

# BLAINE AIRPORT PROMOTION GROUP

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TAKING YOUR AMBITIONS SKYWARD  
8891 Airport Road C-2, Blaine MN. 55449

*Sixth Year of Publication*

## THE EDUCATION COORDINATOR MAY 12, 2016



The star chart represents the location of the 88 constellations in our observable universe. The Sun and all the stars we can see with the naked eye make up only a small part of a huge, disk-shaped collection of stars called the Milky Way Galaxy containing more than 100 billion stars.

My wife Bonnie and I have observed that space science and advancements for space exploration have grown very rapidly. Bonnie made the observation that we now have a greater understanding that we are indeed "space travelers" as we orbit around the Sun at 60,000 miles per hour and have access to new understanding of the vastness of the universe.

### Our Educational Goals Continue

In 2010 the Blaine Airport Promotion Group was formed based on the inspiration of Harvey Karth and by January 20, 2011 the BAPG launched its first monthly newsletter that featured the Congressional directive of STEM, Project Lead the Way and STEP programs as our own educational outreach to connect with aerospace schools and middle schools that have interest in STEM and interest in aviation.

At the same time Dr. Lorie Dykstra was developing the Center for Engineering, Mathematics and Science for Seniors (CEMS) at the Blaine High School with support from James Mecklenburg, Program Director Minnesota PLTW at Minnesota State University, Mankato. The CEMS program is now incorporated into the tour program at the Blaine airport coordinated by CEMS Integration Coordinator Jennifer Birkmeier of the Blaine High School.

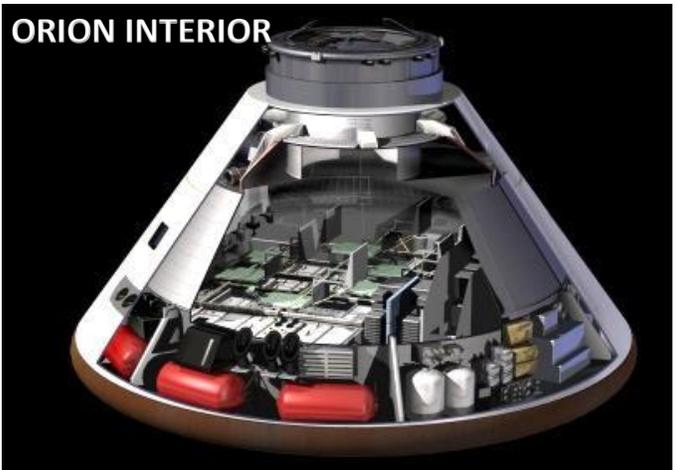
Schelly Kauffman introduced the Civil Air Patrol ACES curriculum that is the basic tool for K-5 and 6-12<sup>th</sup> grades for aviation and aerospace studies that we see today in the middle school programs at University Avenue ACES School and the coordinated airport tours conducted by Integration Coordinator Kate Watson.

The cooperation between schools, airport business and BAPG provide an opportunity for the business owners to share their business success stories and facility on the airport. With the school systems in place these visits are long range school objectives that match the subject being presented in the classroom and in part become a hands-on experience for classroom studies. This is the now, ever reaching for the future.

The Moon is the most distant place ever visited by humans with the Apollo 11 Moon landing in July 1969 by astronaut Buzz Aldrin and Neil Armstrong. A Space Launch System is being developed by NASA that embodies the nation's greatest ambitions reaching beyond the Moon. By 2018, NASA hopes to launch the Space



Launch System that is 15 percent more powerful than the Saturn V rocket, which powered the Apollo mission to the moon, and will carry the new Orion capsule. The Exploration Mission-1 will not



carry any people during this three-week trip that will take the spacecraft 40,000 miles beyond the moon and back to Earth. Exploration Mission-2 scheduled for launch by the 2020s will carry astronauts in the Orion capsule into deep space. The Orion spacecraft is built to take humans farther than they have ever gone before. It will serve as the exploration vehicle that will carry a crew into space, provide emergency abort capability, sustain the crew during the space travel and provide safe re-entry from the deep space return velocities.

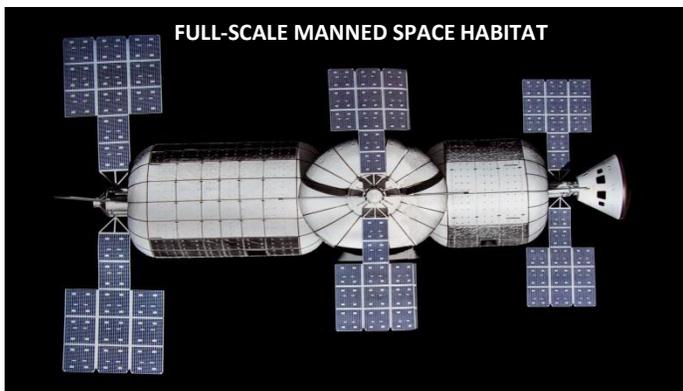
NASA is already deep into the engineering phase of how to get to the Red Planet "Mars" and back. Mars is 200 times as far as the trip to the Moon. Solar Radiation in deep space is expected to be

more harmful so research is needed in designing radiation shielding in spacesuits, development of deep space way stations and possible solar electric propulsion systems for deep-space flight. Deep-space travel will depend on a propulsion system that is sustained by available fuel sources such as solar energy.

By the 2030s NASA hopes to have developed and collected data from early launches of space craft such as the launch of *Origins, Spectral Interpretation, Resource Identification, Security, Regolith Explorer* (OSIRIS-Rex) planned for a September 2016 launch date to study and sample the asteroid 101955 Bennu and return samples by 2023. Lockheed Martin has completed the assembly of the spacecraft that is now undergoing environmental testing. The cost of the launch vehicle is estimated to be \$183.5 million and the 7 year mission will cost approximately \$800 million. Robotic technology development and capability will also be critical to the future and to make a successful journey to Mars.

Partnerships are needed by NASA, both international and commercial to realize the completion of the launch to put people on Mars in the 2030s. Potential collaborators interested have already poured millions into research and development. Former NASA engineers have been involved in the development of space modules that are already in orbit. Space modules will be an essential way station and supply port for long range support and supply.

Robert Bigelow owns two experimental spacecraft, Genesis I and Genesis II, that are orbiting Earth at more than 300 miles moving at 16,990 miles an hour. Robert purchased the rights to the patents developed by NASA in 2000 to pursue private space station designs. A plan for a full-scale manned space habitat will be used as orbital hotels, research labs and factories. Robert's BEAM module was launched to the International Space Station on April 8, 2016 on a SpaceX cargo mission and arrived on April 10, 2016. Robert owns the hotel chain Budget Suites of America and is the founder of Bigelow Aerospace and plans to spend \$500



million to achieve launch of the full scale hardware. Much of Robert's work is proprietary.

## Lockheed Martin is dedicated to STEM Education

“Advancing science, technology, engineering, and mathematics (STEM) education is a critical focus for Lockheed Martin. We know firsthand the importance of educating our young people in these areas. Our future success — and our nation’s technological advantage — depend on a constant supply of highly trained, highly capable technical talent.”

Over the next eight years there will be more jobs available in science, technology, engineering and mathematics than any other occupation

**Project Lead The Way (PLTW)** — Our partnership supports PLTW’s Launch, Gateway and Engineering programs, which are used in K-12 schools across the United States.

**Generation Beyond** - a first of its kind, national educational program to bring the science of space into thousands of homes and classrooms across America. The program is designed to inspire the next generation of innovators, explorers, inventors and pioneers to pursue STEM careers.

**Code Quest** — A computer programming competition that puts high school student’s coding skills to the test by solving problems created by Lockheed Martin Information Technology professionals.

**4-H Robotics: Curriculum and Clubs** — A program that seeks to help young people develop their engineering and technology passion and proficiency through new, high-quality robotics curricula, use of digital technologies, robotics clubs, and competitions.

**Great Minds in STEM (GMIS)** — Students participating in GMIS’ Viva Technology program experience a day filled with fun, hands-on STEM-focused activities.

**Girls Inc.** — Our pilot program connects Lockheed Martin volunteers with girls ages 9-12 to strengthen their interest and confidence in pursuing STEM education and careers.

**National Geographic Society** — Lockheed Martin is working with National Geographic to develop STEM-focused film “edutainment” projects that reach teachers and students with multi-media classroom activities, teachers’ guides, and White Board and Smartboard content.

**Lockheed Martin has two Minneapolis-St Paul locations, at 1303 Corporate Center Dr. and 656 Mustang Dr.**