



Home About Advertise Sponsors Careers Resume Articles Events Contact Subscribe Alt Format

CURRENT ISSUE

DIVERSITY/CAREERS

March 14, 2005



February/
March 05



- Hispanic EEs
- Homeland security
- Satellites & space
- Medical technology
- Data storage
- L-3 Link's Wilson
- ALMA - sky's no limit
- Alphonso Diaz
- EEL supplier diversity
- SHPE NTCC in Texas

- Supplier diversity
- Managing
- Diversity in action
- News & Views



CAREER OPPORTUNITIES



Changing technologies
OPPORTUNITIES IN THE SATELLITE AND SPACE INDUSTRIES

There's work for diverse techies in satellites and space

With shakeouts, consolidations and new, smaller companies arriving on the scene, the industry is moving toward a better bottom line

Looking beyond the domestic market, U.S. companies seek and find new opportunities with customers in developing nations

By Jon Boroshok
Contributing Editor

Much of today's satellite industry is deeply involved with telecom, networking and the Internet, as well as broadcasting and, of course, defense. But there's more in the sky than meets the eye.

"A drastic number of changes are in place for major players," says Andy Steinem. Steinem, who is CEO of executive search firm Dahl Morrow International (Leesburg, VA), is a past president of the Mid-Atlantic chapter of the Society of Satellite Professionals.

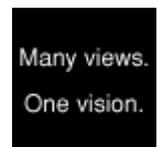
She points out that many of the largest and best-known satellite companies have been acquired by other companies in the last few years. Many have had rounds of layoffs, she says.

Still, she sees growth in the industry. The larger companies are working toward stability and bottom-line profitability, and "New, smaller companies are ramping up," she notes.

Looking beyond the domestic market, U.S. companies seek and find new opportunities with customers in the developing nations. Without the legacy land-based infrastructure that longer-established nations take for granted, many developing countries have turned to



Loral Skynet project director Donald Jefferson works with antennas and satellites.





wireless and satellite alternatives for telecom, high-speed Internet access and networking. By placing a premium on an understanding of cultures, customs and languages, this may open extra opportunities for a diverse satellite-industry workforce.

Promoting diversity

The T. Howard Foundation (Alexandria, VA) implements programs and offers scholarships aimed at increasing the talent pool, and improving employment opportunities for women and people of color in the "development, deployment and application of advanced satellite and telecom technologies."

The industry already shows reasonable female and minority representation. "I don't see any qualifiers except for skill sets," Steinem notes. The diverse techies interviewed for this article have established themselves as movers, reaching for the sky in several aspects of their exciting field.



Arturo A. Rosales directs special programs for Boeing Satellite Systems.

Bridget Neville: SVP of engineering and ops at PanAmSat



Bridget Neville

As SVP of engineering and operations for PanAmSat (Wilton, CT), Bridget Neville manages all the company's engineering and ops resources and functions. That includes design, implementation and maintenance of PanAmSat's worldwide, satellite-based communications network. Neville's responsibilities also cover ground infrastructure, cost savings, and "making sure the newest technology is working well," she says.

PanAmSat flies a fleet of twenty-four satellites. Since each one has a design life of fifteen years, and it takes more than two years to design and build a new one, the company is always in the process of upgrading its fleet. Neville has two satellites in development right now, slated to be used by cable broadcasters. Neville has a 1987 BSEE from the University of Notre Dame (South Bend, IN), an MSEE from the University of California-Los Angeles and a later MBA from UCLA's Anderson School. She got hooked on satellites right after college, working for Hughes Space and Communications in California. She spent seven years in pure engineering before adding management responsibilities at Hughes.

She has been involved with PanAmSat since 1996. From 1996 to 1998 she served as a consultant, providing project management of satellites under construction while working for the Philip A Rubin&Associates consulting firm in Washington, DC. She was officially hired as PanAmSat's engineering VP in 1998.

Neville's proudest accomplishment to date is improving the stability of PanAmSat's fleet, and thereby the level of service to customers. "We've rebuilt our quality and confidence," she says.

Her technical management duties are interesting, challenging and extremely important. But Neville admits that she occasionally misses being a pure engineer. "It's always fun to roll up your sleeves and get involved,"



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she says.

Rod Ragland directs software engineering for HNS

Rod Ragland is a director of software engineering at Hughes Network Systems, Inc (HNS, Germantown, MD), a subsidiary of the DirecTV Group, Inc. Ragland manages a team of fifteen engineers, developing software for the uplink interface for Directway, the HNS high-speed satellite Internet access service.

Ragland's group works with Performance Enhancement Proxies (PEP), a proprietary technique that boosts the satellite Internet signal to speeds comparable with terrestrial broadband. It's his job to make sure that return-link traffic is efficient, giving the customer good performance via bandwidth efficiency and data compression.

Ragland is clearly a satellite expert, but that's not how he imagined his career while growing up in Detroit, MI. He planned to be an architectural engineer, and started training for it by summer work with the Army Corps of Engineers while he was in high school.

But when he started at the University of Michigan he found that his favorite classes involved computers and circuits. He completed a BS in electrical and computer engineering in 1978, and earned an MSEE at the Georgia Institute of Technology the next year.

Then he went to work at Bell Labs' Indian Hill, IL facility, doing software and database development and dreaming of digital hardware. He went on to the Gould, Inc Research Center (Rolling Meadows, IL), where he got into hardware as well as software, including lots of digital signal processing and speech enhancement for fighter cockpits.

In May 1987 he moved to Lockheed Martin (Glen Burnie, MD), where he worked in digital signal processing, digital communication and voice compression. Then it was off to Comsat Laboratories (Clarksburg, MD) as technical supervisor for a group developing voice compression products and facsimile ops for the IntelSat and Inmarsat satellite systems.

Ragland joined HNS seven years ago. "The technology is challenging and we have an outstanding group of people," he says. "I find the international twist exciting."

He agrees that balancing work and life can be difficult. "The demands of the job are high, but management is responsive. This environment has been nurturing and supportive to me," he concludes.

Art Rosales runs special programs for Boeing Satellite Systems

Arturo A. Rosales directs special programs for Boeing Satellite Systems (El Segundo, CA). The company makes geosynchronous satellites used for communications and observations.

In twenty-five years with Boeing, Rosales has worked in systems engineering, strategic planning and program management. Special programs, his current task, involves executing government programs. He was previously responsible for the company's commercial and NASA programs based on the Boeing 601 satellite product line.



Arturo A.
Rosales

Rosales has also managed Boeing's 376 satellites, and served as VP and general manager of fixed and broadcast satellite services programs and VP of commercial programs for the company.

His interest in space began early. "From a very young age, I was fascinated by science fiction," he recalls with a laugh. He took his special interests with him to the Massachusetts Institute of Technology, where he completed a BS in aeronautical and astronautical engineering in 1969 and an MS in fluid mechanics and propulsion the next year.

"Working on new technology and new frontiers gives me a buzz," says Rosales. "The systems we make have changed the world in the last twenty-five years. For example, we now get real-time news broadcasts worldwide."

In addition to his work, Rosales is on the advisory board of the University of Texas Pan American, where 85 percent of the student body is Hispanic. He's a member of SHPE, and of Boeing's employee Hispanic network. And he helped create a partnership of Boeing and the UCLA medical school with a local school district, aimed at getting kids interested in math and science.

Rosales was recently named one of the country's fifty most important Hispanics in business and technology by Hispanic Engineer & Information Technology magazine. In 1998 he received a Hughes Electronics leadership award. And a dozen years ago, the Hispanic Engineer National Achievement Awards Conference (HENAAC) recognized him as one of its Hispanic engineers of the year.

Rosales is trying to get his workweek down to fifty hours or so. "It's too easy to get wrapped up and personally associated in satellite systems," he says. Like his growing satellite fleets, "Time flies."

Donald Jefferson: tech project director for Loral Skynet



Donald Jefferson

Donald Jefferson is technical project director for Loral Skynet (Hawley, PA). The company combines geosynchronous satellite communication services with high-speed fiber networks to transport high-quality data, voice and video around the globe. The content includes TV programming for home and business, data networking, telephony, business communications and more. Customers include Fortune 500 and other companies, ISPs, TV broadcasters and government agencies like the DOD.

His job, he says, involves engineering, building, designing and testing systems for satellites and their payloads. On the side, he takes responsibility for retrofitting and upgrading the antenna drive system.

He works with an internal RF system that the satellite control group uses to fly the satellites. "My job is to make it as easy as possible for them to do their jobs," he says. He's also lead engineer for the company's complete control group, and occasionally mentors interns.

Jefferson joined Loral Skynet in 1996. He enjoys designing things and seeing them work, and he likes the team approach at Skynet. "We've built some nice tools that we're pretty proud of," he says. "When stuff breaks, you figure out how to make it work again. That's always fun."

Jefferson completed his BS in physics at Morehouse College (Atlanta, GA) in 1980, and earned an MSEE at the University of Michigan.

His first job was with Bell Labs, and he has essentially been in communications ever since. His move to satellites "was more of an evolution than a conscious decision," he says. "Satellite is just another microwave link, but instead of horizontally, you point up."

Jefferson enjoys his status as a workaholic. "I don't really have much work/life balance," he says. "Maybe I wasn't smart enough to figure it out."

Timi Awuwoloye is a senior network engineer at Loral Skynet

Olurotimi Awuwoloye is a senior network engineer in Loral Skynet's network infrastructure group (Rockville, MD). A native of Nigeria, he's been in the U.S. for five years, and with Loral for two of them.



Olurotimi
Awuwoloye

After earning his EE at the University of Ife (Osun, Nigeria), Awuwoloye started working for Telenet, a Cisco partner. He was soon recruited by U.S. companies because of his Cisco skills, and worked for Lucent before joining Skynet. He recently became a Cisco Certified Internet Expert.

"Satellite has always been my first love," says Awuwoloye. He specialized in satellites in college, and also liked IP. His job at Skynet combines both. He provides voice and data services and IP over satellite. He works on the Internet side of things: customers connect via satellite, and Skynet runs it out on the Internet, he explains.

Most of his customers are international companies. "There's not a lot of IP satellite use in the U.S.," he explains.

He's learned to take the challenges of his job in stride. "I try to prepare ahead," he says. "At the end of the day, it doesn't look like that big a challenge."

Awuwoloye works six days a week, and when he's off the job he's often to be found in his home computer lab, where he has six PCs hooked up to the office. "Work is my play, too," he says. "It's not a stress for me at all."

Kristi Jaska is a tech director at ViaSat



Kristi Jaska

Kristi Jaska, technical director for ViaSat (Carlsbad, CA), has been with the company since its startup some seventeen years ago. Before that she worked with several of ViaSat's founders at a previous company.

She started on the road to a satellite career at Cornell University (Ithaca, NY), where she studied signal processing, communications, and what is now called IP networking, while earning her 1984 BSEE and 1985 MSEE. She also studied and worked with RF, networking, call setup protocols and signal processing layers, so satellite communications was a natural progression for her.

On the job, she's held various engineering, design and management positions, often in product startup. She's currently leading a design effort for SurfBeam, a system that will link Internet to home via a satellite

system.

Jaska enjoys working on front-end system engineering and organizing the development process. It's up to her to figure out the specs, analyze the design and determine what needs to be done. She's also involved with new business development, seeing if it makes financial sense for ViaSat to take on a project.

She enjoys the opportunities she's had to move around within the company. "I'm constantly learning new things," she says. "I like that about my job."

But she takes work/life balance very seriously. She recently returned to ViaSat after a sabbatical where she stayed home with her daughter for the year before she started kindergarten.

"If you're performing and doing a good job, you're a known entity to your employer," she says. As she expected, ViaSat was flexible on the matter.

Iris Bombelyn launches rockets for International Launch Services

Iris Fujiura Bombelyn is a program director for International Launch Services (ILS, McLean, VA). The company is a joint venture between Lockheed Martin in the U.S. and Khronichev Space Center in Russia. It manages satellite launches on Atlas and Proton rockets.



Iris Fujiura
Bombelyn

Right now Bombelyn is working on three active programs, as well as supporting new business efforts. The ILS account team is responsible for sales, contracting, licensing and regulatory compliance, and execution of launch services contracts.

As part of the team, Bombelyn heads up the launch services execution phase. She coordinates the pros that integrate the satellite with the launcher, and works to ensure mission success, legal and regulatory compliance and customer satisfaction.

Satellite launches are a natural fit for Bombelyn. "My favorite holiday is the Fourth of July because of the fireworks," she says. And on the job, of course, "I get to watch real rockets launch."

In 1983, when Bombelyn received her BS in engineering and digital design from Washington State University, a huge boom in defense spending was on. She found good jobs working for Martin Marietta Astronautics Group (Vandenberg Air Force Base, CA) and the Atlas Production segment of Lockheed Martin Astronautics Group (San Diego, CA).

Back then an eight-bit microprocessor was considered fast, she remembers. In 1983 Bombelyn was the first woman engineer to work at her team's Vandenberg launch pad, but she never felt any discrimination, she says.

Working in a mostly male environment, she got used to being "serious as a heart attack." Now she has more women colleagues, which gives her a chance to soften and modify her style.

Bombelyn is comfortable speaking Japanese, thanks to her mother's Japanese heritage. She also speaks Russian, which she learned to help her

interface with her international counterparts.

Bombelyn's increasing responsibilities have meant more work, as they usually do. She's been married for fourteen years, but has no children, so long hours are doable when necessary. While she loves her career, her long-term goal is "to retire before I'm too old to enjoy it," she says.

Jananda Hill is a senior staffer at Northrop Grumman Space



Jananda Hill

Software engineer Jananda Hill is a senior member of the ground systems tech staff in the production and supply chain organization of Northrop Grumman Space Technology (Redondo Beach, CA). It's her business to develop software for equipment used to conduct manufacturing tests on flight circuit boards.

The boards are used in spacecraft like the James Webb space telescope, the successor to the Hubble space telescope. "It's fulfilling to work on systems that are critically important to our nation and the scientific community," she says. Like so many of her colleagues, Hill loved Star Trek and Star Wars as a child. "As a result, I have always had a fascination with space exploration," she says. She became especially interested in the space industry after astronaut Mae Jemison burst onto the scene.

Hill attended the Massachusetts Institute of Technology on a Bell Labs scholarship that she won as valedictorian of her high school class in Atlanta, GA. She received her BS in computer science and engineering in 1997, and went on to a 2002 MSCS from Stanford University (Stanford, CA) in 2002.

Hill held several engineering positions at Lucent Technologies (North Andover, MA) from 1997 to 2001. She was responsible for embedded software development and integration for high-bandwidth optical networking systems.

She joined Northrop Grumman in January 2003. On this job, she says, "I am provided with growth opportunities. I have to continue to learn and sometimes take on responsibilities I've never had before. This is challenging and very rewarding."

It's also exciting for her to see a project she's working with appear in the news or a publication.

Last year Hill was honored as Black Engineer of the Year in the "most promising in industry" category. She also received her company's 2004 women of achievement award.

Hill enjoys the team-oriented environment at Northrop Grumman Space Technology. "The company also provides for flextime," she says. "This gives me a chance to volunteer as a math and SAT prep teacher and still have time for extracurricular activities."

Rene Del Valle: network engineer at Tachyon

Rene J. Del Valle is a network engineer II at Tachyon, Inc, a satellite broadband service provider. He has worked in Tachyon's San Diego, CA office since 2002.



Rene J. Del Valle

His work involves provisioning, which includes designing, implementing and tracking, customer orders for satellite customer premise equipment in the U.S. and Mexico. He works out customized solutions for remote networks and applications to optimize satellite performance.

He's also responsible for maintaining parts of the corporate network, such as the 802.11b wireless environment, T1 connectivity and client-based VPN tunneling for remote access. Most Tachyon customers, he says, use this solution to access a company's intranet from a remote site over the satellite link.

Born in Colombia and a former drill instructor in the U.S. Marines, Del Valle received his BS in computer applications and networks from Coleman College (San Diego, CA) in October 2000. He has a strong telecom background, including work at AT&T, Wam!Net and other companies as a network operating center engineer and tech support analyst.

He has always been interested in satellite technology, but says that people in networking tend to shy away from the strange, "big boxes in the sky." Del Valle himself has a more constructive view.

"I like to work with all the different networks. Interfacing with their environments is fun," he says. "I get to play with so many different technologies on a daily basis." Plus, it helps him keep current with new technology, he notes.

Fluent in Spanish, Del Valle was recruited to provide bilingual onsite and remote sales engineering and tech support to service partners and customers. "The terminology can be tricky," he says. "Some of it doesn't translate well."

Some folks involved in 24/7 maintenance have trouble getting away, but "Tachyon has a good rotation system," Del Valle says with appreciation. "Someone will be on call for glitches, while someone else gets a weekend off."

Alka Mohapatra: satellite ops at GTech

Alka Mohapatra is a project manager for GTech Corp (West Greenwich, RI). The company provides software, networks and services to power high-performance transaction processing for major customers on six continents. Its technology includes Enterprise Series central system architecture and a sophisticated IP-based satellite communications system.



Alka Mohapatra

GTech's core market is the lottery industry. It's also increasing its presence in commercial gaming technology and financial services transaction processing. Mohapatra received a BSEE with a concentration in computer engineering from the University of Rhode Island in 1989, and went to work for GTech. She liked satellite technology for the challenges of wireless communications and protocols.

Her current job is in the point of sales department, where she estimates budget, resources, hardware and software, scope, design architecture, and management required for major projects the company undertakes. She's a member of the Professional Management Institute.

But until recently, Mohapatra was directly involved with GTech's satellite operations.

She played a big role in network management: downloading new software, changing configurations remotely, doing remote diagnostics, receiving statistics and the like. She also developed an automated peaking system, where the computer provides RF signals to aid in the proper alignment of newly installed satellite dishes.

One of her proudest achievements, she recalls with pleasure, was her part on the team that brought satellite communications to the gaming industry. She was also involved in pilot-testing CDPD, Mobitex and GPRS technologies.

A number of GTech lottery and gaming customers use dedicated, IP-based satellite communications systems or private satellite networks. If a problem arises, Mohapatra is still called in to consult.

"The company is growing and the technology is always changing," she says. She stays current by taking classes at GTech's in-house learning facility. Online training is, of course, available 24/7.

GTech is wonderful for work/life balance, says Mohapatra. When her daughter was born, the company supplied tools and technology so she could work from home.

Then and now, Mohapatra really enjoys her work. And that's a good thing, she says, because "You're on the job a big chunk of your life.

D/C

Jon Boroshok is a freelance writer in Groton, MA.

OPPORTUNITIES IN THE SATELLITE AND SPACE INDUSTRIES

Check the latest openings at these diversity-minded companies.

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|--|--|
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| GTech Corp (West Greenwich, RI) www.gtech.com/careers | High-performance transaction processing |
| Harris Corp (Melbourne, FL) www.careers.harris.com | Communications equipment for commercial and government |

| | |
|---|--|
| Hughes Network Systems (Germantown, MD) www.hns.com | customers Broadband satellite network solutions for businesses, governments and consumers |
| ILC (Atlanta, GA) www.ilc.com | MaxView network control software for commercial and government applications |
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| L-3 Communications, Space & Navigation Division (Budd Lake NJ) www.L-3com.com/careers | Pointing, guidance, control, positioning and surveying equipment for satellites, land navigation, weapons, launch vehicles |
| Loral Skynet (Bedminster, NJ) www.loralskynet.com | Fixed satellite services; secure worldwide connectivity and communications |
| Northrop Grumman Space Technology (Redondo Beach, CA) careers.northropgrumman.com | Systems for space, defense and electronics technology |
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