

P E R S O N A L I T Y P R O F I L E

Station employee reflects program's international scope

By John Ira Petty

When Raphael "Ralph" Anthony Grau speaks with his mother, they might use English, Spanish – or both of the above with some Italian, French and Portuguese thrown in.

Sometimes they forget to switch back to just plain English when they speak to others, which has confused some supermarket checkout people.

Grau is EEE Parts Lead in the International Space Station Program. EEE stands for electrical, electronic and electromechanical parts, "basically switches, relays, microcircuits," he said. "Every computer chip, every signal processing chip has to get my blessing for space station. The parts count has got to be in the hundreds of thousands."

Grau's multicultural, multinational background is in many ways what the Americas are about. It certainly reflects the diversity of the JSC workforce.

Grau's first name is Spanish, the middle name Italian, and last name German. "My dad was born in Cuba; his parents were from Spain. Generations before that the family was German. My mom was born in Brazil; her grandparents were Italian."

The language abilities have come in handy. For example, he regularly volunteers to do interviews with media representatives from Spanish-speaking countries. He also worked at the JSC booth at the State Fair of Texas for the Technology Transfer Office. Smiling, enthusiastic and outgoing, he handles those duties well.

At age 34, Grau has been at the NASA complex since May 1990. He worked for Ford Aerospace for three months, then got an invitation to join NASA.

He has been assigned to the International Space Station during his



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Raphael "Ralph" Anthony Grau, EEE parts lead in the International Space Station Program, displays some of the many electrical components that he has examined.

entire NASA career. He began with reliability engineering for guidance navigation; from there he worked in maintainability, safety, quality assurance and now EEE.

It has been a growing process. "When you work for safety and quality assurance you develop a good, broad-horizon system picture, because it all has to work together. Everything has to be reliable and, especially, safe. I've worked propulsion, thermal systems, micro-meteor shielding systems, data management systems— so I've had broad experience with all the core systems that make the space station tick."

Grau was born in Baltimore. His father was in petrochemical construction. "Build it and move was the family motto," he

said. The family did move, 26 times in 20 years. Grau spent 11 years in Latin America and two years in Australia.

He earned a bachelor's degree in electrical engineering from Texas A&M University, then went to work in Sugar Land for a company doing energy management systems for power companies.

Grau got tired of that after about four years. Space fascinated Grau, so he applied to Ford Aerospace.

About a year after he graduated from A&M (a year during which he took a semester-long welding class for practical and artistic applications) he started evening classes at the University of Houston-Clear Lake. In 1992 he received a master's in business administration.

"I wanted to get into the project management side," he said. "My job isn't so technical, as long as things don't break. But if they do break, I've got to understand why."

His job basically is to shake out the bugs before equipment gets on orbit.

For Grau, there is life outside the space program. Until about three years ago he was active in water skiing, snow skiing, personal watercraft, dirt bikes and more. Then he ruptured a disc in his back.

Surgery was successful, but hobbies changed. Now he builds his own computers and home theater systems.

He also enjoys inside-the-loop night life. He lives in the Greenway Plaza area, "a really vibrant part of town." Being out and about relieves the stress. "We're in a very stressful program. You need to manage stress before it eats you alive."

With the stress comes satisfaction. Grau says he believes there's a renewal of interest in space, "especially as we start pushing more commercialization. I think we really need to be agents of change and facilitate private industry getting into space – setting up the infrastructure and the knowhow to do it safely."

Space has become multinational. The Phase 1 shuttle-Mir program is an example of the benefits. Mir's contributions to the space station program were substantial.

"We don't normally think of gaining perspective," Grau said, "It helps so much – just taking a step sideways and looking at it with a different set of eyes and a different set of rules."

"Space isn't a single country's endeavor anymore. It has to be multinational, because of economics and technical factors. We all have our strengths we bring to the table."

Besides, Grau said, "Some of our differences are so artificial." ■

**International Partners Office provides worldwide liaison**

The International Partners Office at JSC was established five years ago to serve as a focal point in managing all of the programmatic issues associated with keeping the International Space Station program on track.

"We were not brought into existence to solve technical problems but to define and resolve programmatic issues such as resource sharing and barter agreements," said Craig Stencil, manager of the International Partners Office.

Representatives stationed at JSC and overseas serve as liaisons between the center and countries around the world. The office has a permanent representative in the Netherlands (European Space Agency), Italy (Agenzia Spaziale Italiana/Alenia Aerospazio), Japan (National Space Development Agency of Japan), Canada (Canadian Space Agency), Brazil (National Institute for Space Research) and Moscow (Russian Space Agency). Similarly, the Russian Space Agency, Canadian Space Agency, Italian Space Agency, the National Space

Development Agency of Japan and ESA have local representatives at JSC. Brazil, a recent addition to the ISS program, plans to have a full-time representative here soon.

Through this network of worldwide communication, the office is able to perform one of its primary missions: keeping JSC's ISS program manager aware of all current issues affecting the partners.

Representatives stationed overseas are responsible for ensuring that international partners build ISS elements/equipment to meet requirements. In addition, NASA has transferred production responsibility for several elements to international partners/participants. However, NASA retains responsibility for ensuring that the elements are built to meet specifications. For example, as a result of barter agreements reached with ESA, the U.S. is going to lift to orbit the ESA-built Columbus Orbital Facility. ESA, in return, is working with the Italian Space Agency to supply two elements – Nodes 2 & 3 – for

ISS. The Nodes are outfitted with U.S.-sourced components for which NASA retains responsibility and oversight.

Other projects that the office manages involve all station partners and participants. The partners recently reached an agreement on cost sharing, an effort that took years to achieve. To reach this accord, the partners had to develop a mechanism to share the expenses associated with operating on-orbit station components.

"Determining the fair share of each country's piece of the station was a complex exercise because contributions vary across nations," said Stencil. "We had to estimate what we think it will cost to operate the station, and then we had to decide what is common to everybody and, lastly, we had to reach a fair percentage for each partner and participant."

In addition to working with international partners on a daily basis, the office maintains close coordination with NASA Headquarters. Headquarters is tasked with being the final arbiter in negotiating inter-government agreements

and memorandums of understanding, but the International Partners Office sets the requirements for these agreements.

The International Partners Office works with its HQ counterpart, the Space Flight Division of the Office of External Relations, on a daily basis. Interaction among the offices includes providing support in response to Congressional inquiries concerning the International Space Station.

With all of the early partner/participant contributions on schedule for delivery, the office is now turning its attention to working issues associated with launching the station.

"Our primary challenge now is to anticipate potential threats to development activities that may become problematic," said Stencil. "These may include countries that challenge requirements or ask for more money to deal with new requirements. There are no guarantees with any development program, but I think we are starting to turn the corner to launching the station." ■