

# *Reflections of Joseph "Guy" Thibodaux, Jr.*

I arrived at LSU in September 1938, a youngster not quite 16 years old, with few social skills and hardly dry behind the ears with the intention of studying chemical engineering. My father's salary was \$165 per month and he had a small inheritance of \$300 upon his father's death. We learned that tuition at LSU was \$62 a year, room rent was \$6 a month and that I could eat three meals a day for \$15 a month. I received a National Youth Association Scholarship with the help of one of Senator Long's associates, Earle Christenberry, which paid 30 cents an hour for 50 hours of work – with that covering all of my meals, I was off to LSU.

It was 1938 and probably the lowest ebb in the University's history. Following Senator Long's assassination, numerous state and university officials were under indictment for various forms of criminal activity. The president of the University was caught trying to escape to Canada with the university airplane. The governor was going to Angola in a striped suit and others committed suicide rather than face the disgrace. The University

was about to lose its accreditation, and differences of opinion about the curriculum between the head of the Chemical Engineering Department and the dean of Engineering made it uncertain whether, upon graduation, I would receive a degree from the Engineering College or the College of Pure and Applied Sciences. This was not the recipe for a great start.

Fortunately, this had nothing to do with the qualifications and abilities of the outstanding faculty, as I was to learn over the next four years. One never knew what type of industry and organization they would work for, therefore my professors laid out a curriculum and concentrated on teaching me all of the fundamentals which would allow me to work in any industry. The professors in the various departments provided me with a solid foundation in inorganic, organic and physical chemistry, physics, electricity, statics and mechanics, mathematics, chemical thermodynamics and chemical engineering unit operations. In May 1942, I received a ROTC Commission, but could not graduate because I needed to complete a course in

Chemical Engineering Plant Design as my work schedule did not permit me to take that course when it normally was offered. I roomed with another student, Max Faget, who was enrolled in mechanical engineering with an aeronautical option. We soon discovered that we were students with similar outlooks. We were more interested in methodology than procedures, in learning as well as being taught, and abhorred learning by rote. We rebelled at doing things that could not be explained by logic. During finals while other students were cramming for exams we were shooting snooker and attending movies on Chimes Street. I don't think we ever made the honor roll.

We were about the same size and build, enjoyed wrestling, weight lifting, running and playing handball. We decided that if we survived the war, we would get together and look for a job. We kept in touch while he was a Naval officer patrolling the South Pacific in a submarine and I was an Army officer building airports, roads and bridges in the rain forests of North and Central Burma. We were separated from the service about the same time. Then, one day in June 1946 the phone rang and Max was on the line. "Let's go look for a job," he said, "my dad says I can have his car." Our first stop was Langley Field, Virginia, home of the Langley Aeronautical Research Laboratory of the National Advisory Committee for Aeronautics (NACA) across from Norfolk where Max had gone to high school. We were interviewed by Paul Purser, an aeronautical engineer and LSU graduate who had graduated three years before us and had worked there all during the war. He offered Max a job working on ram jets and asked what I did. I told him I was a chemical engineer and had no idea where I would fit in an aeronautical research organization. He said they needed someone to work in liquid propellant rockets

and it sounded like I would fit in there, so he offered me a job. I think I was the only chemical engineer among the 3,200 employees at the center.

After working there six months, we realized that NACA was the finest organization ever created by the United States government. It had the most talented research engineers, designers, technicians, craftsmen, and administrative personnel I have ever encountered and it was a classless society where every member of the team was an equal contributor to the success of NACA's mission. We worked together as a team, as I had learned at LSU, when we were conducting experiments using various pieces of equipment to study unit operations. Rockets were nothing more than a chemical process plant which involved all phases of chemistry, chemical thermodynamics, heat transfer, fluid flow, and materials. As I later became involved in manufacturing them, my basic knowledge of crushing and grinding, classification, polymer chemistry, catalysts, curing, reaction exotherms and endotherms, and rheology all came into play.

After that I worked in so many fields – fuel cells, radio isotope thermoelectric generators, batteries, chemical power generation, supercritical cryogenic storage and management systems, capillary screen "zero g" propellant management systems, pyrotechnics and explosives, solar power generation, active and passive cooling systems, catalytic decomposition beds, hydraulics, space radiation effects on materials, oxidation resistant materials, and others too numerous to mention. Because of what I learned at LSU, I was never hesitant to tackle any of those disciplines and fields, confident that I could make a contribution in all of them. My basic knowledge allowed me to communicate with all the bright young

specialists who had far more detailed knowledge in those fields than I had. I may not have known all the answers, but I knew what questions to ask.

I learned organization, management and motivation skills from the brilliant leaders at NACA by observing what they did. They provided me with the finest tools and facilities and equipment; they also provided moral support and promoted team work, respect for everyone on the team, responsibility to one's self and the team, courage of one's convictions, and willingness to share one's expertise and experience. There was no room for selfishness or inflated egos. Your rewards were respect of the other team members as well as everyone else at the center. Whatever respect you received was not conferred, it was earned. Your ideas were converted into physical models on which you conducted tests, as you were provided with the best test facilities, data acquisition systems, and data reduction facilities available. You analyzed the data and wrote the final reports. It was truly a "cradle to grave operation."

Throughout my career, I followed a few simple philosophies. From the Dalai Lama, I learned that "great achievements involve great risks" and that it was necessary to "learn the rules so you can break them carefully." From the motto of the Russian Academy of Sciences, which was plagiarized from Voltaire, I recalled "better is enemy of good" and "don't overdo it." From "Dutch" Kindelberger, founder of North American Aviation on organizations, I remembered "if it ain't broke, don't fix it." Finally from my own observations, I thought "there's little joy to success if you couldn't fail."

I feel privileged to have worked at NACA and on the creation of NASA using NACA as its cadre. I also am blessed to have had the opportunity to participate in man's adventure in

landing on the moon and exploring the universe. I am indebted to my parents who encouraged me to go to college and made the sacrifices to keep me there. I am indebted to all of the talented professors at LSU who shared their knowledge with me, to the brilliant engineers and managers at NACA who trusted, encouraged, and allowed me to grow, and to my wife of 57 years who managed the affairs of the family and the education of the children during the days, nights, and weekends I was traveling throughout the United States, Europe, and Asia, and even for my mental absences while at home where my mind was working on the problems which required solutions. To my children who survived the teenage rebellions of the terrible 60's and became useful members of society and excelled in their chosen fields of work, I also am thankful. I've had a fascinating career beyond imagination. Thank you for feeling I deserve to be chosen for this honor, placed in the company of so many distinguished recipients, especially one of the first so honored, my old college roommate Max Faget, without whom I may have never been able to work with the space program. After all it was on that job hunt with Max that Paul Purser, who hired Max and me, recognized that I might have something to offer an aeronautical research organization.