Electrical Engineering Alumna who Grew Up Around Rockets Is Now a Leader in Aerospace

Published in Creating Tomorrow – Oct. 15, 2016 – Jessica Gregory remembers looking up on her way to elementary school and seeing rockets blaze into the morning skies. She was raised near Santa Maria, Calif., in the 1980s at a time when rocket launches from nearby Vandenberg Air Force Base were a common sight.

She didn’t know it at the time, but Gregory would become a part of the space industry she grew up around and would lead a team of engineers who are building a spacecraft that will reignite American space exploration.

ECE alumna Jessica Gregory (BS '04, MS '10) works as a systems engineer at Orbital ATK. (Photo: Thomas Evans)

Gregory was born in Logan, Utah, while her father was attending USU for a degree in civil engineering. He later got a job in the nuclear industry and moved his family to Santa Maria where the space industry was expanding rapidly.

Plans were in place to build a space shuttle launch pad at Vandenberg, and business in that area was booming. With so many people moving to the region, her father started a side business renting furniture and home goods to incoming families. That little side business eventually became the family’s main income and the Gregorys were doing well. But all that changed in January 1986 when the Challenger shuttle exploded, bringing the space industry to an abrupt halt. After business in Santa Maria dried up, the Gregorys moved back to their home state of Idaho.
Life went on, and after starting college at USU, Gregory considered several career paths including culinary arts. But the math whiz inside her knew she could also succeed in a technical field, and by 2001 she had decided to pursue a degree in electrical engineering.

Near the end of her junior year, she was looking for an opportunity to get more involved in engineering research. A mentor named Sue Ellen Haupt, who oversaw the student chapter of the Society of Women Engineers, told Gregory to apply for an undergraduate research opportunity in space sciences. Through a twist of luck, she was selected for a 10-week research grant working under ECE Professor Dr. Charles Swenson who specializes in space science instrumentation.

"I basically walked into his office and asked if he had anything for me to do," she recalled. "He put me to work at the Space Dynamics Lab working on systems that measure atomic oxygen in the ionosphere."

She spent the next 10 weeks learning about the ionosphere and how it affects everything from satellite communications to the national power grid. She said she liked the topic so much she chose it for her senior design project and was later hired to work with Swenson on a NASA sounding rocket mission.

"Dr. Swenson told me I’d learned so much he didn’t want me to leave," she said. "He asked me to be part of a mission to launch a sounding rocket over a tropical storm to see how major weather events affect the upper ionosphere."

Swenson needed a payload that could blast into space and take a series of electrical measurements using technology that hadn’t been developed yet.

"We started by standing in front of a whiteboard and scratching out ideas on how we could collect all this data," said Gregory. "It was pretty comprehensive. We took it from a conceptual design all the way through functional integration ready for flight on a sounding rocket."
The mission was dubbed NASA ‘STORMS’ and, after a successful launch from Wallops Flight Facility in Virginia in 2007, provided Swenson and fellow researchers with new data about the makeup and behavior of the ionosphere. Swenson credits Gregory for helping make the mission successful.

“She was responsible for the entire integration of the USU instruments to the payload and we relied on her for the success of the program,” he said. “Jessica was an excellent graduate student and wrote a very effective MS thesis on rocket probes for measuring electric fields in the space environment.”

Gregory graduated with a BS degree in electrical engineering in 2004 and started working for what is now Orbital ATK just two years later thanks in part to her association with current SWE advisor Nina Glaittii. In 2010 she earned a master’s degree in electrical engineering and today is a systems engineer for Orbital ATK, managing the NASA requirements that influence the design of SLS – the spacecraft that will replace the space shuttle.

She says her life so far has been a series of fortunate opportunities that pointed her toward a career in space.

“If it wasn’t for my association with Dr. Haupt and with Nina, I wouldn’t have had my undergrad research experience and I wouldn’t have applied at ATK,” she added. “I didn’t know it until I started working in this business, but my entire life has been influenced by the space industry.”

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