From Barrier Buster to Ozone Buster

Boeing Employee Honored as First Woman Chemistry Graduate at Georgia Tech

Once there was a young woman in Georgia who loved science. She earned an academic scholarship and was accepted at one of the country's most rigorous, prestigious technical universities -- Georgia Institute of Technology. She followed the chemistry curriculum, received good grades, and in her third year applied to be a chemistry major.

Jean Ray in the Boeing Materials Technology laboratory using a Fourier Transform Infrared Spectrometer equipped with a microscope. Jean was the first woman to graduate with a degree in chemistry from the Georgia Institute of Technology.

But one small detail stood in her way: the college catalogue clearly stated that women were only allowed to major in applied mathematics, engineering and architecture. Her change-of-major form had been approved because all students in good standing were routinely approved, and because only the applicant's first and middle initials were on the forms, disguising her gender. There would be a battle ahead once someone realized a woman had sneaked through the system.

This determined young woman, Jean Ray, is now a chemist at Boeing Commercial Airplanes' Boeing Materials Technology, in the Fluids and Lubricants Group. She was recently honored by the Georgia Tech College of Science and Business as the first woman chemistry graduate in their "50 Years of Women at Tech" celebration.

"The head of the Chemistry Department summoned me to his office and reminded me that women were not allowed to major in chemistry," Jean said. "He said this was so Georgia Tech did not duplicate programs available elsewhere in the state university system."

At the time -- 1960-65 -- the school had just one women's dormitory that housed only 12 freshmen who were required to live either in the dorm or at home. This, and the limited number of majors available to women, automatically constrained the number of women who could attend Georgia Tech. Jean was one of only about 50 women out of 7,000 students total on the campus.

For her first two years, Jean was officially registered for a major in chemical engineering, but was following the chemistry major curriculum.

"It's not that they didn't have room for women in the classes -- there was no barrier to women taking any chemistry class," Jean said. "But, even if I did all the required coursework, I still could not be granted a chemistry degree."

Jean easily could have solved the problem by transferring to another school. But at that time, Tech was the only Georgia state university that required the American Chemical Society's approved curriculum and prepared students for graduate school.

"It was a superior education -- a degree from another state school was just not as good," Jean said. "Why shouldn't I be able to attend an accredited program and get the same education as the men?"

Furthermore, financial limitations made it impossible for Jean to attend private school. Jean's scholarship covered only tuition and books -- a grand total of $400 per year -- and this was only enough for a state university.

"Plus, at Tech I could live at home. If I transferred elsewhere, I would have had to live in a dorm," she said.

Not one to be deterred, Jean spent spring break of 1962 in the Tech library reviewing all the state university chemistry curriculums. She made a list comparing the titles and number of chemistry classes needed to get a bachelor of science chemistry degree.

"My next step was to write the board of regents requesting admission to the Georgia Tech chemistry department," Jean said. "I stated I was a student in good standing, on scholarship, had routine approval to change my major, and cited the unavailability of equivalent chemical education in great detail."

Her reasoning was based on the fact that Georgia Tech had clear-cut curriculum requirements that could not be met at other state schools.

Several months later, Jean received a reply from the board, complimenting the well-written letter and the "maturity of the writer." They also asked if Jean had written the letter herself.

Her answer was short, simple and not-so-subtle in its implications. "Yes, I researched and wrote the letter... however, I discussed the issue with my cousin, Tim, who is a lawyer," Jean said.

"I was influenced in part by the court cases going on at that time to legally desegregate southern colleges and schools," Jean said.

Jean will never know if it was her persuasive letter-writing or the mention of cousin Tim the lawyer that turned things in her

favor, but in January 1963, the board of regents notified her that an exception would be made in her case, and she was allowed to major in chemistry.

"I immediately shared the details of my method with my Alpha Xi Delta sorority sisters and others who wanted to transfer to a 'forbidden' major," Jean said. "Soon after that, the school approved three women for physics, biology and psychology majors, again as exceptions to the rule."

It wasn't until the 1966-67 academic year that all departments were open to women, and a larger women's dormitory was made available. Today, 28 percent of the students at Georgia Institute of Technology are women.

Three Tech women graduates have become astronauts, including former Boeing employee Sandra Magnus, who went into orbit Oct. 7 as one of six crewmembers aboard the Space Shuttle Atlantis.

This year, before the Georgia Tech Homecoming game on Oct. 26, the College of Science and Business held a forum where Jean was honored as the first woman chemistry graduate. She also gave a presentation and participated in a panel discussion about her experiences at Tech and as a scientist in industry.

"I was surprised and delighted when Tech contacted me about being recognized as part of their 'First Ladies' celebration," Jean said. "It was wonderful to visit with old friends I haven't seen in many years and see the greatly expanded campus with so many women students."

At the time, Jean didn't think of herself as a trailblazer.

"The steps I took were just something I had to do to meet my personal goal of becoming a chemist," she said.

But now she recognizes the importance of her actions.

"Being the first woman chemistry graduate is an honor, but causing a major change in Tech's system to the benefit of others is what makes my family and me most proud," Jean said.

Jean has been a chemist at Boeing since 1991. She develops, tests and analyzes jet fuels, hydraulic fluids, greases and oils.

From 1999 to 2000, Jean was part of the 777 "Ozone Buster Team" that performed a rapid development and testing of the 777 ozone converter system. The team consisted of experts from Boeing's commercial division and Honeywell's technical center in Des Plaines, Ill., and their results produced a multimillion dollar savings for both Boeing and Honeywell.

The team took first place in the manufacturing category in the 2000 Quality Cup competition, a yearly engineering competition sponsored by USA Today and the Rochester Institute of Technology. The Quality Cup spotlights engineering accomplishments that deserve national attention.

Jean has no hard feelings toward Georgia Tech, and in fact she feels the school offered her many leadership opportunities she might not have received elsewhere.

"I also got very comfortable working with men on projects at Tech," she said. "Being the only female in class was good training. I had to learn to speak up and be heard in predominantly male working environments."

Science definitely runs in Jean's family. Her husband also is a scientist; their daughter is a physical scientist working at the National Oceanic and Atmospheric Administration while completing her PhD in geography; and their son is a computer systems administrator and musician.

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