



TENN VALLEY FLYER

# Tennessee Valley Flyer 2nd Quarter 2012

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### Lt Gen Elder's Gives Views on Cyberspace



**Lt Gen Elder speaks at Von Braun Center**  
(Photo by Matthew Broadhurst)

Lt Gen (Ret) Robert Elder (USAF) recently addressed a crowd of approximately 280 during the 8 Mar 2<sup>nd</sup> Annual Professional Development Luncheon. The luncheon, hosted by local chapters of the Air Force Association (AFA), Armed Forces Communications and Electronics Association (AFCEA), National Defense Industrial Association (NDIA), Women in Defense, and Cyber Huntsville, was a huge success because of inter-organization cooperation. Our Chapter's share of the luncheon proceeds will go to support Aerospace Education.

General Elder, the former STRATCOM Joint Functional Component Commander for Space and Global Strike, focused on Cyberspace challenges and opportunities from a war-fighter's perspective. Distinguished visitors in attendance included: Dan Tidwell representing Congressman Robert Aderholt; Mark Pettitt and Tiffany Noel representing Congressman Mo Brooks; Deb Barnhart, CEO of the US Space and Rocket Center; Richard Russell, Deputy G2, Army Materiel Command; and, Maj Gen (Ret) Larry Northington (USAF).

The Master of Ceremonies, Brig Gen (Ret) Gary Connor (USAF), recognized all veterans as well as members of three

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CyberPatriot teams in the audience: New Century Technology team, coached by Jim Morris; the AFJROTC Huntsville High School team, coached by Lt Col Hollis Bagley; and, the Boaz High School team, coached by Lynn Toney.

According to General Elder,  
Continued on Page 4



**General Elder drew a crowd for the 2nd Annual Professional Development Luncheon at the Von Braun Center.**  
(Photo by Matthew Broadhurst)

**Save the Date!**  
**4 Aug 2012**  
AFA State Convention and Dinner in Huntsville  
Hosted by AFA Chapter 335

Look for  
AFJROTC \$cholarship Winners  
in Next Quarter's Newsletter!

## CYBER- PATRIOT IV Update



Our last newsletter featured New Century Technical High School's advancement to Round 3 of CyberPatriot IV, along with a box congratulating the Springville CAP Composite Squadron from Ashville, AL, for going to the Finals (1 of only 12 teams in the All-Services Division). Since that time, we also learned the Huntsville High School AFJROTC team advanced to Round 3 and placed second worldwide in the 2<sup>nd</sup> round.

Tennessee Valley teams placed as follows for the state of Alabama:

All Services Div: 1st—Springville CAP Composite Squadron

2nd—Huntsville High School AFJROTC

Open Div: 1st—New Century Technology High School

2nd—Westminister Christian Academy

3rd—Grissom High School (Sutton).

*Way to go teams!*

## Springville Spartans go to the Finals!



The Springville Spartans CyberPatriot team from Ashville, AL, went to Finals this year. Members are from left include Anna Katheryne Ray, Shayla K. McCay, Mark Cody McCay (mentor), Capt Walter J. Alexander IV (coach), Vincent M. Corey (team captain), and Walter Jr. Alexander V.

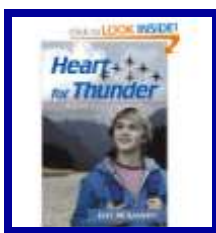
According to Capt Alexander, making it to the Finals is something the cadets will never forget. He said they learned as much about teamwork, dealing with pressure, and good sportsmanship, as they did about cyber security.

### ACTE Technology Fair

At right, Darryl Carpenter helps as a judge out at the recent ACTE Technology Fair. Several chapter members volunteered and they'll need judges, next year, too. It's a great way to interact with young people and see how schools are using technological advances.



*Is your 9-11 year-old looking for a good read this summer?*



We Suggest:

**"Heart for Thunder"**  
by Judy McSpadden

Thirteen-year-old Scott Callahan can't figure out how to get the one thing he really wants - time with his dad. That's not easy when Dad is Colonel "Astro" Callahan, leader of the world famous Thunderbirds. Scott never minded being a military brat before, but his patience with military life is wearing thin. Finally, with the help of his buddy, Lucas, Scott comes up with a unique plan to win his dad's attention. The results not only endanger his dad's life, they send Scott skyward over the Nevada desert.

**Available in paperback and E-Book from Amazon and Barnes and Noble  
Just search for "Judy McSpadden"**

## Super-Star Teachers Shine in the Tennessee Valley!

We are proud to announce the Chapter's 2012 Teacher of the Year is Dr. Sylvia Dean. A "bright star" that shines on Jones Valley Elementary and across Alabama, Dr. Dean is making an impact on students and teachers across the State and nation. Ms. Nancy Johnson from the Alabama State Board of Education, stated of Dr. Dean, "Her influence in making technology, mathematics, and science appealing to students and teachers has spread exponentially throughout the state of Alabama." In her role as Director of the Huntsville Association of Technical Societies, she mentors teachers who seek STEM grants and speaks at forums in the North Alabama community. Ten years ago, she started the First Lego League robotics competition in Huntsville City Schools. Today, the competition has grown and Dr. Dean serves as a consultant for the Lego Corporation to develop educational products and curriculum. As Chairperson of the Alabama Council of Technology in Education (ACTE), the annual ACTE Technology Fair offers more than 800 students in grades 3rd – 12th an opportunity to showcase science and technology projects. As the Chapter Teacher of the Year, Dr. Dean will receive a check for \$250, a "Certificate of Excellence," an AFA Tote Bag, a complementary Civil Air Patrol Aerospace Education membership, and eligibility to compete at the State and, if a winner, at the National level.

This year's Middle/High School Teacher of the Year is Ms. Jennifer Kennedy from Athens Middle School. Known for instilling a passion for space exploration, Ms Kennedy was personally selected to create a program which emphasized robotics education for Athens Middle School four years ago. From just 30 students the first year, her program now has over 200 students. Mr. Mike



**"Nuclear Penguins" of Jones Valley is just one of Dr. Dean's efforts in stimulating science interest to future leaders and engineers.**

Bishop, Principal at Athens Middle School, said her work is helping develop future engineers for tomorrow. As the Middle/High School Teacher of the Year, Ms Kennedy receives a check for \$100, a "Certificate of Excellence," and a complementary Civil Air Patrol Aerospace Education membership. (Russ Lewey)

*Congratulations to both of these fine teachers!*

## Aerospace Education Group Announces 2012 Program

After approval by the chapter's Executive Council, the Aerospace Education (AE) Working Group announced the Chapter's AE Program for 2012. This year's program refines some existing efforts and proposes some new and exciting changes for 2012 as well.

First, recognizing and supporting the three Air Force Junior ROTC (AFJROTC) units in the Tennessee Valley, the Chapter will continue to award a \$500 scholarship to each of the units (Bob Jones, Butler, and Huntsville High). However, this year the Chapter will recognize the top AFJROTC cadet from the three schools – awarding an additional scholarship to the best of the three.

In addition to AFJROTC, there are a number of excellent Civil Air Patrol (CAP) Cadet Programs. In fact, you read how the CAP Squadron in Springville was one of this year's CyberPatriot finalists. This year, the Chapter will recognize the top CAP Cadet of each of the six CAP Cadet Squadrons:

- Boaz
- Cullman
- Gadsden
- Muscle Shoals
- Springville
- Redstone

Of course, it is the teachers that have the burden share of stimu-

lating young minds into the fields of science, technology, engineering, and math (STEM) and aerospace education. Therefore, it is only appropriate that we recognize the Valley's top teachers in this endeavor. Clearly the challenges and opportunities are different for a first grade teacher versus that of someone teaching seniors. As neither age is less important or rewarding, the Chapter has elected to create two divisions (Elementary and Middle/High School). The Chapter will select a winner in each division and then the overall winner, the Chapter's Teacher of the Year, will compete for State (and if selected there), National honors.

To give teachers some new ideas on how to promote aerospace education and STEM, the Chapter is looking to host its first -ever AE/STEM Workshop. This year, the workshop will be targeted to elementary teachers and will include products developed in conjunction with the Civil Air Patrol Headquarters and its AE Program. In addition to ideas and lectures, the program will include a comprehensive 675-page aerospace textbook and a 12-lesson curriculum package.

We are very fortunate to live in a community with so many resources and excellent teachers. However, the Chapter is always on the lookout for ways it can further its goal of promoting aerospace education. Russ Lewey, VP for Aerospace Education, indicated that there are discussions with the U.S. Space and Rocket Center and its Aviation Challenge program, along with even promoting books to excite young readers – "onward and upward." (Russ Lewey)

## General Elder (Cont. from Pg 1)

most people focus on the types of cyberspace attacks, such as data corruption, code manipulation malware, worms and virus flooding, backdoor implants, physical destruction, and insider attacks. He suggested taking a systems engineering approach to looking at targets, as well as their vulnerable points and camouflaging how they look.

General Elder also said “risk management is key to cyberspace protection” and that cyber security should be viewed as an integrated system with more importance placed on internal security since major threats to a system come from internal sources and result from mistakes most of the time. He said the cyber world operates on the concept of networked systems versus a hierarchical one, and that any node in the network can be a new leader.

Why is Cyberspace important, General Elder asked? Because, he said, it exists everywhere and provides one with the power to be anywhere at any time. The challenges are that cyber attacks can also happen anywhere at any time, which is compounded by the fact that attackers tend to be anonymous; and that to be effective, cyber security personnel must change the way they build systems, and those who operate them must change their mindset. General Elder noted that the only way to stop cyber attacks was to turn the network off. Fixing this problem, he added, will take greater resources including research funding. In closing, General Elder urged the CyberPatriot teams to use their powers for good.

A leader in cyber security, General Elder was the first commander of Air Force Network Operations Command and led the development of the cyberspace mission for the Air Force. General Elder holds a Doctorate in Engineering from the University of Detroit. He is currently a research professor at George Mason University in Fairfax, VA, where he conducts research in cyber enterprise resiliency and the use of modelling to support national security decision making. (Cathy Scott and Russ Lewey)

**Picture at right: General Elder poses with members of the Johnson High School Marine Junior ROTC Color Guard, who presented the Colors at the luncheon. (Photo by Matthew Broadhurst)**

**Don't miss out!  
Plan to attend next year's  
luncheon!**



**New Century Technology CyberPatriot Team members enjoyed the luncheon. Seated from L to R are: Orlando Garcia, Paul Eccleston, Kelli Little, Justin Traglia, Jim Morse (coach), and Matthew Wyatt. Standing in back are AFA members John Phillip and Bob Hovde. (Photo by Matthew Broadhurst)**



**The AFJROTC Huntsville and Boaz High School CyberPatriot Teams also attended. Seated from L to R are: Huntsville HS Team, Xavier Shouten, Nathaniel Trudeau, Lt Col Hollis Bagley (standing, coach), Rachel Stough, and Jackie Farber. Boaz High School Team (standing — Ms. Lynn Toney, coach, Alabama Wing Director of Aerospace Education for the CAP, and seated — the Techno Hazards team, Nehal Patel and Jacob Simmons. (Photo by Matthew Broadhurst)**



## Von Braun Team Member Shares “The Right Stuff”

*By John Phillip*

Many people have visited the US Space and Rocket Center and seen the complex hardware on display, especially the full array of objects from the Apollo Program. But few are able to capture a thorough understanding of the incredible engineering that was done so that those unique hardware items could take our astronauts to the Moon and explore it.

Some visitors, however, may be fortunate enough to interact with Otha “Skeet” Vaughan, Jr., while touring the U S Space and Rocket Center. He volunteers weekly at the Center to provide visitors a “first-hand” explanation of the Apollo Program and especially the Lunar Roving Vehicle (LRV). Skeet is a true expert on the “Moon Buggy” because he developed the criteria used in the design of the lunar rover and helped test numerous prototypes. Rocket science and “The Right Stuff” have been his life, and he is always willing to share his amazing experiences and knowledge with any interested person. He retired from NASA in 1999 with over 30 years of service to the space mission, and retired from the US Air Force Reserves as a Lieutenant Colonel. Skeet is an active life-member of the Air Force Association and a member of our local chapter’s Executive Council as well.

After graduating from Clemson University in 1951 as a mechanical engineer, Skeet entered active duty in the US Air Force as an aircraft maintenance officer for the 25th Weather Squadron. Later, he was employed at Eglin AFB, FL, in 1956 as a civilian engineer for the Air Proving Ground Command. He soon realized that the lure of his profession was elsewhere. He knew that Wernher von Braun, who was working with the Army at the Redstone Arsenal, had plans to “go to the moon.” And Skeet was determined to be part of the engineering program that would make that vision a reality.

Skeet was transferred to the Army Ballistic Missile Agency (ABMA) at Redstone Arsenal in October 1956 and began designing cooling systems for the Army’s long range ballistic missiles. He was instrumental in advancing state-of-the-art cooling hardware for the flight control systems for the Redstone, Jupiter, and Juno missiles. He also performed aerodynamic heating studies for those missiles.

With the “Space Race” in high speed, NASA was formed in October 1957 to accelerate the country’s ability to perform in space. Skeet transferred from the ABMA to NASA’s Marshall Space Flight Center (MSFC) in July 1960. He was assigned to the Aerospace Environments Division, which developed environmental criteria for launch vehicles and supported studies for understanding the lunar surface environment and lunar mobility. Skeet and his team members



**Skeet Vaughan, Jr., poses in front of the Lunar Roving Vehicle he helped develop at the US Space and Rocket Center.**

were challenged to quantify conditions such as lunar solar radiation, meteorite flux, temperature and gravity so astronauts could function and move on the surface of the moon. After much study and research, Skeet authored “Lunar Surface Environment Criteria for Lunar Mobility.” This document used lunar photography obtained from the lunar orbiter spacecraft and actual data from surveyor probes that had landed on the Moon. Ultimately, the document became the baseline for future lunar hardware development.

Wernher von Braun was very much aware of the lunar environmental work and how it could be integrated into the Apollo Program, which was being planned. Von Braun told future Apollo astronauts, “Don’t worry about getting to the Moon. I will get you there. It’s what you do when you get there that is important. You will probably be driving a car on the Moon.” Dr. von Braun had a vision of lunar travel. He also knew that his engineers were making good progress in understanding the lunar environment and getting ready to create the unique hardware for that mission.

Finally in July 1969, MSFC issued a request for proposal to three contractor teams for LRV mobility concepts. Many large prototype vehicles had been developed prior to 1969 and were tested at MSFC. Skeet was a member of the MSFC Mobility Team, responsible for evaluating all the concepts and models. The earlier NASA studies and models had planned for a large rover that would require launch of a separate Saturn V rocket; but because of their weight and size requirements, the NASA effort now centered on a smaller LRV concept that could be folded and stowed inside the lunar surface module.

Many critical engineering design details had to be identified and resolved with the planned lunar rover. Skeet made two important contributions. First, he provided a topography characterization of the lunar environment that was used in the Lunar Surface Driving Simulator that trained astronauts to drive on the moon. Secondly, through a number of KC-135A flight tests, the NASA Vomit Comet was able to simulate travel on lunar soil under the moon’s reduced gravity conditions. Skeet and the NASA design team determined that a light-weight wire mesh wheel could be used but the vehicle needed fenders to control the debris that would be thrown up by the moving wheels. These two contributions proved to be significant factors with lunar travel.

(Continued on Page 6)

## “The Right Stuff,” Continued from page 6

Apollo missions 15, 16 and 17 made effective use of the LRV. The rovers traveled an average of 18 miles on each mission. Eugene Cernan, the commander of Apollo 17, later extolled the virtues of the lunar rover. “The rover allowed us to explore the entire valley at Taurus-Littrow from one end to the other, to climb hills we never could have been able to climb on foot, bringing back samples and pictures we wouldn’t have been able to get otherwise. The rover was just so versatile and gave us such an advantage within the timeframe that we had on the moon. Without it, it would have cut down our science and geologic exploration by 70 percent. It was a phenomenal asset.”



The Apollo astronauts created their own “Snoopy Awards” to recognize NASA engineers who made a significant contribution to the capabilities of the astronauts. The Snoopy Awards were only given on rare, special occasions. Skeet was one of seven NASA engineers that received a “Snoopy Award” for their creative and effective work in supporting astronaut travel on the Moon. Skeet is the proud owner of a Snoopy Certificate that was signed by Alan B. Shepard.



Not unlike many of the other young von Braun engineers, Skeet made a significant contribution to the Apollo Program, which was a phenomenal engineering challenge. Yet after Apollo, Skeet continued to effectively serve NASA, especially in the Skylab and Space Shuttle programs. His work later centered on atmospheric cloud physics research of thunderstorms. He was the principal investigator for the Mesoscale Lightning Experiment (MLE) that used the Shuttle’s payload bay video cameras to observe lightning from space. Astronaut video observations were able to capture upper atmospheric disturbances and confirm the existence of “Red Sprites, Blue Jets and ELVES,” which are unique weather occurrences associated with severe thunderstorms. Skeet’s work provided rare, scientific weather observations of actual phenomena that previously had only been a theoretical concept.

Today, Skeet is still willing to thrill anyone interested in learning about how those dedicated NASA engineers identified and transferred the tough science into effective hardware solutions that made Wernher von Braun’s vision a reality. He is one of many von Braun team members who still have “the right stuff.” Most importantly, Skeet wants to share his story. So, stop by the Space and Rocket Center on a Friday afternoon and get an insider’s view of what it took to get to the moon.



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