

Aerospace Instrument “Fingerprints” Space Objects

April 01, 2016

Aerospace scientists recently used a unique ground-based instrument to collect identifying information about satellites orbiting at 35,000 km above the earth. They also observed and classified a supernova in a nearby galaxy.

The Visible and Near-Infrared Imaging Spectrograph (VNIRIS) is a portable instrument designed and constructed at Aerospace to perform a variety of remote sensing functions including launch plume analysis, remote identification of material composition, and calibration of instrumentation on national security space systems.

The team recently took it to the University of California’s James Lick Observatory to demonstrate its use in observing and cataloging satellites.

They successfully used the VNIRIS instrument to obtain spectroscopic information of reflected light from satellites in geosynchronous orbit. These spectra provide a “fingerprint” of an orbiting satellite that can help to rapidly identify the object – a function that is increasingly important as the space environment becomes more contested.

During this observation session, Aerospace scientists pointed VNIRIS towards a star-like object in a nearby galaxy that other scientists suspected of being a supernova.

VNIRIS detected a broad absorption in its spectrum due to ionized silicon, which is characteristic of a type Ia supernova. These results were announced to the international astronomy community which prompted observations by other astronomers to further characterize this supernova.

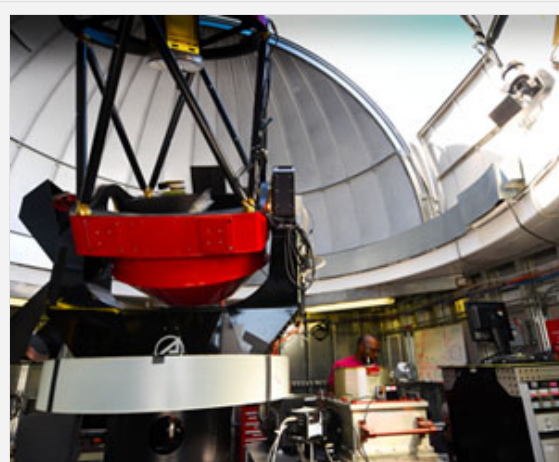
VNIRIS was originally constructed in the mid-1990s and has been continuously upgraded to adapt to customer needs and incorporate the latest in imaging technology.

This unique instrument has been used for a variety of remote sensing applications and astronomical and aeronautical research. VNIRIS can characterize the intensity of light over a broad range of wavelengths, from the ultraviolet through the short-wave infrared (0.35-2.5 microns).

It is one of the only spectrographs of its kind that has this capability and is also portable, allowing it to be used at observatories and customer sites and giving Aerospace scientists the freedom to customize the instrument for diverse applications.



Rick Rudy adds liquid nitrogen to cool the infrared detectors in the VNIRIS instrument. (Photo: Elisa Haber)



VNIRIS is currently operated with Aerospace’s 1-meter telescope and is located in the telescope dome on the roof of Aerospace’s Physical Sciences Laboratory in El Segundo. (Photo: Elisa Haber)

Holly Stewart Receives Fifth Annual OPRA Award

by Gail Kellner

April 27, 2016

It's not a simple task to carry the administrative load for two departments that comprise the Chantilly half of the Systems Analysis and Simulation Subdivision, but Holly Stewart skillfully supports as many as 30 members of the technical staff and managers.

Stewart, administrative specialist, Systems Analysis and Simulation Subdivision, Engineering and Technology Group, was honored for her performance on Wednesday, April 27 with the Fifth Office Professional Recognition Award during the annual Office Professional Advisory Team breakfast.

Dr. Wanda Austin, president and CEO, addressed all of Aerospace's office professionals at the team breakfast before she introduced Stewart. "Our office professionals are on the front lines, and for that, I can tell you, everyone at this company is extremely grateful," Austin said.



Dr. Wanda Austin presented the 2016 Office Professional Recognition Award to Holly Stewart. (Photo: Eric Hamburg)

"Without you, our business simply could not function," she said. "You ensure that our scientists, engineers, and support staff are prepared for the challenges they have to face every day. You make certain that all of the fundamental details that allow our business to thrive are taken care of, so that our company can adapt to the changing tides of a rapidly evolving world," she added.

Holly Stewart

Austin then presented Stewart with the OPRA honor, which is part of the Corporate Awards Program that recognizes an extremely high level of achievement. It acknowledges excellence exceeding expectations by an office support employee and carries a monetary prize of \$5,000.

Austin explained to the office professionals, managers, business managers, and senior management in attendance that Stewart's career at Aerospace spans eight years, handling timecards, travel, documentation, purchasing, calendars, and group communications. In addition, Stewart does complex technical document management and production for professional papers, and performs SAP Business Information Warehouse queries.

A few of Stewart's career highlights include: support for the Office 365 transition, which included the development of multiple classes for The Aerospace Institute on Office 365 tools; critical administrative work for the Mission Assurance Improvement Workshop's arrangements committee; contributions as a member of the Managed Print Services source selection committee; and her collaborative effort in 2011, along with five other office support staff members, to form the steering committee that led to the founding of the Chantilly Office Professionals organization— an organization that she is still deeply involved with today.

Stewart accepted the award in front of two of her three grown children, explaining that she takes great pride in being an office professional at the corporation. She encouraged her peers in attendance to share ideas that they may have on projects or processes and to be "bold and see if you can join the team" on those topics of interest to you.

Larcine Gantner

Larcine Gantner, executive assistant to the CEO, delivered a keynote speech for the multipronged event named Office Professional Development Day. Her comments, delivered with dry wit and bold candor, were met with lots of laughter.

As a little girl, Gantner said she wanted to be an astronaut, writing letters to NASA earlier on – but her dreams were altered when she realized that she suffered from motion sickness very easily with little provocation. She also met her future husband during her senior year in high school, so she decided to settle for "the next best thing" — being an office professional.



Larcine Gantner delivered the morning's keynote address. (Photo: Eric Hamburg)

She told the office professionals that she was very sincere with this comment, acknowledging just how difficult their jobs can be. She said that she had a number of powerful first impressions of administrative professionals when she was a child — one of them was when she visited her father at work. She realized that day that his administrative assistant was the person in charge and she was the one who made things happen.

Gantner will retire from her long career at the corporation at the end of this fiscal year. She explained that although so many things have changed since she joined the company in 1973, there are some things that have not — attitude, commitment, longevity, confidentiality, and a willingness to learn new things. These are the things, she said, that are just as important today as they were many years ago in the life of an office professional.

Aerospace Team At Space Symposium

April 12, 2016

By Jessica Brown and
Lindsay Chaney

An Aerospace leadership contingent attended the opening ceremony and the grand opening of the exhibit center as the 32nd annual Space Symposium got under way in Colorado Springs on Monday, April 11.

Prior to opening activities, the Aerospace attendees met at the company's exhibit booth where Dr. Dave Gorney welcomed everyone to Space Symposium.

The Aerospace booth this year features the Oculus headset, which allows visitors to take a virtual 360-degree tour of Aerospace's El Segundo laboratories.

Throughout the symposium, which runs through Thursday, members of the Aerospace leadership contingent will meet with government, military, and industry decisionmakers as well as media representatives.

WEDNESDAY UPDATE:

On Tuesday, April 12, Aerospace's Dr. Rich Welle headlined the symposium's technical session, providing a balanced analysis of the CubeSat paradigm. CubeSats are a valuable way to increase the technology readiness of a component or subsystem, and to do so rapidly and at comparatively low cost, he said. Welle showed a number of ways to do this, all based on making and flying several iterations of the design very quickly.

Meanwhile, in other Aerospace activity, company executives met with industry and government space leaders to discuss ways to collaborate. In media interviews, company leaders discussed Aerospace's approach for increasing resiliency and complementing the current Global Positioning System service.



The Aerospace team gathered at the company's exhibit hall booth on Monday evening. (Photo: Aerospace)



Matt Begert talks to visiting high school students at the Aerospace booth in the Space Symposium exhibit hall. (Photo: Jessica Brown)



Matt Begert, left, explains the Oculus headset to Dr. Dave Gorney. (Photo: Jessica Brown)

In other speeches and panels:

- Jeff Bezos, president and CEO of Blue Origin, showed exclusive camera footage from the recent launch and relanding of his company's BE-3 vehicle. Bezos said a golden age of entrepreneurship in space has not yet arrived because low launch costs and access to space is needed and the space industry is not moving fast enough on those issues.

He also discussed the commercial space ecosystem and maintained there is room for all companies (SpaceX, Virgin Galactic) to succeed.

- Gen. John Hyten, commander, Air Force Space Command, discussed air superiority in a threat-focused environment. Hyten highlighted how the intelligence community is a key contributor to virtually everything in space, and how integral it is to have a strong partnership with the intelligence community.
- NASA administrator Charlie Bolden said the space community is closer to sending humans to Mars today than ever. He also reflected on President Obama's requests to NASA and how the organization has accomplished them, such as working with new entrants in the space business who have driven innovations and created jobs.

THURSDAY UPDATE:

International panels were featured on Wednesday, April 13. Among countries that were the subjects of panel discussions were Japan, France, and the European Union, all of which have space agencies that

are involved with and looking for new ways to grow in the space community.

Local Colorado high school students visited the exhibit floor. At the Aerospace booth, Matt Begert answered questions from the students about Aerospace, the company's laboratories, and what degrees students need to get a job at Aerospace.

Skinner Now a Principal Director

April 18, 2016



Dr. James Skinner

Dr. James Skinner has been promoted to principal director, Mission Assurance and Assessment, Missile Defense and Space Sensors Division, Systems Planning, Engineering and Quality.

In his new position, Skinner is leading the corporation's Huntsville, Alabama, office and is responsible for mission assurance and performance assessment support to relevant national security agencies.

His most recent previous assignment was as systems director in charge of the Ballistic Missile Defense System (BMDS) Capability Assessment (BCA) Department, a role that made him responsible for leading a 30-plus-person team of subject matter experts from five different federally funded research and development centers and university affiliated research centers.

Prior to joining Aerospace, Skinner served as an Air Force officer assigned to several Defense Department and national research laboratories. His last assignment was as a professor at the Air Force Institute of Technology (AFIT) where he taught software engineering and computer science. He joined Aerospace in 2008.

Skinner earned a bachelor of science in electrical engineering from the University of Washington, a master of science in computer engineering from AFIT, and a Ph.D. in engineering with a computer science emphasis from the University of New Mexico.

Software is a Key in Robotics Competition

by Heather Golden

April 18, 2016

Editor's Note: This article is part of a series that followed the Augustus Hawkins High School FIRST robotics team, and their Aerospace mentor, Tim Wright, as they designed, programmed, built, tested, adjusted, and pitted their robot against those built by other schools in the Southern California region. The full series will be published on Aerospace's website:

<http://www.aerospace.org/news/>

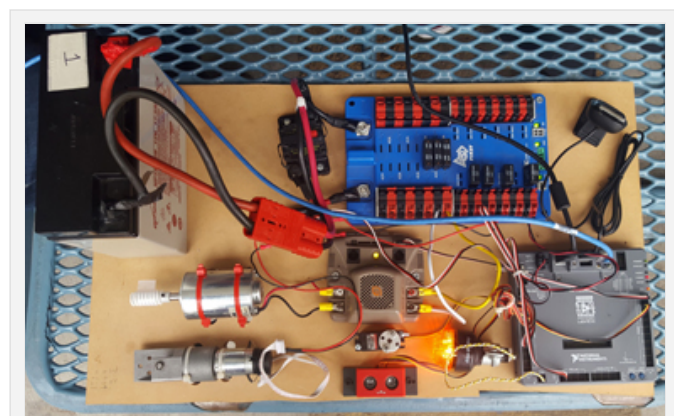
Rachel Ramirez, a 17-year-old Augustus Hawkins High School senior, eyed a computer screen intently as a tiny part affixed to a board next to her whirled. When the whirling came to a stop, she paused to think, biting her bottom lip in concentration, typed a series of commands into the computer, and waited for the next tiny part to respond. This was her first year as part of the Augustus Hawkins' FIRST Robotics team, and she was one of the students writing the code that brought the team's robot to life. FIRST is an acronym for For Inspiration and Recognition of Science and Technology.



Tim Wright, left, coaches Kevin Hernandez and Rachel Ramirez as they write code to program the Augustus Hawkins competition robot. (Photo: Heather Golden)

Kevin Hernandez, also 17 and a senior, sat next to Ramirez, watching and offering suggestions when she seemed unsure of what to do next. Kevin had been on the team for three years, but this was also his first time in programming. Their mentor, Aerospace's Tim Wright, guided the pair by asking questions that led the teens in the right direction when facing a hurdle. The two were only part of a small selection of Augustus Hawkins high schoolers who worked on their robot's code.

"I joined software specifically because I want a taste of what I'm getting into next year," Rachel said. She is graduating high school this year and plans on pursuing a degree in computer science.



Closeup view of software testbed. (Photo: Heather Golden)

Kevin said he has an interest in STEM, and tried other sections in the team before finally arriving at software, which he said he thinks is his favorite.

"I didn't know what I was getting into," Kevin joked. "I tried mechanical first and realized software is way cooler. In mechanical, if you mess something up, that's it. In software, you have the freedom to make mistakes. Even when you're battling in the competition, you can still go back and make it work."

The software component of a FIRST Robotics team faces an interesting challenge every year – correctly programming functions for a robot that doesn't yet exist.

The mechanical side of the house needs almost all of the time available before the match to design and build the robot, leaving no time to code software afterward.

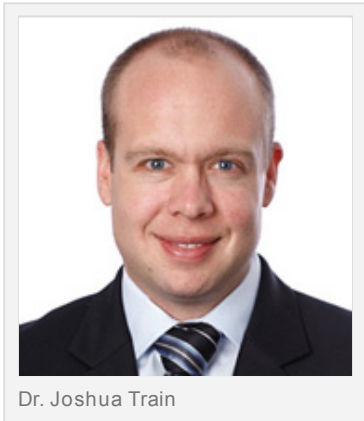
While the robot was under construction, and armed only with a sketch of what their robot would look like, the software team developed the necessary programming and tested their codes on a hodge-podge selection of motors and other various parts mounted to a board. Their test boards were all the information they had to go off of until the robot was built and wired weeks later.

One of the bigger challenges the software team faced was in the opening 15 seconds of each match when the robot had to operate on its own, using only LabVIEW autonomous codes without any assistance from the team's driver. Those 15 seconds could gain the teams much-desired advantages over their opponents if their robots were programmed well.

The Augustus Hawkins students' efforts yielded massive success the first day of the competition when their robot shot a ball into the upper goal autonomously.

Train Promoted to Principal Director

April 06, 2016



Dr. Joshua Train has been promoted to principal director, Computer Science and Technology Subdivision in the Computers and Software Division, Engineering and Technology Group (ETG).

In his new position, Train is providing technical leadership for advancing and applying technologies that support the development and acquisition of information systems.

As the information sciences focal point for the corporation, Train is continuing a strong research environment focused on future technology needs, coupled with direct support to solving nearer-term information systems issues. These technologies include high-performance and cloud computing, Web services and service-oriented architectures, enterprise computing environments, high-level network protocols, ground systems, quantum computing, data analytics, and future-generation computing.

Train joined Aerospace in 2007 as a member of the Network Systems Department in ETG. He spent two-and-a-half years in Chantilly supporting National Systems Group, where he led

activities in network systems modeling and prototyping. During this time, he defined the research gaps and designed multiple advanced testbeds to investigate new mission areas.

His most recent previous assignment was senior project leader for the Advanced Projects Directorate in El Segundo, where he supported the Space and Missile Systems Center by leading demonstration efforts as the chief segment engineer for a ground system in MILSATCOM. In this role, he led technical evaluations on ground sites and information systems, proposed lower risk and cost designs, and helped the customer successfully execute and integrate multiple ground segment contracts.

Train holds two patents and has a bachelor's degree in computer science from Biola University and a master's degree in electrical engineering and a Ph.D. in computer engineering, both from USC.

April 2016 Obituaries

by Elaine Young
April 04, 2016

Sincere sympathy is extended to the families of:

Herbert Babin, member of technical staff, hired Jan. 15, 1962, retired Aug. 1, 1994, died Feb. 16, 2016.
Patricia Baker, secretary administration, hired June 17, 1985, retired April 1, 1992, died Mar.8, 2016.
Oscar Burkhardt, member of administration staff, hired April 16, 1962, retired July 1, 1991, died, Mar. 3, 2016.
Patrick Dunn, member of technical staff, hired Jan. 24, 1963, retired Feb. 1, 1988, died Feb. 16, 2016.
Dorris Foltz, secretary, hired Aug. 14, 1967, retired Oct. 1, 1988, died Jan. 21, 2016.
Gilbert Friese, member of technical staff, hired Jan. 12, 1970, retired Aug. 1, 1991. died Oct. 26, 2015.
Jewel Gee, member of administration staff, hired Oct. 3, 1960, retired Nov. 1, 1992. died Feb. 16, 2016.
Bobby Grizzle, security supervisor, hired Dec. 2, 1976, retired Oct. 1, 1990, died Mar. 28, 2016.
Leo Kulakowski, principal director, hired, Mar. 21, 1962, retired Jan. 1, 1992. died Mar. 6, 2016.
Charles Melfi, project engineer, hired, Mar. 29, 1966, retired July 1, 1994, died, Feb. 24, 2016.
Lawrence Paulson, member of technical staff, hired May 15, 1961, retired June 1, 1982, died July 15, 2015.
Earl Reber, member of technical staff, hired June 30, 1970, retired Nov. 1, 1981, died Mar. 24, 2016.
Elizabeth Reed, office support, hired July 6, 1965, retired July 1, 1979, died Dec. 23, 2015.
James Shaffer, member of technical staff, hired Feb. 14, 1966, retired Jan. 1, 2010, died Feb. 24, 2016.
Tom Shiokari, member of technical staff, hired Dec. 28, 1960, retired Oct. 1, 1993, died Mar. 25, 2016.
Gregory Smith, member of technical staff, hired June 15, 1987, retired July 1, 2006, died Oct. 21, 2015.
Paul Stoll, member of technical staff, hired Sept. 8, 1980, retired Dec. 1, 1994, died Mar 8, 2016.
Alexandria Talladino, secretary administration, hired Mar. 26, 1973, retired July 1, 1991, died Mar. 6, 2016.
Roger Westcott, office of technical support, hired Sept. 20, 1965, retired April 1, 1990, died Aug. 23, 2015.

April 2016 Notes

by Elaine Young
April 04, 2016

Notes of appreciation to fellow employees and Aerospace for thoughtfulness and sympathy have been received from:

Andy Guillen, on the recent passing of his mother, Laura Guillen.
Vickie Guillen, on the recent passing of her mother-in-law, Laura Guillen.

To submit a note of appreciation to Aerospace, please contact Valerie Jackson in Human Resources at 310-336-0891.

April 2016 Anniversaries

by Elaine Young
April 05, 2016

40 Years

Engineering and Technology Group

Paul Zittel

Space Systems Group

Rosa McDonald

35

Engineering and Technology Group

Ray Russell

Operations and Support Group

Hi-Yuen Reeves

Space Systems Group

Daniel Ortiz, Deborah Nerio

30

Engineering and Technology Group

Frederick Fritzen

National Systems Group

Douglas Schulthess

25

Operations and Support Group

Peggy Zweben

Space Systems Group

Ralph Folsom

Systems Planning, Engineering, & Quality

Craig Lindsay

20

Enterprise Information Services

Ryan Kim

15

Engineering and Technology Group

Fatima Syed, James Roberts, Petras Karuza

Enterprise Information Services

Ginni Machamer

National Systems Group

Debra Smith, Joseph Sacchini, Matthew Koerner

Operations and Support Group

Laura Kim

Systems Planning, Engineering, & Quality

James McLeroy

10

Engineering and Technology Group

Gene Ma, J. Denise Castro-Bran, Jesse Sheinwald, Mark Altman, Sidney Yuan,

Yeh-Ching Tung

Enterprise Information Services

Gary Glass

Operations and Support Group

Leslie Jones

Space Systems Group

Elham Ghashghai, Eun-Sung Park, Laura Needels

5

Engineering and Technology Group

Adina Matchae, Christopher Folley, Kristine Ferrone, Michael Roberts, Penny Knofler, Robert Oberto

Enterprise Information Services

Joseph Fares, William Bowen

National Systems Group

Miroslav Kubinec, Stephen Williams

Office of the General Counsel and Secretary

Trung Kien Le

Operations and Support Group

Emily Lauzon

Space Systems Group

Edward Ortiz, William Kowalczyk

Systems Planning, Engineering, & Quality

John Ranaudo