

## How Well do Off-the-Shelf Parts Fare in Space?

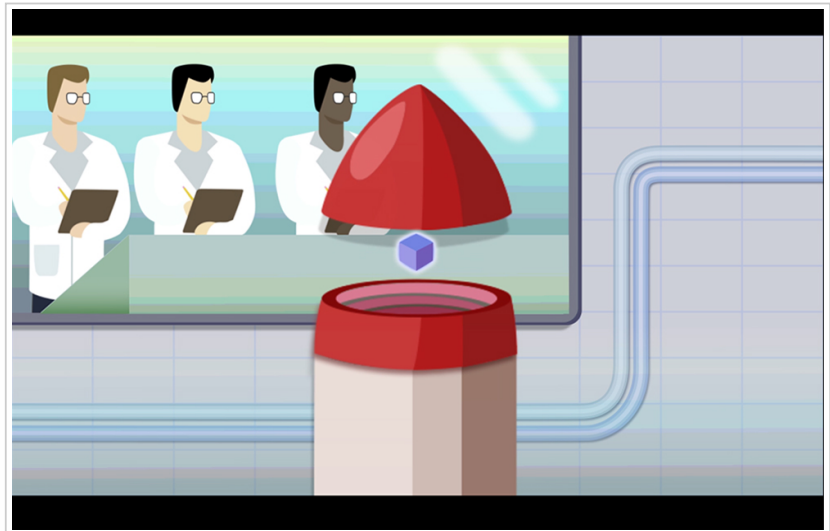
by **Gail Kellner**  
October 30, 2018

Using off-the-shelf electronic parts for space applications is a very attractive option for short missions. The parts are plentiful, reliable in their intended applications, inexpensive, and quick to procure—which makes them irresistibly strong contenders to consider.

While there is increased attention on these commercial-, automotive-, and industrial-grade parts for resilient missions and technology developments, the biggest concern is their sensitivity to the natural space radiation environment.

Just how well will these parts fare in an environment they were not tested in or intended for?

[Click here to read more](#)



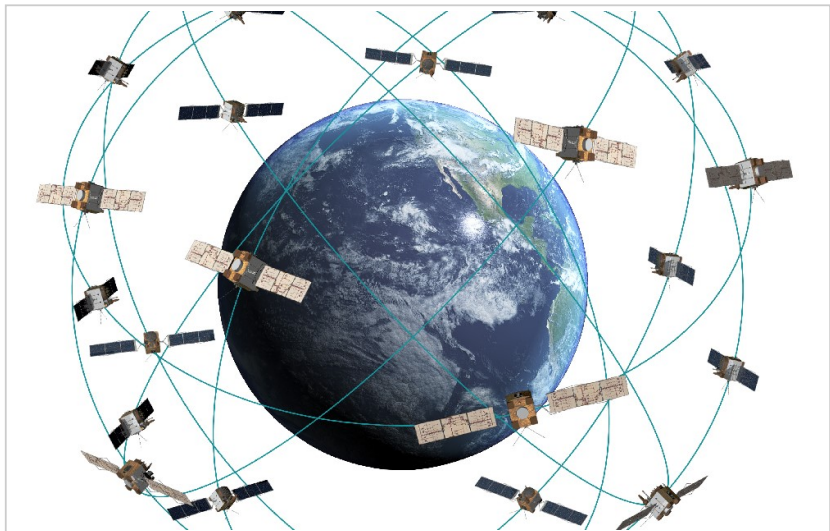
## Satellite Constellation Risk Assessment

by **Wendy O'Dea**  
October 25, 2018

People generally take for granted that when they need directions or location information, they can whip out their mobile devices and the Global Positioning System (GPS) will simply just work. But GPS is actually a complex system that relies upon a large number of satellites circling the globe in precise orbits, working together to provide position, navigation, and timing data to users anywhere on Earth. Such a system of satellites is called a constellation, and experts at Aerospace strive to ensure that satellite constellations like GPS continue to remain operational and provide optimal performance for their users.

Statisticians and mathematicians in Aerospace's Reliability and Statistics Department develop and maintain mathematical models to predict satellite lifetimes, estimate the probability of a successful launch to orbit, and perform probabilistic risk assessments. They developed an innovative technique called Constellation Risk Assessment (CRA) to bring together these models with tools developed by Aerospace performance analysis experts to provide projections of how long and how well a constellation's capabilities will work, decades into the future.

[Read more about Satellite Constellation Risk Assessment](#)



## Eirene Sceptre Aids in Cyber Defense

by Wendy O'Dea  
October 08, 2018

To be resilient against paralyzing cyber attacks, real-time monitoring capabilities are needed to identify vulnerabilities before attacks occur. Aerospace is meeting this challenge with Eirene Sceptre, a versatile cyber defense toolkit of commercial products and custom solutions to protect and secure space systems.

The first step in defending space is securing a ground system of vast computer networks that receive and route critical communications and flight instructions from Earth to satellites. These systems, which run on everything from old DOS-based computers to the cloud, need specialized cybersecurity solutions that scale to meet mission requirements.

[Read more about Eirene Sceptre](#)



## AEHF-4 Mission Launches on Powerful Atlas V

by Randolph L Kendall  
October 17, 2018

The Atlas V / Advanced Extremely High Frequency-4 mission lifted off in the early morning of October 17, virtually jumping off the launch pad as five solid rocket motors delivered nearly three million pounds of thrust.

It lifted off in the 551 configuration at the beginning of the launch window, at 12:15 a.m. Eastern time, from Space Launch Complex-41 in Cape Canaveral, Florida.

[Read more](#) about the AEHF-4 launch.



An Atlas V rocket with the AEHF-4 spacecraft rolls from the Vertical Integration Facility to the launch pad at Cape Canaveral Air Force Station. (Photo: United Launch Alliance, LLC)

## Press Release: Aerospace Evaluates Options for Retired ICBM Booster Systems

October 29, 2018

The Aerospace Corporation's [Center for Space Policy and Strategy](#) (CSPS) released a new policy paper today, *Options for Retired Intercontinental Ballistic Missile (ICBM) Booster Systems Beyond Commercial Applications*. The paper discusses the debate over the use of excess ICBM booster systems; presents post-retirement options that would be advantageous to the U.S. government or the overall space industry; and addresses consequences to current policy.

Author Jeffrey C. Boulware, senior project engineer for Aerospace's National Systems Group, explains that post-retirement uses of ICBMs are controlled by law in Title 51, Section 50134, of U.S. Code. "The law prohibits the transfer of ICBM systems to private

industry for commercial space launch purposes,” said Boulware. “Prior to its establishment these systems had been transferred to the commercial space launch industry, often before retirement from military service.”

The law also contains conditions that allow excess ICBMs to be retained for government use.

“Advocates for change would like to create a low-cost launch service provider, whereas opponents to changing the policy argue this would unbalance the commercial launch market and stifle innovation from emerging companies,” said Boulware. “Public debate has centered around this issue, neglecting consideration of other applications for ICBM systems after they are retired.”

Opportunities that could emerge as a result of expanding the current policy include industry internal research and development; academic research; and science, technology, engineering and mathematics education.

Boulware adds that, “The policy paper is not intended to make an argument for or against any policy changes, but merely to present alternative applications that could inform the options for change.”

Currently, the U.S. Air Force is modernizing its ICBM fleet to the Ground Based Strategic Deterrent (GBSD) system, which will replace its aging three-stage Minuteman III (MMIII) vehicle. With the deployment of GBSD, several hundred of the MMIII’s booster systems will be phased out of military service beginning in the late 2020s.

“The long term, enterprise plan for future retired ICBM assets must balance the needs of launch service providers, payload operators and other potential users,” said Jamie Morin, vice president and executive director for CSPS. “By identifying some alternative uses for these boosters, we are looking to begin a discussion about how to balance national security, cost to the government, economic interests and other considerations.”

To learn more, download the *Options for Retired ICBM Booster Systems Beyond Commercial Applications* policy paper at [www.aerospace.org/policy](http://www.aerospace.org/policy).

## Press Release: CSPS Explores Case Study on Commercial Partnerships for Space

October 24, 2018

The Aerospace Corporation’s Center for Space Policy and Strategy (CSPS) released a new report today, *A Model for Space Sector Growth: A Luxembourg Case Study*, which analyzes the country’s success in growing its space sector by supporting commercial partnerships and other incentives to strengthen its position in the space industry.

“Luxembourg has been a major player in the satellite communications business since the 1980s, with the founding of SES,” said Kristi J. Bradford, author of the report and a senior member of Aerospace’s technical staff. “The country is actively growing its space industry beyond satellite communications through its economically motivated national space agency and space resources initiative.”

The CSPS report provides insight into Luxembourg’s effort to promote and support commercial space ventures through government activities, including financial incentives in the form of research and development grants, and direct investments for commercial companies. These incentives, among others, have drawn new entrants into Luxembourg’s space sector. Other attractive benefits include legal frameworks to support commercial activities, academic and professional development programs, international engagement, and other strategies key to maintaining a robust space sector.

“At a time when multiple nations are creating new space agencies with strong charters to foster commercial growth, the Luxembourg case study can help policymakers understand the key variables in promoting space industry — whether to develop their own promotion models or respond to others’ efforts,” said Jamie Morin, vice president and executive director for CSPS.

The rise of international space endeavors and commercial space pursuits has generated a space environment that is congested, contested and competitive. Despite the challenges associated with new entrants to space, Bradford says it is important for the U.S. to recognize and seize the opportunities they bring.

“By supporting these countries in their space ambitions, the U.S. can promote responsible behaviors in space,” said Bradford. “This could also help the U.S. increase its influence abroad, mitigate the risk of countries seeking support from U.S. adversaries, open new markets for U.S. companies, and potentially even secure future partners in space.”

To learn more, download the Luxembourg case study at [www.aerospace.org/policy](http://www.aerospace.org/policy).



# Awards and Recognitions, October 2018

by Gail Kellner  
October 05, 2018

*Aerospace employees frequently earn recognition for their professional accomplishments. This Orbiter feature acknowledges those honors and awards, including the publication of books. To nominate someone for consideration in this section, send details of the award in a timely fashion to [orbiter@aero.org](mailto:orbiter@aero.org), or contact Gail Kellner at [gail.d.kellner@aero.org](mailto:gail.d.kellner@aero.org).*

## Dr. Drew Turner

Dr. Drew Turner, senior member of the technical staff, Ionospheric and Atmospheric Sciences, Space Sciences Department, was named a recipient of the 2018 American Geophysical Union (GSU) James B. Macelwane Medal.

The James B. Macelwane Medal is given annually to three to five honorees in recognition of significant contributions to the geophysical sciences by an outstanding early career scientist.

Turner will be recognized during the 2018 AGU Fall Meeting in December in Washington, D.C.



## October 2018 Obituaries

by Christine T Kato  
October 12, 2018

*Sincere sympathy is extended to the families of:*

**Gerald Bauer**, member of technical staff, hired Jan. 11, 1986, retired Nov. 1, 1991, died Feb. 12, 2018  
**Stuart Belknap**, member of technical staff, hired March 16, 1968, retired Oct. 1, 1996, died Sept. 3, 2018  
**Paul Butler**, office of technical support, hired May 16, 1977, retired March 1, 2004, died Aug. 18, 2017  
**Zinnia Cameron**, member of technical staff, hired Sept. 1, 1991, retired March 1, 2006, died May 23, 2018  
**Nien-Chih Chang**, member of technical staff, hired April 23, 1963, retired Oct. 1, 1993, died Sept. 7, 2018  
**Joe Childress**, office of technical support, hired Sept. 10, 1973, retired June 1, 2012, died April 26, 2018  
**Robert Gross**, member of technical staff, hired May 3, 1965, retired Sept. 1, 2009, died Sept. 13, 2018  
**Amy Hagen**, member of technical staff, hired March 3, 1980, retired Aug. 1, 2010, died June 28, 2018  
**Frederick Hoeke, Jr.**, member of technical staff, hired Dec. 12, 1960, retired Dec. 1, 1993, died Sept. 26, 2018  
**Norman Lantz**, member of technical staff, hired Nov. 6, 1972, retired March 1, 2003, died Sept. 19, 2018  
**Denis Lipka**, member of technical staff, hired Aug. 8, 2014, died July 22, 2018  
**Leda Mark**, member of administrative staff, hired July 16, 1985, retired Sept. 1, 1995, died Aug. 7, 2018  
**Primitiva Patterson**, member of administrative staff, hired Sept. 13, 1982, retired Aug. 1, 2006, died Sept. 9, 2018  
**Julia Rosenberg**, office of technical support, hired Jan. 6, 1986, retired Feb. 1, 2002, died Aug. 2, 2018

*To notify Aerospace of a death and have it included in the Orbiter, please contact People Operations at (310) 336-5107.*

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