum," which should be a quiet time for solar flares. He hopes to schedule future flights to take place when an eruption occurs.

The other technology test approved by NASA is the latest "evolution" of the company's own technology, said spokesman Andrew Antonio.

World View is developing an air-ballast system that will change the balloon's elevation, allowing it to use prevailing winds to remain over a specific geographic area.

That flight should take place by the end of the year, Antonio said.

Both flights will originate in Arizona. World View is using regional airports while Pima County is building a permanent spaceport for it near Tucson International Airport.

World View would not provide information on pricing, but the grants for each project from NASA's Space Technology Mission Directorate are capped at \$400,000.

Tobiska said his experiment will cost no more than \$250,000. The launch itself costs \$150,000 to \$180,000, Tobiska said.

World View expects to launch another NASA-funded experiment later this month, part of a previous \$440,000 NASA grant.

Its balloon will carry an experimental Solar Instrument Pointing Platform developed by Craig DeForest at Southwest Research Institute.

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Contact reporter Tom Beal at [tbeal@tucson.com](mailto:tbeal@tucson.com) or 520-573-4158.

MORE INFORMATION



Tucson airport board backs spaceport operation



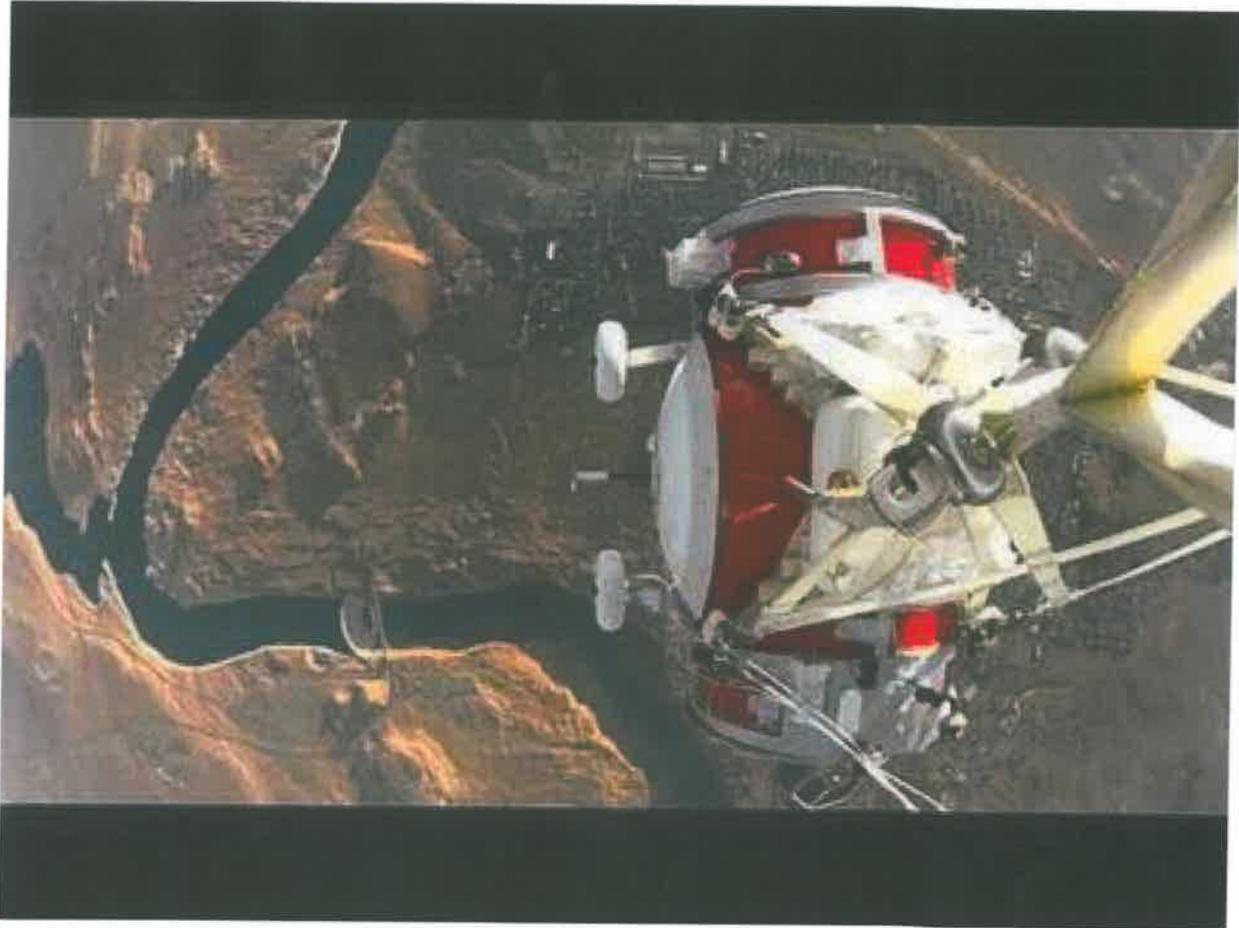
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Tom Beal

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