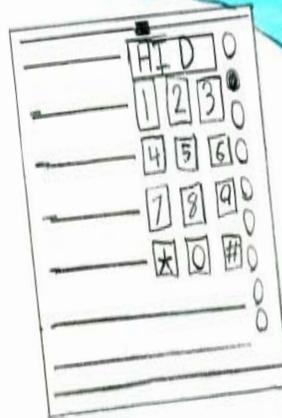


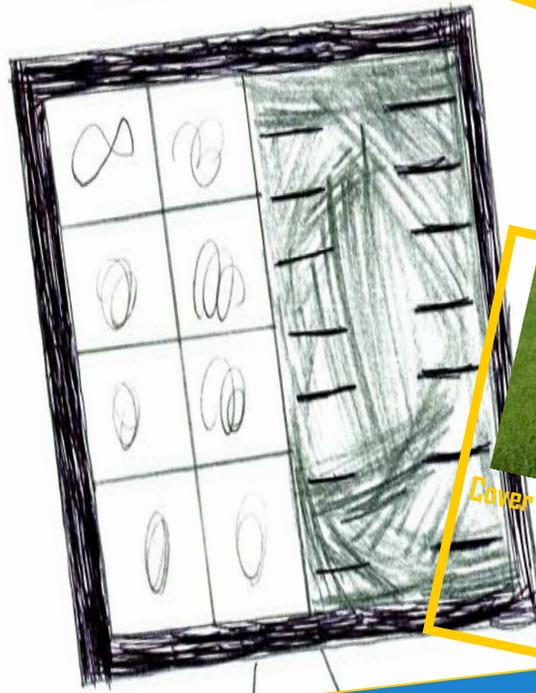
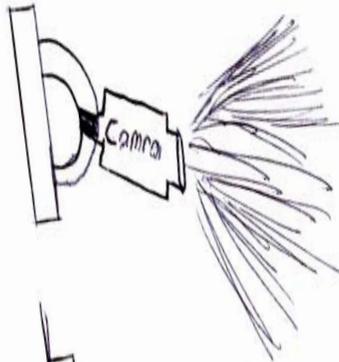
Safety Safety Sa... safety safety batter safety safety Safety

SAFETY AWARENESS  
Month



VIEW

Independent Verification and Validation Facility



VOLUME 3, ISSUE 2, APRIL – JUNE, 2007



## Director's Point of *NEW*....

This quarter has found us busy giving *no quarter* to mediocrity. We have been reviewing and refining our process and product as well as our strategy and service—all the while working hard

to inspire and enjoy being inspired by the next generation. We are preparing to host researchers and administrators at this fall's OSMA SAS, at the same time we will host students and educators at IV&V's Day in the Park. Our engineers are working with our project managers to bring a new approach to validation and verification that we are confident will best serve our customer—our Agency. Our RMO team continues to impress us, our customers and our stakeholders with their skill and dedication. In short, we have had a great quarter working together on behalf of our Facility and our Agency. This is a great time to be a member of NASA's IV&V family.

Speaking of family, please enjoy the illustrations in this quarter's *IVView* designed by the children of our civil service employees and contractors. Anthony Alvaro's winning entry is featured on our cover, but we were so impressed with all of the entries that we just had to include the artwork of his fellow competitors throughout this publication. Thank you to all of the artists who participated in the Safety Awareness Poster Contest on Inspiring The Next Generation Day. Along with the authors who have penned the stories for this publication, all of the artists will receive a space pen in appreciation for their impressive creativity and the concern for safety they share with their parents.

As we go to press, let me encourage all of you to take time in the coming weeks to practice the IV&V value of balance with as much dedication as you have practiced those of excellence, integrity, innovation, respect, safety and teamwork. Take your family out on the lake, swing in a hammock in the shade, hike the beautiful mountains that surround us, or hang out with your grandkids at Cheat Lake just as Trudy and I have been doing for the last few days. Come back renewed, full of great ideas and good spirits, just as I intend to do. In the meantime, kick back in your cube or on your porch and take a few minutes to enjoy the *IVView*.

Sincerely,

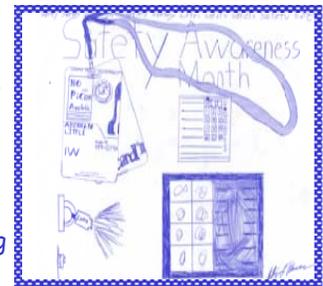
Dr. Scott Caffall  
Director, NASA IV&V Facility

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Cover Image Credit: Anthony Alvaro is 11 years old and attends Fairmont Catholic School. He enjoys coming to the NASA IV&V Facility for the "Inspiring the Next Generation" day activities with his mom; this was Anthony's fourth year attending. Anthony's interests include playing sports (baseball, football, wrestling), reading science fiction, origami, guitar, video/computer games, sudoku and writing stories. Anthony has one sister, Anna, age 9. Anthony wants to design video games when he grows up.



Managing Editor: Donna Ozburn

Editor: Kathleen Millson

Please submit news items and/or photos to  
Kathleen.M.Millson@nasa.gov; 304-367-8445.

All submissions are subject to editing.

Next Submission Deadline: September 10, 2007

# STS 117 Atlantis: A "kid's" imagination takes flight



The sight of Atlantis on Pad 39A at night was worth the late flight from West Virginia at the end of a long work day. As a matter of fact, it would have been worth making the trip on foot...I wouldn't have missed this for the world.

As a kid I played with plenty of fireworks and rockets. I imagined myself into every manner of may-hem all in the interest of science (just ask my mother and our neighbors back in Petersburg, W.V.) Any kid will tell you that the coolest thing about the launch is the countdown,

unless, like me, they grow up to get to see something as amazing as Atlantis actually leaving the launch pad. Even as far away as I was, I could feel the force of the blast off. Nothing I ever imagined as a kid prepared me for the sight of Atlantis in flight.

/V/SERVICES

## Anything Can Happen Out There...

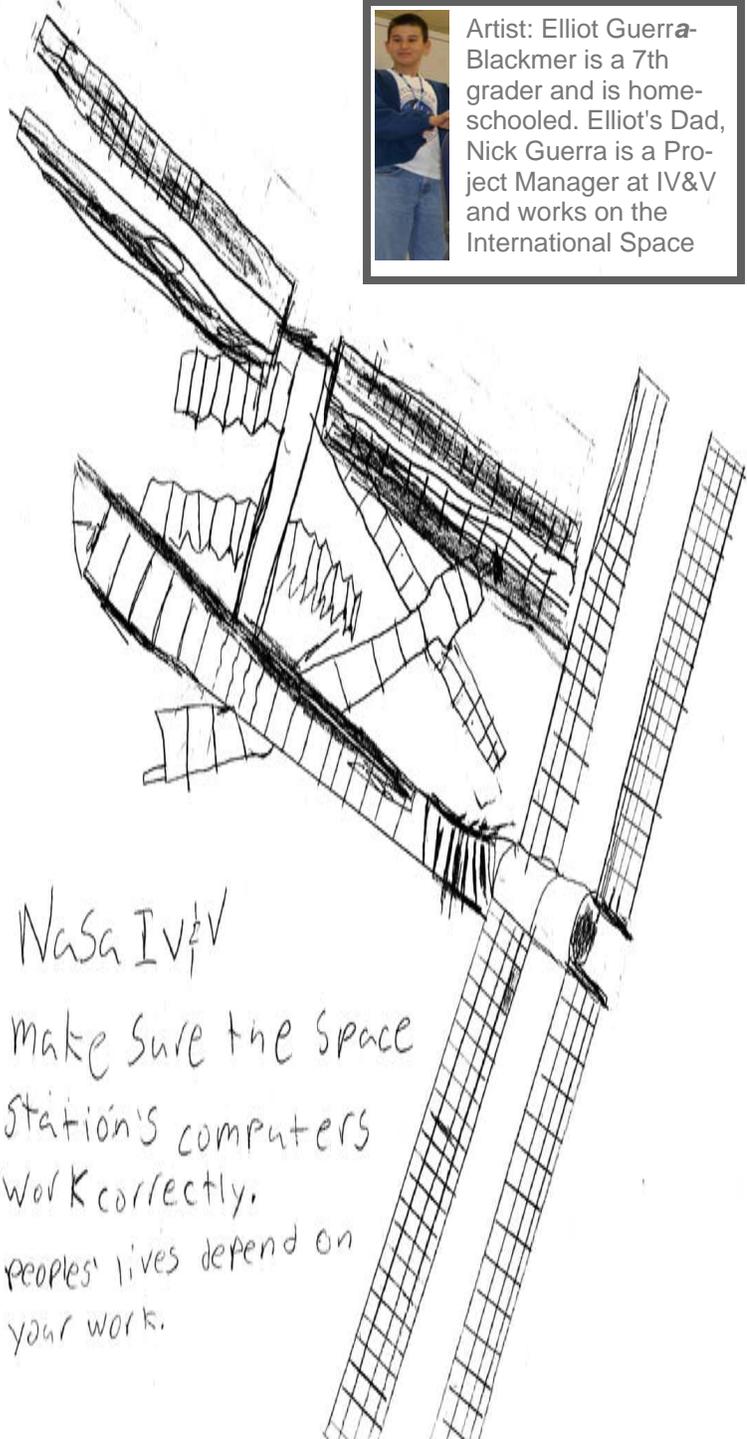
IVSERVICES

Problems with the Russian computers during the recent ISS visit by the shuttle in mid-June served as a reminder to us all of the critical nature of what we do here at IV&V. All three strings of computers (2 computers per string) on the Russian side failed during the incident, which disabled the station's propulsive attitude control systems and shut down its air and water production equipment. At no time was the crew in danger, but worst case scenarios included abandoning the station for the first time since it was permanently crewed in 2000. The root cause of the event has not been determined, but a number of efforts have begun to ensure that alternatives exist should similar events occur in the future, including software-intensive/only solutions on which ISS IV&V personnel will perform assurance.

Any thing can happen out there  
So it needs to be safe.



Artist: Elliot Guerra-Blackmer is a 7th grader and is home-schooled. Elliot's Dad, Nick Guerra is a Project Manager at IV&V and works on the International Space



NASA IV&V  
Make Sure the Space  
Station's computers  
Work correctly.  
Peoples' lives depend on  
your work.

## Aeronomy of Ice in the Mesosphere: Chromatics and Noctilucent Clouds

High oh high way up above the ozone  
High oh high in regions near the poles  
Set against the arctic cold twilight  
Casting off an iridescent light  
Known for only the last century  
We don't know how you have come to be

Noctilucent Cloud  
That ghostly shining polar shroud  
We didn't think you'd be allowed  
At latitudes so low (but there you go)  
Shining over a darkened sky  
In mesospheric zones so high

How and why can you be?  
You're a cloudy mystery (mystery...)  
For the twenty-first century  
Noctilucent Cloud!  
High oh high on wings above the ocean

On a Pegasus, AIM launches into space  
Measuring the temperature so cold  
Sizing up the cosmic dust so old  
How much water vapor lies within  
Your layer so thin?

Noctilucent Cloud  
That ghostly iridescent shroud  
We didn't think you'd be allowed  
At latitudes so low (how can we know?)

Shining over a darkened sky  
In mesospheric zones so high  
How and why can you be?  
Are you tied to our destiny  
Our global climate history  
An atmospheric mystery  
Noctilucent!

Every year you number more and more  
And with time you're brighter than before  
Forming in a most unlikely place  
At the edge of space  
Noctilucent Cloud  
That ghostly iridescent shroud  
We didn't think you'd be allowed  
At latitudes so low (we need to know)  
Glowing over the polar sky  
In mesospheric zones so high

How and why can you be?  
Are you tied to our destiny  
Our global climate history  
You're still a cloudy mystery  
Noctilucent Noctilucent Noctilucent Cloud!

AstroCappella: Noctilucent Cloud  
Words and Music by Patricia Boyd



Did you know that the Chromatics were asked by the NASA AIM project to write a theme song highlighting the satellite mission and polar mesospheric clouds on the edge of space?

Listen to the song above and see the related link for more Chromatics links.

AstroCappella CD from The Chromatics  
<http://www.astrocappella.com/>

IVSERVICES

On April 25<sup>th</sup>, NASA successfully launched the AIM spacecraft - the first mission dedicated to the exploration of the mysterious Polar Mesospheric Clouds (PMCs), also called noctilucent (night-shining) clouds. "The coordinated AIM measurements will provide the first focused and comprehensive data set needed to unravel the mysteries of these clouds," said the Principal Investigator James M. Russell, III, of Hampton University in Hampton, Virginia.

In recent years noctilucent clouds have been increasing in number, growing brighter and are occurring at lower latitudes than ever before (sightings in recent years as far south as Utah and Colorado.) Are these clouds, which did not exist a century ago, a temperature gauge for climate change? What causes them? We don't know for sure. Theories range from space dust to global warming. For the next two years, AIM will study the clouds to learn what they may be telling us about our fragile planet. For the past three years, IV&V Facility has performed IV&V on the AIM spacecraft and three onboard instruments focusing its efforts on the flight software and instrument software. NASA, along with teams from SAIC and NGIT provided outstanding IV&V services to the AIM mission.



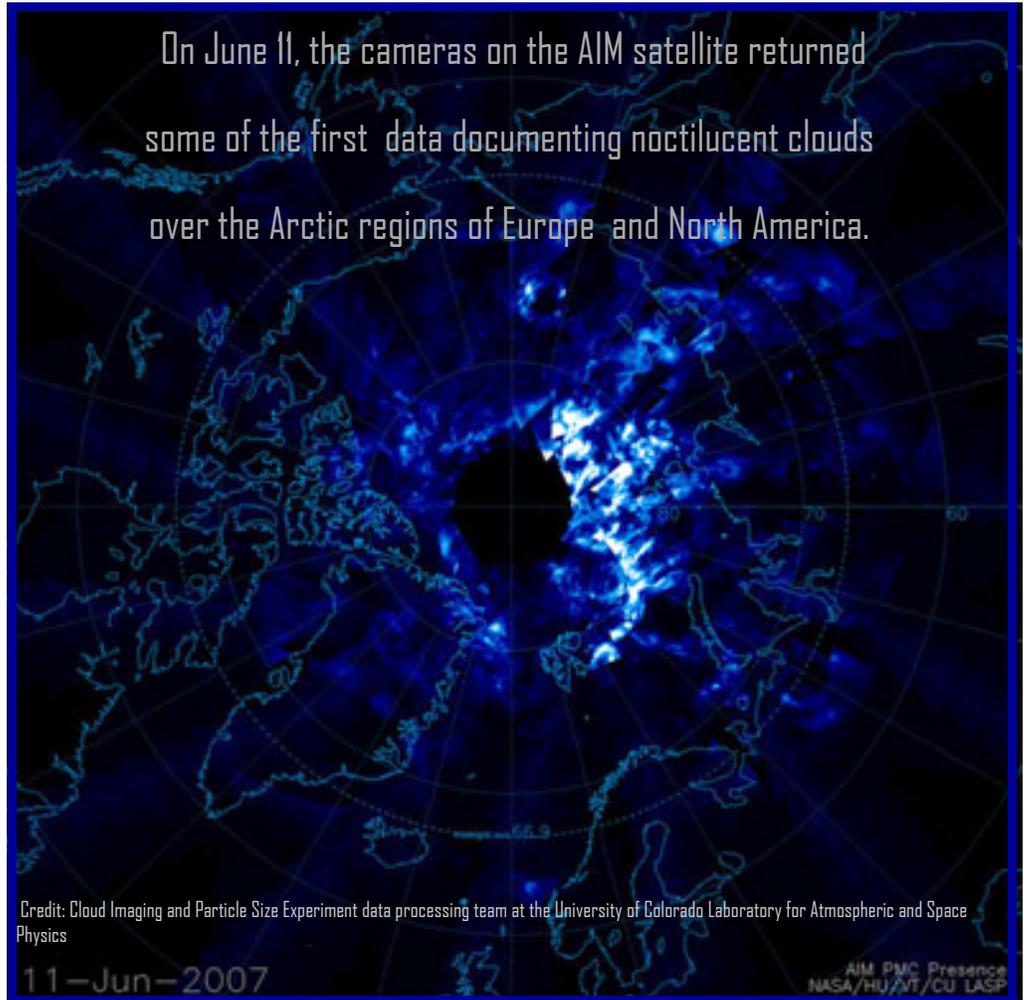
For further information about AIM, visit <http://www.nasa.gov/aim/> or <http://aim.hamptonu.edu/>

## AIM spacecraft gets its first look at night-shining clouds

NASA NEWS RELEASE

WASHINGTON -- A NASA satellite has captured the first occurrence this summer of mysterious iridescent polar clouds that form 50 miles above Earth's surface. The first observations of these clouds by the Aeronomy of Ice in the Mesosphere (AIM) satellite occurred above 70 degrees north on May 25. Observers on the ground began seeing the clouds on June 6 over northern Europe. AIM is the first satellite mission dedicated to the study of these unusual clouds.

These mystifying clouds are called Polar Mesospheric Clouds, or PMCs, when they are viewed from space and referred



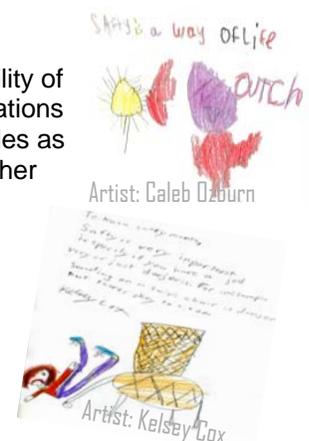
/SERVICES

# night-shining clouds

to as "night-shining" clouds, or noctilucent clouds, when viewed by observers on Earth. The clouds form during the Northern Hemisphere's summer season that begins in mid-May and extends through the end of August. They are being seen by AIM's instruments more frequently as the season progresses. The clouds also are seen in the high latitudes of the Southern Hemisphere during the summer months. Very little is known about how these clouds form over the poles, why they are being seen more frequently and at lower latitudes than ever before, or why they have been growing brighter. AIM will observe two complete polar mesospheric cloud seasons over both poles, documenting for the first time the entire, complex life cycle of PMCs.

"It is clear that PMCs are changing, a sign that a distant and rarified part of our atmosphere is being altered, and we do not understand how, why or what it means," stated AIM principal investigator James Russell III, Hampton University, Hampton, Va. "These observations suggest a connection with global change in the lower atmosphere and could represent an early warning that our Earth's environment is being altered."

The AIM instruments are returning valuable information on the global extent and variability of these clouds and preliminary information on their particle sizes and shapes. Early indications are that the clouds occur at high latitudes early in the season then move to lower latitudes as time progresses. The AIM science team is studying these new data to understand whether the changes in the clouds may be related to global climate change. When the Northern Hemisphere summer season ends in mid- to late August, the AIM science team will not have to wait long before the Southern Hemisphere's season starts. This occurs about three months later in mid- to late November. The Southern season lasts until approximately mid-March of 2008.



Artist: Caleb Osburn

Artist: Kelsey Cox



The Seventh Annual Software Assurance Symposium (SAS) will be held on September 25-27, 2007, at the Waterfront Place Hotel in Morgantown, West Virginia. The event is the showcase for research sponsored by NASA's Office of Safety and Mission Assurance (OSMA) and managed by the NASA IV&V Independent Verification and Validation (IV&V) Facility. The objective of the symposium is to highlight the important research areas in the field of software and safety assurance.

The research initiatives are presented in two parts at the conference. During the morning sessions of the conference, researchers give executive presentations which are high level overviews of the research projects.



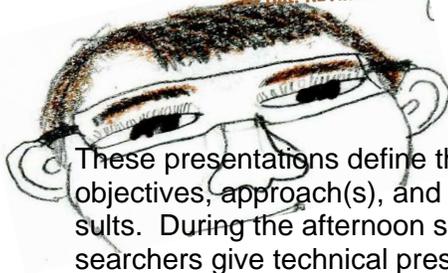
Bryan O'Connor, Chief Safety and Mission Assurance and the SMA Directors will join us again this year as well as participants in meetings with NASA's Chief Engineer, Chris Scolese.

IV&V RESEARCH



Artist: Rachel Cox





These presentations define the project's goals, objectives, approach(s), and any remarkable results. During the afternoon sessions, the researchers give technical presentations in order to elaborate on their research and provide a clearer understanding of their progress and results. Thus, the executive presentations provide attendees with an overview of the current state of software and safety assurance research, and the technical presentations provide attendees with the opportunity to gain more insight into the individual research projects.



O'Connor, Chief Safety and Mission Assurance Officer, SMA Officers, and the Office of the Chief Engineer.

The symposium also strives to create an atmosphere to encourage both formal and informal meetings to allow attendees to share ideas and make plans for future collaborations.

Whether it be constructing and flying balsa wood gliders or spending an evening at the casino, the Software Assurance Symposium is always packed with enjoyable evening activities for everyone. We assure that this year will be no exception. We hope to see you at the 2007 Software Assurance Symposium.

Along with current researchers, students, and NASA IV&V Facility employees, expected attendees for this year's conference include Brian

For more information, please visit the Software Assurance Symposium website located at: <http://www.nasa.gov/centers/ivv/sas/home/index.html>.

## Research Infusion

Research Infusion is a part of the overall Software Assurance Research Program plan. This effort supports the tech transfer of research developed tools and techniques as well as some commercial tools. The goal of Research Infusion is to transfer mature Software Engineering and Software Assurance technologies into practice while reducing the risk to those projects who participate.



The purpose of Research Infusion is to benefit the software development project, validate the technology, and generate empirical data to assess adoption. There is funding available for training and consulting in the use of the technology, license fees in the case of commercial technologies, the time necessary to apply the technology and collect and analyze data.

This year the technologies that will be made available include:

- Software Architecture Visualization and Evaluation (SAVE) Toolset,
- Perspective Based Inspections (PBI)
- SpecTRM
- CodeSurfer/Code Sonar
- Software Cost Reduction (SCR)
- Klockwork InSpect
- Reactis
- Requirement Assistant
- Software Process Assurance for Complex Electronics (SPACE)
- Software Developer's Assistant (SDA)

Because trying new technologies and approaches takes some additional time and effort as those involved come up to speed, collaborations are encouraged and supported. Either the technology provider or the research team who developed or refined the tool or process is involved.

Additionally, previous Research Infusion efforts have indicated that additional support is always appreciated. For this reason, this year IV&V's Research Interns are coming up to speed on all of the candidate technologies and will be available to help support the infusion teams.



# NASA IV&V Inspires Its Very Own Next Generation

## The Next Generation—*ERS*

- Caleb Ozburn
- Anthony Alvaro
- Anna Alvaro
- Elliot Guerra
- Justin Dobratz
- Julie Dobratz
- Stephanie Harris
- Alex Harris
- Kimberly Harris
- India Carvell
- Lauren Cox
- Rachael Cox
- Kelsey Cox
- Matanya Solomon
- Lucas Jarrett
- Kelly Jones
- Kevin Jones
- Kaeley Dicks
- Rachel Rousseau
- Samantha Cavanaugh



The agenda for Inspiring the Next Generation Day included “Launching Rockets from Spinning Planets”, “Bottle Rocket Launch”, Pizza Lunch with their folks, Parent Time (spent learning more about what their parents do for NASA, and “Shuttle Simulator Experience” followed by Safety Awareness Month Poster activities...the result of which you have seen throughout the *IVView*.

/OUTREACH



## 40-Second Bottle Rocket Flight...*Preston County does it again!*

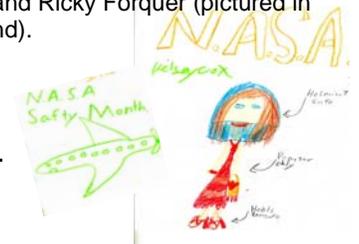
The 4<sup>th</sup> Annual Freedom Bank (formerly the Frieda J. Riley) Bottle Rocket Challenge was a great success again this year. Seventeen teams from 12 counties competed for the title of 'Regional Champs'. South Preston Middle School walked away with the grand prize – mementos from the Rocket Boys and NASA Challenger Center as well as \$200 from Freedom Bank for the school's science department. This was the team's second consecutive year as champs, with Bruceton Middle School in second and Robert L. Bland in third. The IV&V Facility provided the judges and launchers for the event, which took place on May 24<sup>th</sup> at Hite Field in Clarksburg, WV.

The event was designed to inspire interest in the physics and strategy of flight. The teams created their own designs for the rockets (plastic 2 liter soda bottles), built the craft according to their design specifications and tested the rockets using varying mixes of air pressure and water to create the longest flight time for each rocket. Those with properly functioning parachutes tended to have the longest flight time – South Preston Middle School managed an impressive 40 second flight.

Three of the six Rocket Boys were on hand to take part in the competition: Roy Lee Cooke, Billy Rose and Jimmy O'Dell Carroll. The 'Boys' signed autographs, presented prizes and shared many inspirational and comical stories with the students. Many of the students were already expressing interest in next year's Challenge – formulating new and improved design elements on the spot. This is an activity that truly inspires the next generation of space flight scientists and aerospace engineers.



Special thanks to the IV&V personnel who participated in the event: Donna Ozburn, Kat Millson, Steve Pukansky, Meagan Carrier, Kaci Reynolds, Ken McGill, Richard Grigg, Stephanie Ferguson, Justin Morris (pictured in background) and Ricky Forquer (pictured in foreground).



The IV&V Facility Outreach provided a judge, Lisa Montgomery, to support the final round of the *West Virginia Open for Business Statewide Student Business Plan Competition* hosted by the West Virginia University Entrepreneurship Center in the College of Business & Economics. The competition allowed students, working as individuals or teams, the opportunity to develop business plans that were evaluated by a panel of judges consisting of professors, venture capitalists, experienced entrepreneurs, high-tech industry leaders, CPAs, and business lawyers. Funded entirely from private donations and grants, the goal of the competition is to select businesses that have the potential to be viable West Virginia start-up companies. Teams are provided with mentoring, tools, and contacts that will increase their likelihood of success. The finalist teams commit to locating in West Virginia in order to be eligible for the prize money.

Open to any student attending a college or university in West Virginia, regardless of major, this year's competition was the largest ever with 50 participants representing 9 different West Virginia colleges and universities. Those initial 50 entries were trimmed to 10 over the course of three rounds that spanned the academic year. Students were challenged to focus their idea, impress potential investors with 2 minute "elevator pitches", and construct a business plan. To help the students meet this challenge, teams had a coach from the business community. Even for teams who didn't win, the mentoring provided by this competition was invaluable. This year there were two categories High Tech, which included innovations and improvements in technology, and Life-styles. Five teams from each category advanced to the final round. A winner from each category was chosen April 14 and received \$10,000 plus professional services and support to start their businesses.

Congratulations to the 2007 winners Arachnovation, the brother and sister team of Will and Maggie Starcher and their re-engineering of a traditional artist easel, and Navway Records, an independent effort by Derrick McKee to develop an independent record label.

# NASA /V&V I.T. Specialist, Brian Davis is exercising his options

Exercise is a word that people often don't like to see or hear, but *everyone* needs some sort of exercise to help stay physically fit. To exercise *my* option to live a fit and healthy life...exercise *is* the only option. On January 17<sup>th</sup>, 1993, I was a passenger in an automobile accident and from that point I was in a coma for 6 months and 14 days. Given the many complications caused by my injuries, and my experiences at the hospital, it is a miracle for me to be able to tell you a little about my long recovery—a recovery continues with each passing day.



Now there are several things that *you* can do for exercise, just whatever gets your heart rate up and strengthens your muscle tone. Before my accident I lifted weights five days a week and did some cardio a couple days a week. Well, my exercise routine has completely changed since before my accident. Now I do some cardio 7 days a week and I lift a lot of weights once a week, then several days during the week I do one or two lifts. People tell me, that exercising in this new way is a reason why my recovery has gone well. Since I was in such good shape before the accident, I was able to hold on to and then build upon the strength that was threatened by such a long time in a coma. Exercise is a great attitude adjustment and is a great ally in my effort to improve and continue to challenge myself mentally and physically.

I try to go to the gym every day—Taylor County's Total Health Center, where I get on an Elliptical trainer for 70 minutes. On the weekend I do 140 minutes a day. Over the last four years the amount of calories I have burned a day ranges anywhere from 331 calories, when I began four years ago, to 1846 calories a day. I have walked on an elliptical machine for a grand total of 5,718.64 miles. Here are some of my totals over the last four years:

OUR VALUE-ABLES

Year	# of times	miles walked	calories burned	fat calories burned	avg. miles per each time
1	272	1,015.18	165,196	47.199	3.732
2	307	1,435.04	215,364	61.533	4.674
3	296	1,621.88	256,972	73.421	5.479
4	277	1,646.54	266,741	76.211	5.944



In this, my fourth year, I still have 25 days to go. My goal for year this year is 1,800 miles, but at the pace I am currently going I am going to fall anywhere from around 35 to 50 miles short. Whether I reach this year's goal or not, I am exercising. I am exercising my option to stay strong, stay healthy—to stay alive. I hope this inspires those of you who are reading my story now to exercise your own options to be strong and healthy too. Who knows—maybe I'll see you at the gym. I'm almost always there.



When theres a wet floor put a wet floor sign.

Julie

you use your card to get in if you don't have a card you can't get in

Star

Saftey is a way of life

catch

Rachel Cox

Staftey moth!

Don't stand on rolling chairs!

By Rachel Cox

Justin Dobatz

2 ins. thick

Put two inches of Bullet proof glass at window

Make people wear two card IDs with two different codes. Ask name them.

Julie

Badges

Make sure people are wearing

N.A.S.A Safety Month.

To NASA safety month, Saftey is very important, especily if you have a job very or just dangeris. For insample Sending on a swivel chair is dangeris but there's ahy to sit on.

Kelsey Cox

Dad makes desig. Soft

buy.

Don't play with staplers or seissors

Always walk with an escort.

SAFTEY AWARENESS MONTH AT NASA

Never play with flammable items.

Saftey Awareness

Out Look For Spilled Drinks!

Aware of Wet floors!

N.A.S.A

Kelsey Cox

NASA Safety Awareness

CAPTION: The Name is the key to the key of knowing if you are safe.

Saftey first!

Don't run!

Always Watch out for wet floors!

look out for Spilled drinks!

Helmet safe

Popstar

Verbs Veruse

Do not smoke in the building. It may be a fire.

No smoking.

When there is a fire Use the fire exting. isher.

Kimmie & Daddy/Roger

Don't use anything else

Saftey

First

Don't Stand or Sit on Tables

Lauren Cox Jake Cox

Safety, Respect, Teamwork, Balance, Excellence, Innovation, Integrity