

NASA lead test director's life filled with ups and downs

John Yaniec lives the life that we all dreamed of when we were youngsters. For him, every week is one large science fair.



John Yaniec

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John Yaniec is the NASA lead test director at Ellington Field for the Reduced Gravity Program. He schedules experiments to be flown aboard the "Weightless Wonder," NASA's KC-135 aircraft. He manages the schedule with all NASA centers, manages the budget for the KC-135 program, and briefs senior management on the status of the program.

Yaniec and his staff supervise the loading of all experiments and the boarding of all researchers onto the plane and ensure that all goes safely aboard the KC-135.

Yaniec's job requires a unique combination of technical, organizational, and people skills; a strong physical constitution wouldn't hurt either.

"A technical background is an absolute necessity for this job," said Yaniec. "We deal with a number of experiments and our primary job is safety on this aircraft. As a

Quarles; aircraft engineering co-op Brian Barnett; and KC-135 lead flight engineer John Lamb. It is a team effort all the way.

Yaniec and a support team of engineers read through the test equipment data packages before the experiments fly on the aircraft at JSC or when the KC-135 is deployed to Glenn Research Center (GRC),

making sure that they have all the answers to their safety questions and concerns resolved.

Flight operations of the KC-135 are not restricted to just JSC. The aircraft deploys to GRC six or seven weeks per year to support the microgravity researcher operations there.

During flight weeks, Yaniec manages the experiments as they come in and works with

the researchers as they prepare for their flights. He leads the test readiness reviews (TRR) for all packages scheduled to fly during the week. The TRR meetings are held on Monday mornings at Ellington Field. During the review, the team takes a final look at the experiment before it is loaded onto the aircraft to make sure that it is safe to fly.

Once the TRR is completed, the loading process begins. Loading the aircraft with the experiments can take a couple of hours or all day, depending on the number and size of the experiments.

On flight days, typically Tuesday through Friday, preparations include issuing flight suits, holding safety and morning pre-flight briefings, making the final changes to the manifest, preparing the aircraft's weights and balances, and ensuring that all individuals are approved to board the aircraft for flight. Once aboard the aircraft, a final check is done of the aircraft cabin area, ensuring that all experiments are safely secured and ready for flight.

During pre-flight briefings held just before boarding the aircraft, a review of the weather, aircraft status, and researchers'

needs for parabola requirements (types and increments of parabolas) is given for all researchers and personnel involved with the day's flight. Typical flights, which last

approximately 90 to 120 minutes, include four sets of 10 parabolas, each set separated by a 2- or 3-minute turn. But according to Yaniec, there are sometimes deviations, and that's one reason why the pre-flight briefings are held. "To conduct their experiments properly, some researchers require simulations of lunar, Martian, or other gravity conditions between -0.1 g and 1 g."

The typical flight crew includes a pilot, copilot, flight engineer, and two test directors. Five to seven experiments are usually flown per flight.

Once airborne, Yaniec and the other test director advise researchers when zero-g conditions begin and issue a warning just before the pullout maneuver begins with its resulting 1.8-g force. Safety is always his overriding concern.

"As a test director, my primary job is safety," said Yaniec. "Once we board the aircraft, we go through the aircraft to make sure that everything is secure and that everyone and everything is ready for takeoff. Once we are airborne, our primary job is the safety of the researchers onboard."

The KC-135 provides a cost-effective means for researchers to do their research in a microgravity environment without having to incur the high cost of using the space shuttle. "We can provide the microgravity environment, 40 to 50 times a flight, four days a week, and the researchers can fly with their experiments. They can go home, do their analysis, and draw their conclusions," said Yaniec.

However, some experiments that are initially flown aboard the KC-135 are destined to be flown aboard the space shuttle or the space station because longer microgravity durations are needed to run the experiment. Even for those experiments that will be flown aboard the space shuttle or the space station, the KC-135 serves as a valuable testbed.

"We can test the flight hardware before it goes up to orbit, and the researchers can come onboard with the astronaut crews who will be conducting their experiments aboard the space shuttle," said Yaniec. "They can work together, and the astronauts can give the researchers some valuable advice as to how to design their experiments to ensure the best chance of success on orbit."

The KC-135 is also used in a NASA-funded program, the Reduced Gravity Student Flight Opportunities Program, which selects experiments proposed by students and flies the student researchers with their experiment. There are currently three student programs: a nationwide university program, a statewide community college program, and a statewide high school program.

For many, the opportunity to participate in this program has been a life-changing experience. "We have received some comments from high school and college students noting how their experiences participating in the program, either as flight crewmembers or as members of ground crews, impacted their career paths," said Yaniec. "Many now want a job with NASA, and they see now that their education is important. For those in high school especially, they see how important math and science are to their future development. They can see a means to an end now, believing that if they do study hard, perhaps they can eventually get a job with NASA."

Yaniec joined NASA at the Lewis Research Center (now GRC) in 1991, working on logistics for the electrical power system for Space Station Freedom. In 1993, when LRC had an opening for someone with organizational skills to organize the DC-9 microgravity program, he applied and got the job. He worked with the DC-9 program

from aircraft outfitting until it ended in July 1997.

Yaniec served as the KC-135 aircraft experiment coordinator for GRC-based experiments until September 1998, when he transferred to JSC to become a test director for the KC-135. He was named lead test director for the KC-135 program last June.

He has flown

almost 18,000 parabolas – more than 7,000 on the DC-9 and 10,729 on the KC-135 – and has logged about 1,100 hours of flying time on the two aircraft since he started with the DC-9 in 1994.

Yaniec will celebrate 30 years of government service this month, having spent 21 years with the Air Force both as a GI and civilian employee before joining NASA. ■



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Not all experiments flown on the KC-135 are bolted to the floor. John Yaniec and David Thiessen (Washington State University) free float the Microgravity Sciences Experiment, "Capillary Bridge Active and Passive Stabilization Experiment," from Glenn Research Center.

test director, my primary duty is ensuring that the operation is safe both on the ground and in the air. And being a good people person is also important because we work with people ranging from high school students to multi-degreed individuals from around the world. Also, having a strong stomach to be able to do 40 to 50 parabolas per flight, four days a week, 30 to 35 weeks a year on a continuous basis helps."

Astronauts in training, students, scientists across the NASA centers, and researchers who have grants or are funded by NASA or other government agencies fly aboard the KC-135. Researchers fly experiments in the areas of fluid physics, life sciences, combustion, materials sciences, and engineering development for both the shuttle and the International Space Station. Research coordinators at Glenn Research Center, Marshall Space Flight Center, and Johnson Space Center coordinate all of the experiments to be flown aboard the KC-135.

Yaniec credits the success of the Reduced Gravity Office to his staff – test directors John R. Bain, Andrew Nash and Troy Whitney; administrative aide Brandy



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KC-135 Test Directors John Bain and John Yaniec assist the University of Michigan team (Liquid Droplet Radiator Pointing Experiment II) during the College Student Flight Campaign this past spring.