



The Oklahoma Aviator

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Oklahoma Aviator, 32432 S. Skyline Drive, Cookson, OK 74427

Oklahoma Students Join in Live Broadcast with Int'l Space Station Crew

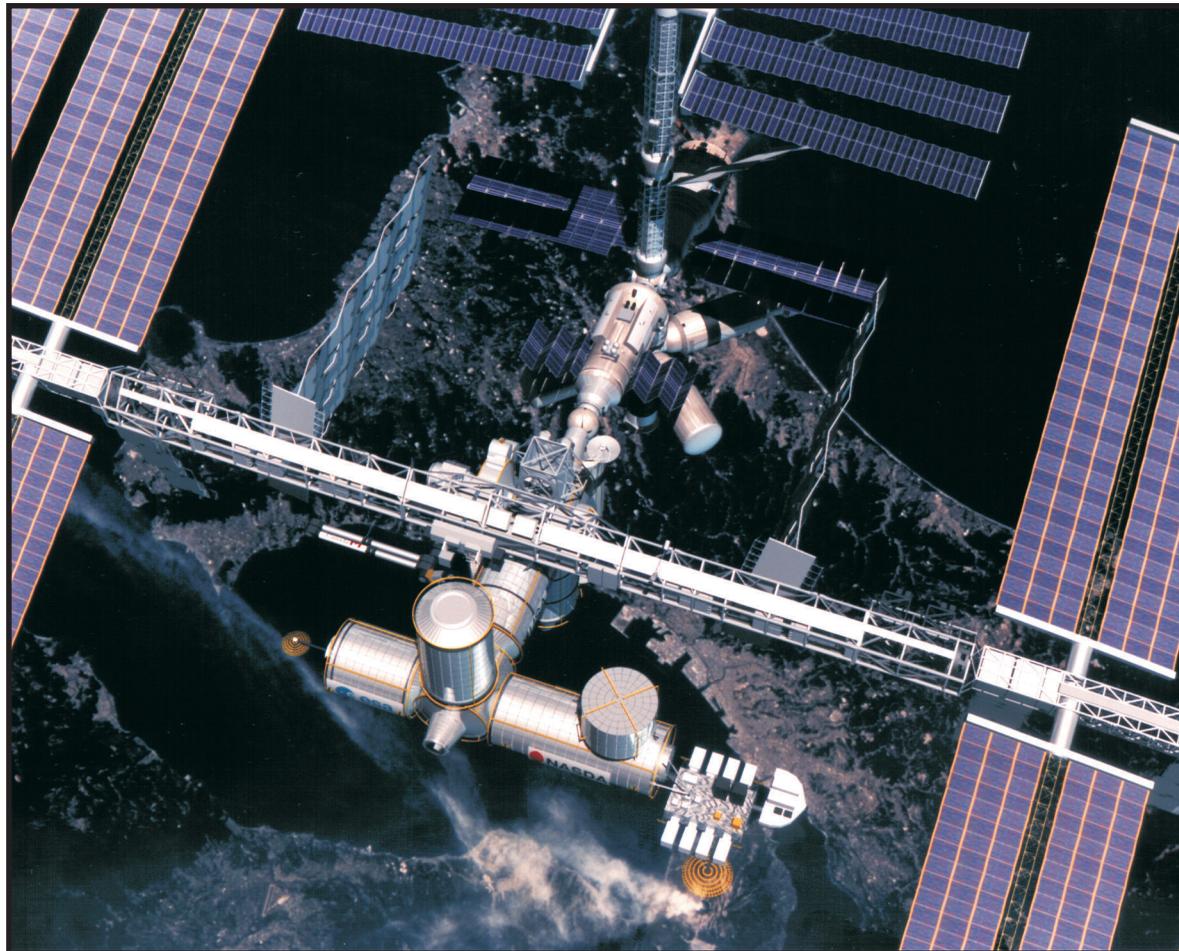
by **Barbara Huffman**

The scene was Tulsa Technology Center's main auditorium at the Riverside Airport campus in Tulsa on July 17. About 300 people were gathered to participate in the Tulsa Aviation Education Alliance's presentation of an interactive live broadcast with the two-person "Expedition Seven" astronaut crew of the International Space Station (ISS).

The live broadcast, over six months in planning and one of only three such events conducted across the country, was to be the crowning event of the Alliance's Science and Engineering Careers Academy (SECA), a weeklong series of classes aimed at high school sophomores, juniors, and seniors, designed to familiarize them with careers available in science and engineering. It is also, on a broader scope, part of a national initiative by NASA to interest students in pursuing careers in science or engineering.

Attending from NASA were Col. Charles Precourt, an astronaut himself and current Deputy Director of the ISS Program and Dr. Merri Sanchez, Expedition Seven Manager.

The idea for the live broad-



cast was born while TCC was working on another program with NASA. NASA officials bemoaned the fact that so few young people graduate from college in engineering and science and asked if there was any-

thing TCC could do to help. The answer was yes, TCC could sponsor a science and engineering camp.

Later, Col. Precourt, Julia Clay of Senator Jim Inhofe's office, and Jim O'Neal of Boeing-Tulsa—manufacturers of several portions of the ISS—were having lunch. At one point, Col. Precourt picked up his cell phone and placed a call directly to the ISS, speaking with one of the astronauts in residence. Amazed, Julia Clay asked, if a cell phone call were possible, could the astronauts speak live to a group of people in an auditorium? Thus was born the idea for the live broadcast.

As the audience milled about waiting for the program to begin, I began to see the complexity of the operation. Col. Precourt was on stage talking with NASA Houston to co-

ordinate the complicated link-up operation. First, the two astronauts in the space station, Commander Uri Malenchenko and Dr. Ed Lu, had to make their preparations. Second, a crew of ground personnel at NASA Houston were also involved, preparing to relay the video and audio coming down from the space station to the

TTC auditorium via a satellite link to NASA TV.

The video would be displayed on the auditorium's giant 14 ft. by 21 ft. screen. Live audio from Tulsa was to be transmitted via telephone lines to Houston and via radio transmissions from there to the space station.

We could hear Col. Precourt's conversations with NASA:

"Charlie, this is Houston.

We'll be ready in two minutes."

"Roger that, Houston. Charlie here. We read you loud and clear. Two minutes is good."

Suddenly, it was as if I were part of "mission control." I was trying to get my mind around what was about to happen.

And then, there they were onscreen, astronauts Uri Malenchenko and Ed Lu. Ed was playing with a small model of the Wright Flyer.

Dr. Precourt opened the program by saying, "We are pleased and happy to bring NASA here to Tulsa," and I had a feeling that he meant it. Then he began preliminary conversations with the astronauts. At first, it seemed no different than talking with someone in the next room. Both astronauts were standing and there was no indication they were weightless. That is, until Ed Lu floated the Wright Flyer model in front of him. It took a couple of tries to make the model stay in one place, but he finally did.

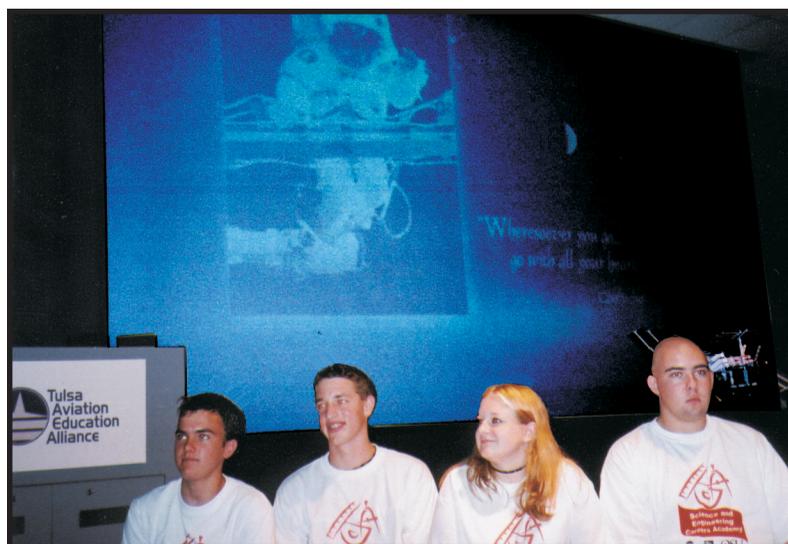
It hit me that these guys we are watching and talking to in real time were, right then, 240 miles away from the earth, in outer space! During our 20-minute exchange, they would fly a third of the way around the earth! I couldn't have been more excited if I were in mission control live.

I buckled my emotional seat belt and held on as

kids began asking their questions. As the students identified themselves and asked their questions, I was fascinated at the two-and-a-half-second delay in our transmissions—another reminder that the astronauts were really far above the earth's atmosphere in the cold, dark, air-

continued on p. 6.

See Page 5 for our interview with Col. Precourt and Dr. Sanchez



Some of the TAEA Science and Engineering Academy students who participated in the live space station broadcast.

The Higher Plane

by **Barbara Huffman**



The Mercury 13- America's First Women Astronaut Candidates

Who is there that does not know the term “the Mercury 7,” the initial group of U.S. astronauts from the early 1960s? Their exploits in space allowed the country to catch up to and quickly surpass the initial embarrassing lead gained by the Soviet Union. The foundation laid by NASA and the Mercury 7 astronauts set the stage for the glorious accomplishments of Gemini, Apollo, SkyLab, the Space Shuttle, and the International Space Station—almost fifty years of history in manned spaceflight.

But I doubt many of us would recognize a somewhat similar term from that same time period: “the Mercury 13.” That included me, until I read a book entitled *The Mercury 13: The Untold Story of Thirteen American Women and The Dream of Space Flight* by Martha Ackmann.

It is no accident that the Mercury 7 astronauts were all men—it was planned that way. However, the book tells the often disturbing but nonetheless heroic story of 13 famous women aviators who, with help from Dr. W. Randolph Lovelace II, founder of the Lovelace Institute in Phoenix, AZ, briefly convinced NASA to consider women as astronauts.

In 1961, this group of women was subjected to the same performance and medical tests as the male astronaut candidates, equaling or surpassing the men's performance on all counts. However, after testimony in Congress, the program was summarily cancelled in 1963.

Ackmann has done a good job in presenting a well written, nicely organized, and well-researched book. For those interested in the history of aviation, women's roles as pilots and astronaut candidates, the history of the space race with Russia, or in getting a picture of the “good old boy” network, this is the book for you.

I cannot say I enjoyed reading about qualified women pilots being turned down for the astronaut program just because they were female, or about our national hero John Glenn's devastating congressional testimony that women as as-

tronauts might be “undesirable to our social order.” Learning that NASA would not share the men's testing equipment with the women (while they were sharing it with monkeys) and jokes about female astronauts being “recreation” for the male astronauts are shocks to 21st century sensibilities.

Nor was it comforting to read of the manipulations and antics of Jacqueline Cochran, former head of the WASP's, which resulted in early cessation of the congressional hearings and an end to women being considered for astronaut training. Apparently Cochran, too old to become an astronaut herself, did all she could to keep any other woman from enjoying that privilege.

What I did enjoy, however, was reading the vivid stories of the 13 women. What a group of awe-inspiring Americans! The book tells about Jerrie Cobb, an Oklahoma pilot with 10,000 flying hours (compared to John Glenn's 5,000 hours)—the first woman to be tested by the Lovelace Institute—and of her leadership and lobbyist roles for female astronaut candidates.

It also tells the stories of the other women:

- Jan and Marion Dietrich from California, twin sisters who learned to fly together
- Rhea Hurrle Allison, an executive pilot from Houston
- Irene Leverton, second in total flight hours only to Cobb
- B Steadman, owner and operator of her own aviation service in Michigan
- Jean Hixson, a former WASP and Air Force Reserve captain who taught school in Ohio
- Gene Nora Stumbough, a former University of Oklahoma flight instructor
- Jerri Sloan, an officer of her own aviation firm, Air Services of Dallas
- Myrtle Cagle, a civilian flight instructor at a Georgia Air Force Base
- Sarah Gorelick, a former engineer from Kansas City,
- Wally Funk, a twenty-three year old flight instructor at Fort Sill, Oklahoma

with over 3,000 flying hours, and • Janey Hart (wife of U.S. Senator Phil Hart), a helicopter pilot who, even though forty years old, was the oldest woman to be invited for astronaut testing. Hart made the cut.

These were amazing women. They loved to fly, always higher and faster. They ferried planes into dangerous countries, won national speed contests, broke one aviation record after another, taught men to fly, and even sacrificed relationships and marriages for the chance to be tested for the astronaut program. They would not be stopped, and though they were overlooked in the sixties, they would pave the way for women at NASA in future years.

Fortunately, after the disappointing end of the Mercury 13 program, these women did not stop. Wally Funk signed up for a civilian space launch operation, and the book has a wonderful photo of her upside down, experiencing zero-G. She was an FAA inspector, an investigator for the National Transportation Safety Board, and she taught more than 800 men and women to fly.

Jerrie Cobb went on to develop a flying missionary service, ferrying medicines and other much-needed supplies to the indigenous peoples of the Amazon River Valley. In 1980, she was nominated for the Nobel Peace Prize for her efforts as a South American missionary pilot.

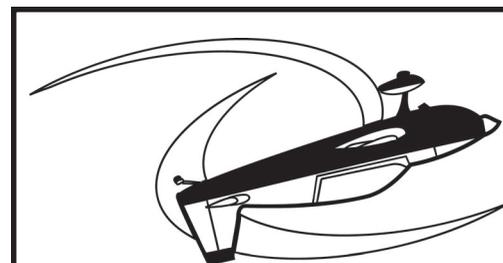
Janey Hart, mother of eight children, went on to become one of the founders of the National Organization for Women (NOW)—much as a result of her not being heard in the congressional hearings. She served on the organization's first national board. NOW members picketed outside NASA headquarters in Washington and staged street theater protests to garner press attention. George Low, NASA director of spacecraft and flight missions in the Office of Manned Space Flight, who had defended NASA's hiring policy at the congressional hearings eleven years earlier, was now willing to admit that its record for bringing women into upper-level positions was “very poor.”

Myrtle Cagle retired as an airline mechanic in Georgia. Irene Leverton was a pylon-racing champion and FAA pilot examiner. Sarah Gorelick Ratley became a certified public accountant for the federal government. B Steadman was a Powder Puff Derby winner and president of the Ninety-Nines.

Fortunately, NASA has since heard the message. America's first woman in space, Dr. Sally Ride, first flew on the Space Shuttle Challenger on June 18, 1983. Since then, women have played greater and greater roles in subsequent shuttle missions. To date, twenty-eight American female astronauts have flown on the Shuttle.

In 1995, Eileen Collins, an Air Force test pilot, became the first female astronaut to pilot an American spacecraft, and in July 1999, she finally slid into the left seat for her history-making flight on the space shuttle Columbia. Collins invited the Mercury 13 women to be part of a special celebration with her.

Ackmann explains, “She wanted them to share in the celebration because she genuinely believed the day also belonged to them. ‘What if they had failed those tests?’ Collins asked. It would have reinforced stereotypes and pushed back a women-in-space program even further. Anyone who had passed the tests in 1961 demonstrated that she had the will, the ability, and the courage to go forward, she said, and they all should have been given a chance. Now, Collins believed that the time had come to say thank you. Without the Mercury 13, she declared, the country would not be celebrating women astronauts and the first female shuttle commander. ‘They gave us a history,’ she said.”



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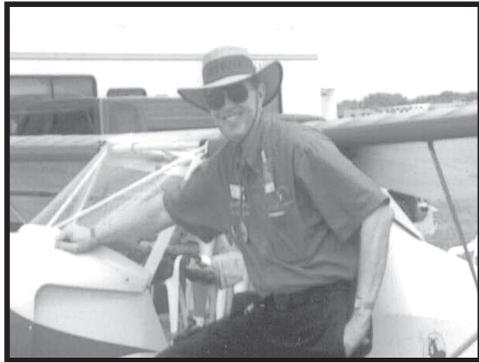
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Up With Downs

by Earl Downs



Are You Safe on the Ground?

It was a nice pretty day and a few airplanes were parked on the ramp of my small Fixed Base Operation (FBO). I was in the back office counting my money (Okay, you caught me—small FBOs don't have any money. I was actually trying to figure out which bill I could hold off paying for another week). I suddenly heard the loud noise of an airplane engine running at high power. Walking to the front lounge and looking out the large window, to my horror, I saw a high-performance single-engine airplane, running at high power, with its tail only a few feet from the plate glass window of my building.

The window was shaking and the door next to it had been blown shut. I ran to the unicom and radioed for the airplane to throttle back. No response. I had to go out the back way to get to the airplane because it was blasting the front door. By the time I got around the corner the airplane had taxied off towards the runway. Upon returning to the lounge, sure enough, I found the plate glass cracked. One more bill to pay!

This is only one of many ramp operations horror stories and it leads me to ask this question: are pilots born with the knowledge of ramp procedures and ramp courtesies, or are instructors supposed to teach them these things? When you stop to think about it, most training curricula do not say much about it and neither do the Practical Test Standards. As a previous FBO owner and a current flight instructor, let me pass along a few of the niceties of ramp operation that are important.

Obviously, safety has to come first and it starts the moment you set foot on any area that has the potential for airplane movement. Just walking around requires extra vigilance. Don't assume your passengers understand the need for caution. Many, if not most of them, have never been closer to an airplane than going down a jetway to an airliner. The ramp is not a benign parking lot (are there any benign parking lots?) and this assumption on the part of unknowing passengers has led to horrific accidents involving people and spinning propellers. Also, most parking lots do not have treacherous chains, ropes and tie-down rings for unsuspecting passengers to trip and fall over.

Teach your passengers about the perils of the ramp BEFORE your flight. If you or they see a pilot in the cockpit of an airplane on the ramp, assume that the engine will start.

When you untie the airplane from its ground restraints, try to coil the chain or rope near its ground attach point. This is a courtesy to the next pilot who might have to taxi over extended ropes or chains had you left strung carelessly about. Please, do not leave the wheel chocks out on the ramp—they can become damaging missiles when propwash hits them as you add power to taxi out. They also remain as obstacles for other airplanes trying to enter the ramp after you leave. If it is just too far to put the chocks safely by an FBO building, put them near the ropes or chains you just neatly coiled up.

Turn on the anti-collision light prior to engine start. Before you yell "CLEAR PROP," first look around to see if there are other people near the airplane. Then yell it out loud enough for anyone to hear. I have seen many pilots with their headsets on mumble "clear prop" while their eyes are down fiddling with gadgets in the cockpit. Your head needs to be up and your eyes looking outside when you start. Do not wear a headset while starting—it could prevent your hearing a warning shout to NOT start your engine.

When you make radio calls for ground or flight information after starting up, move your airplane away from congested parking areas. Clearing the parking area makes way for other airplanes and people that may be waiting to leave or enter the area. If you are at a tower-controlled airport, just be sure you do not taxi onto an active taxiway unless you are completely ready to taxi and have the proper clearance.

Some FBOs will drive a fuel truck right up to your airplane. Others require that you park near a fuel service center or "island." These island pumps usually have about 50 feet of hose to reach your plane. The hose is usually coiled on a reel, but it may be out on the ground from previous use, so don't taxi over it! Always chock or tie down your plane when fueling. You do not want to see it rolling away during the fueling process.

Self-service fueling is showing up at many airports, so be sure to carry a credit card. Read the published operating directions carefully. Be sure to use the grounding wire, but don't clamp it on to some fragile part of the plane. Never hook it to the prop (I have seen it done!). If possible, clamp it to a wing tie down ring because it is designed for abuse.

If you have a high-wing plane, be careful with the ladder. A misguided ladder can really ding up an airplane. When you are finished fueling, lay the ladder down.

Airplane fuel hoses and hose nozzles can be heavy, cumbersome, and sometimes downright belligerent. Take your time and move slowly up or down a ladder. These

Ask the Doctor

by Dr. Guy Baldwin, AME



News About Prostate Cancer

The New England Journal of Medicine recently contained a couple of articles regarding the prevention of prostate cancer. For many years, a medicine called Propecia, which contains 1 mg of finasteride, has been available to treat male pattern baldness. Many men have taken Propecia for years without apparent problems. Later, Merck Company introduced Proscar, which contains 5 mg of finasteride, to treat the symptoms of benign prostate hypertrophy (BPH).

BPH is not prostate cancer. Instead, it is a benign enlargement of the prostate that occurs as a normal part of aging. Men above the age of 40 or 50 often experience symptoms of BPH. Because the enlarged prostate presses on the urinary tract, the symptoms include frequent urination at night, reduced urine flow, and difficulty in controlling the flow.

Proscar is effective in treating the symptoms of BPH, as has been known for several years. And the good news for pilots is that, first of all, a diagnosis of BPH by itself does not cause a pilot to lose his medical certificate. Further, pilots can take Proscar to relieve the symptoms of BPH without endangering their medical certificate.

But there is more good news. The article in the New England Journal reported the results of studies indicating that men who took Proscar had less chance of

getting prostate cancer. Specifically, for men aged 63 years, statistics show that, without treatment, 60 out of every 1000 of them will develop prostate cancer. By contrast, the reported studies indicated that for the same population taking Proscar, the incidence of prostate cancer is reduced from 60 to 45 cases per 1000, a 25% reduction.

Not all the news was good, however. The article went on to say that, with Proscar, some of the worst types of prostate cancer showed up a little more often. Statistically, of the 60 cases per 1000 without treatment, 18 of them would be expected to be "high-grade" cancer. By contrast, of the 45 cancer cases per 1000 with Proscar, 22 of them would be expected to be high grade.

If you do get prostate cancer, there are several treatments available. Since prostate cancer is slow growing, some older patients choose to have no treatment at all. However, if the cancer spreads beyond the prostate, the results are much more serious.

According to Dr. Warren Silberman, Chief of the FAA Aeromedical Branch in Oklahoma City, pilots who have prostate cancer can continue to fly as long as the cancer has not spread to the bone, as determined by an annual bone scan test forwarded to the FAA.

So, what does all this mean? If you have BPH, taking Proscar can not only relieve the symptoms, it will also reduce your chances of prostate cancer by as much as 25%—all without causing problems with your FAA medical certificate. And, although Proscar sometimes causes sexual side effects, you may get your hair back as an added benefit!

What if you do not have BPH, but want to take Proscar to reduce your risk of prostate cancer? This is a little more of a "coin toss" situation due to the slightly increased risk of high-grade cancer with Proscar.

If you have any questions on this or other subjects, please feel free to call my office at 918-437-7993.

fuel nozzles do not have auto shut-off valves like automobile fuel hoses. They pump fast and often continue to run about a cup of fuel out after you have released the trigger, making it easy to overfill your tank. Don't hang the fuel nozzle on the edge of the fuel tank filler neck like you do with your car—you could easily break the filler neck. Airplanes have also been damaged because of shoving the fuel nozzle too far into the fuel tank. You may also want to carry a pair of gloves to wear while fueling. When you are finished fueling, leave the fuel island in a condition you would like to find it if you were the next patron.

Someday you are going to find that your airplane has a low battery and will not start. I know you may have seen some seasoned old pilot hand prop an engine, but

DON'T DO IT! Don't get me wrong, I have been propping engines for 45 years without a problem, but I was taught how to do it from my first flight. I have seen unknowledgeable pilots with unknowledgeable passengers get into real trouble while hand propping. My advice is to get a mechanic and fix the problem.

Well, I hope you get my drift. The term "situation awareness" applies at all times. Every year serious accidents and property damage occur in ramp areas because of a lack of ramp courtesy and safety. The best rule to follow (not a FAR) is the golden rule. Treat other pilots and ramp service personnel the way you want to be treated yourself. Be courteous and be safe.

Comments or questions? Earldowns@hotmail.com

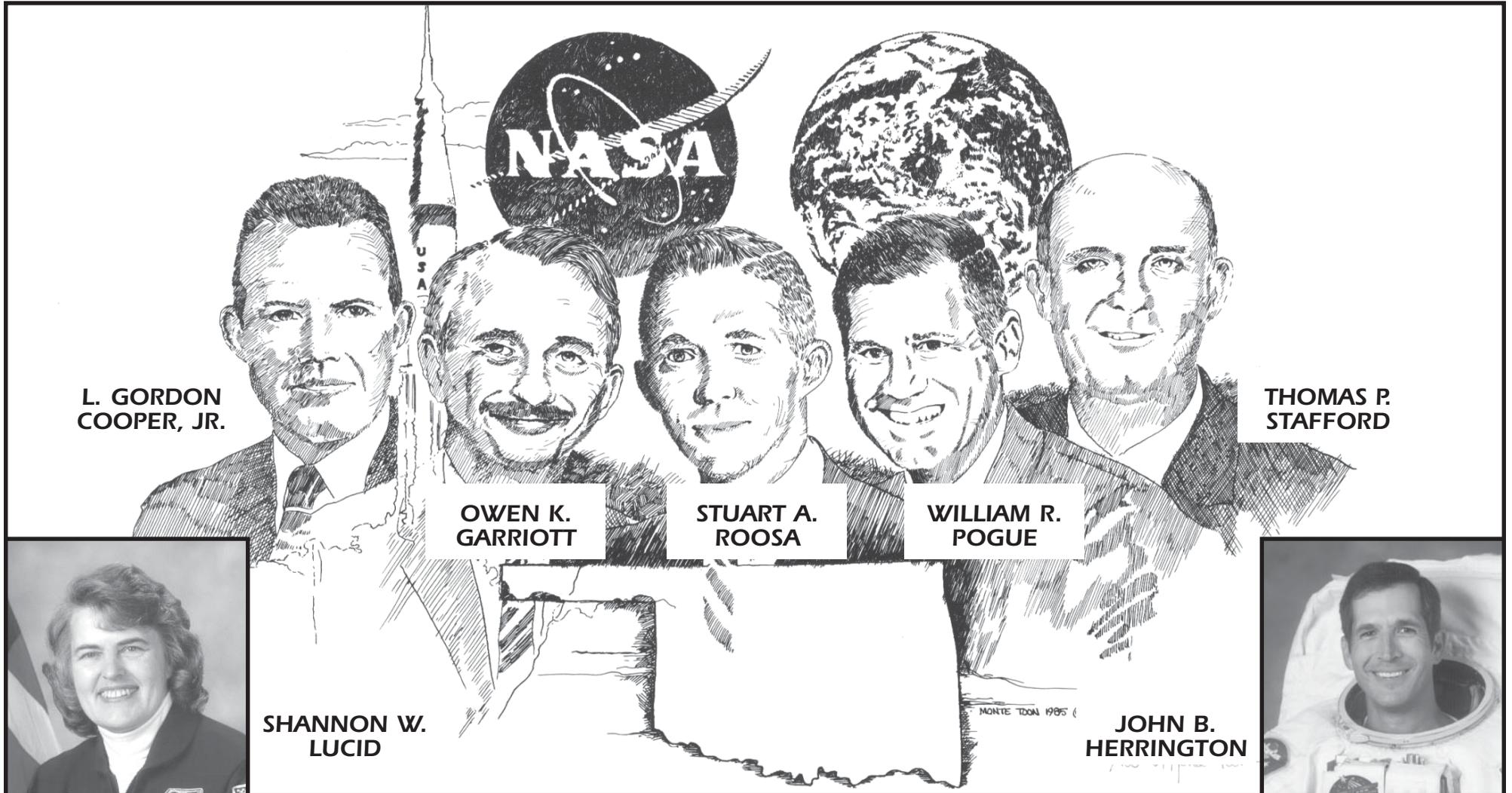
Oklahoma's 7 Astronauts: More Than Any Other State!

Oklahoma is fortunate to have had a total of seven astronauts who call the state home in one way or another. Until last year, Oklahoma was first in the

nation in that regard. When California added their eighth astronaut, we fell to second place, but we are still first on a per capita basis.

The print below is the sixth of twelve in our series of historic aviation art. Each 13"x16" print is signed by the artist. Single prints are \$20 each. Any

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WILLIAM R. POGUE

SHANNON W. LUCID

JOHN B. HERRINGTON

NAME	FROM	BACKGROUND	NASA EXPERIENCE	OTHER INFO
L. Gordon Cooper	Shawnee	Aero engineer and test pilot, 7,000 flight hours, 4,000 in jets	Original Mercury 7 astronaut- 1959. Mercury "Faith 7" pilot- 1963; Gemini 5 command pilot- 1965; backup commander for Gemini 12 & Apollo 10. Logged 222 hours in space	Retired from NASA in 1970
Owen K. Garriott	Enid	PhD engineer & college professor in physical sciences. USAF pilot training	Selected as one of first 6 Scientist-Astronauts. First Skylab flight in 1973 set new endurance record (60 days). Extensive studies of the sun, earth resources, & weightlessness	Continues to be heavily involved in charitable and scientific endeavors
Stuart A. Roosa	Claremore	Aero engineer & experimental test pilot at Edwards AFB	Apollo 14 command module pilot- 1971; backup commander for Apollo 16 and Apollo 17	Died of complications from pancreatitis- 1994.
William R. Pogue	Okemah, Sand Springs	USAF combat pilot in Korea, USAF Thunderbird pilot, flight instructor at Edwards AFB	Member of the astronaut support crews for the Apollo 7, 11, and 14 missions. Pilot of Skylab 4 Nov. 73 to Feb. 74.	Logged 7,200 hours flight time- 4,200 in aircraft and 2,017 in space.
Thomas P. Stafford	Weatherford	Experimental test pilot at Edwards AFB & Chief of Performance Branch	Gemini VI pilot- 1965; Gemini IX commander- 1966, Apollo 10 commander, first flight of lunar module to the moon- 1969; Apollo-Soyuz project, Apollo commander- 1975	On Apollo 10 re-entry, set "fastest human" speed record: 28,547 mph
Shannon W. Lucid	Bethany	PhD biochemist in private industry. Commercial/instrument/multi pilot	Mission Specialist- 1979; Space Sta Mir board engineer- 1996; selected as NASA's Chief Scientist- 2002.	Holds record for most flight hours in orbit by any woman in the world.
John B. Herrington	Wetumka	Aero engineer, graduate of USN Test Pilot School, Pax River, test pilot	Mission specialist- 1998. Supported Shuttle launch preps & post-landing ops. Flew on STS-113 logging over 330 hours in space, including 3 EVAs totaling 19 hours and 55 minutes.	Logged over 3,300 flight hours in over 30 different types of aircraft.

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An Interview with Col. Precourt and Dr. Sanchez

by **Barbara Huffman**

After the July 17 live broadcast with the International Space Station, the Oklahoma Aviator interviewed NASA's representatives, Col. Charles Precourt and Dr. Merri Sanchez. Here are the results.

OA: Col. Precourt, how do you think the Live Program went? How did the crew feel about taking time out of their busy schedules to respond to questions from the school kids?

Precourt: It went really, really well. The crewmembers are very glad to share what they are doing. It's really important—they recognize it is part of their purpose. They put a lot of thought into what they wanted to share and were obviously excited to link up with folks on the ground.

OA: When you were in space, how did you feel about linking up with people on the ground?

Precourt: It is always somewhat anxious. Logistically, it is difficult to set up. In this case, although we had a big crew here on the ground to set up our end, the two astronauts had to make sure their end—the cameras, the audio, and the entire scene—were just right, all in weightlessness! So there is a sense of urgency to get it all set up correctly. On my first flight, I was the photographer representative and spent a couple of hours each day just making the interviews happen successfully.

OA: Dr. Sanchez, I believe you are responsible for everything that goes to the ISS for the astronauts?

Sanchez: Yes, we review and approve all the manifests for all hardware that goes up, whether it's food, clothing, experiments, spare parts for change-outs, etc.

OA: You make sure they don't go to space without extra flashlight batteries?

Sanchez: (laughing) – They are actually counting batteries right now. We have standard pantries that we make sure are well stocked, so we routinely ask the crew to perform audits and inventories so we know what needs to be replaced.

OA: The astronauts look really young. After John Glenn's Space Shuttle flight, are there further plans to send older astronauts into space? Or was that more of a publicity thing?

Precourt: No, ever since John's Mercury program flights, he stayed pretty close to NASA. What we do in space is to try and understand the effects of gravity. There was a natural connection between him and the life scientists, who are always trying to understand more of how the body reacts to various influences. Of course, his flight represents only one data point—one elderly person under those conditions—but as time goes by we'll collect more and more data points. Also I think, for the American people, it was a great chance to reconnect with the space program's legacy. John's flight was immensely popular with the public and it brought renewed positive attention to the space program.

OA: Colonel, do you expect to go back to space?

Precourt: At my age, I'm probably done. I say probably, because you never know what tomorrow may bring. But now

I'm in a management position. Those of us who have flown in space need to bring our experience back into the organization to share with others. If we kept on flying, we would have less and less opportunities to make the organization stronger for the future. So NASA encourages careers that exploit flight experience in different ways – not just continuing to fly forever. Even though the astronauts are in a flying career, they also do a lot of technical work between missions with the engineers, to strike a balance between what the engineer can build and what is practical for use. As the younger ones gain experience, they too will move into more and more responsible positions where we can exploit their experience.

Sanchez: I think it's a natural progression. We invest an enormous amount in training crewmembers and we do want them to fly several times. But the experience of a person who has been in space is invaluable to bring into the management and technical positions.

OA: How do you hope the session today affected the kids?

Sanchez: Actually, I went out and talked with some of the kids after the session and my hope is that a spark happens. Hopefully, some of them will want to grow up and become an astronaut or an engineer. That's what I wish for every time I talk to kids.

OA: You mentioned wanting to go to space, Dr. Sanchez. What is the future of females in the astronaut program? Have women performed equally with the men?

Sanchez: Oh, absolutely. I see no differences in the ability of a male or female to do the work, with the one limitation that sometimes very small people have

a little bit of difficulty using the suit and doing the tasks. Oftentimes, men have more of the required background experience to be selected. More men are military pilots, but that has nothing to do with abilities, but with the natural flow of the ways careers go for men.

Precourt: It's not the right perspective to just compare men and women. As a manager of people, I'm particularly keen on the fact that gender is irrelevant. What we really need to do is discover the unique talents of every human being. Each one of us has talents that no one else has and we need to explore those. In our particular business, everyone is on a journey of self-discovery. When we discover a unique talent, it doesn't matter if it's a man or a woman. When we can put the person in the right place, we have done a pretty good thing.

OA: Have you flown with female astronauts?

Precourt: Yes, the co-pilot on my second flight was Eileen Collins.

OA: What did you get from today's session?

Sanchez: It really is magical, because I feel I might have made a difference in the way a student thinks about careers. I might have made a difference in the way a community perceives space. It feels good.

OA: In doing these programs, do you have on your education hats or your public relations hats?

Precourt: Both. For me, it's an opportunity to remind people we don't see every day that we're doing something important to them. It's rewarding to see this kind of excitement, whether you call it public relations or education. To us, public relations is education.

[Editors Note: Jack Sellers, a TCC professor and one of the main organizers of the event, said Col. Precourt stated it was the most professionally run live broadcast he had observed. Dr. Sanchez and NASA Houston were equally complimentary. Also, Astronaut Ed Lu called Jim O'Neal of Boeing-Tulsa on his cell phone the next day from the ISS to tell him he really enjoyed the program, was impressed with the students, and was happy to participate.]

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International Space Station Live Broadcast

continued from p. 1.

less vacuum of space.

Josh Bell of Sapulpa asked the main purpose of the mission. Dr. Lu answered that it was simply to learn better how to operate in space, and that in addition they were performing scientific experiments.

Laurie Pavel of Claremore wanted to know when the space shuttle would fly again? Dr. Lu answered that they hoped as early as next year.

Owasso student Brian Rogers asked whether or not Uri and Ed had or would have to do a space walk. Uri answered that they had not had to so far, but that they were prepared for a space walk should one be needed for any reason.

astronauts talked about how they keep in good physical shape in space, how they maintain contact with family and friends through email and occasional phone calls, and predicted that in 20 years the program will head back to the moon, to various asteroids, and to Mars. They described the sights out the windows of the ISS and talked about Dr. Lu's learning the Russian language from teachers in Houston and Moscow, but could not say whether or not NASA would be willing to take a student into space in the near future.

The kids had wanted to know the wildest experiment the crew was doing and whether or not they had flown over last week's hurricane, which they had.

The students heard that the astronauts are building their home as they live in it, and that the station, now nearly the size of two football fields, would eventually be able to house 6 or 7 astronauts at one time. There will be more laboratories, personal quarters, and more rescue vehicles.

In response to a question from Julia Roberts of Ardmore about what the astronauts did for fun, the students learned that, while there is not a lot of recreational time each day for the astronauts, who have very full work schedules, there is a good library of books and over 200 videotapes from which they can choose entertainment. They also have a guitar, a piano keyboard, and camera equipment for shooting interesting pictures out the ISS windows.

We learned more of Dr. Sanchez' involvement with the crew. She, a PhD engineer, is in charge of the two astronauts' mission execution. For two years prior to the mission, she worked with

them on every detail of hardware and software they would need to attend to all aspects of their work assignments, their leisure time, and the things of basic living.

Dr. Sanchez had been the lead engineer on the X-38 program, which developed a test vehicle to be used as a kind of a lifeboat – a mini-shuttle, if the crew needed to evacuate the space station. It would glide under a parafoil to a desert landing. The program was phased out due to evolving technology, but that experience brought her to the ISS program.

In response to a student's question, we learned from Dr. Sanchez that each astronaut is allowed to take up to 20 pounds of personal gear with him or her. The crew throws dirty laundry away, because NASA has yet to discover a way to wash clothes in weightlessness. Every so often, accumulated trash is jettisoned and later burns up on re-entry into the atmosphere.

We learned that astronauts require a matter of days to become acclimated to weightlessness and hours or days to re-acclimate to a normal-gravity environment when they return from missions.

Students wanted to know how astronauts sleep in weightlessness and how they are trained to help each other in medical emergencies. Then came the inevitable question: how do they go to the bathroom? After a tasteful discussion of vacuum—the plumbing line to space—Dr. Precourt closed the event with warm words of appreciation to all who had participated.

As people began to quietly file out of the auditorium, I was struck at the hushed, somewhat reverent atmosphere. I sat quietly, savoring the moment, not



The International Space Station Expedition Seven crew; Commander Uri Malenchenko and Dr. Ed Lu.

yet interesting in removing my emotional seat belt.

I wanted to say, "Houston, we're still here. We Oklahomans still care about NASA's programs, and we all have a secret desire to pioneer space. Say, do you all have a need for an aging, happily married couple fascinated with space flight? Houston, are you there, over?"



Recently, the ISS Expedition Seven crew took this photograph of the Wright Brothers National Memorial at Kitty Hawk, NC, joining both ends of the entire 100 years of manned flight history. The actual memorial is located at "A" and the 1903 flights were done at "B." For our visit last month, we landed at First Flight Airport at "C" and our hotel was located on the beach at "D."



Julia Roberts, center, a student from Plainview High School in Ardmore, poses for a photo with Dr. Merri Sanchez, left, Expedition Seven Manager and Col. Charles Precourt, right, Deputy Director, ISS Program.

For Stephanie Brown of Broken Arrow, Ed described the qualifications for becoming an astronaut. He suggested that working in engineering, science, math, or even accounting and business would be good. He said the astronaut program now includes people who had been pilots, doctors, even a vet! But the most important thing, he thought, was to do a good job in whatever field you chose.

In response to other questions the

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Thanks to Luscombe Aircraft for Fifty Flags Flight

by Mike Huffman

In last month's issue, we had intended to write a detailed article about our Fifty Flags to Kitty Hawk trip. However, there was so much other good Oklahoma aviation news to report, we ran out of room. With only a portion of a page left, we decided that showing several photos would be more effective than a bunch of text.

However, this month we want to say a very special "thank you" to the people at Luscombe Aircraft for allowing us to use their new Model 11E airplane for the trip.

John Daniel, Luscombe President and CEO, authorized the trip and was there to see us off as we left on a rainy Tuesday morning. Jerry McCluskey, Luscombe's

Chief Pilot was very gracious in checking me out in the airplane the day before.

Of course, we cannot leave out Miles Hoover, Luscombe's Sales Manager, who accompanied us on the trip. Miles, Barbara, and I got along famously through the entire week-plus, spending a total of over 25 hours in the airplane together.

With that much time, during much of which I was at the controls, we were able to get a good feel for the airplane. It is a roomy, comfortable, and stable bird. With 185 ponies up front, it had plenty of power for the heavy loads we carried. And, priced at \$155,900, it is very competitive with the Cessna 172 and 182.

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NASA Team Builds 1926 Goddard Rocket Replicas

As a part of NASA's 2003 Centennial of Flight celebration, engineers and technicians at Marshall Space Flight Center in Huntsville Alabama, in cooperation with the Mississippi-Alabama AIAA Section, have reconstructed several historically accurate replicas of Dr. Robert H. Goddard's 1926 first liquid-fueled rocket.

The purposes of the project are to clearly understand, recreate, and document the mechanisms and workings of the 1926 rocket for years of exhibit and educational use.

Both flight and static display replicas have been constructed, based on drawings and photographs of the time. These replicas are as historically accurate as possible, both inside and out. In some instances, the original designs had to be slightly modified in order to satisfy modern safety and hazardous materials-handling requirements.

Not unlike an archeological effort, the Marshall team's reverse engineering activity has illuminated and documented the historical and technical significance of Dr. Goddard's accomplishments by creating detailed engineering-quality drawings and specifications describing the original rocket and how it was built, tested and operated. Static hot-fire tests and flight demonstration have further defined and quantified the actual performance and engineering challenges of this major segment in early aerospace history.

The detailed plans and specifications for Goddard's first rocket developed by the project have created a vital new resource about the evolution of liquid rocketry with emphases on lessons learned and systems engineering, something which will help future students of aerospace engineering understand and appreciate the foundation on which their work rests.

The project is being managed like any other propulsion project and is subject to all of the usual safety, design, test and flight readiness critical design reviews. The rocket and components are being tested on exist-

ing hot-fire test stands and other test facilities at Marshall Space Flight Center.

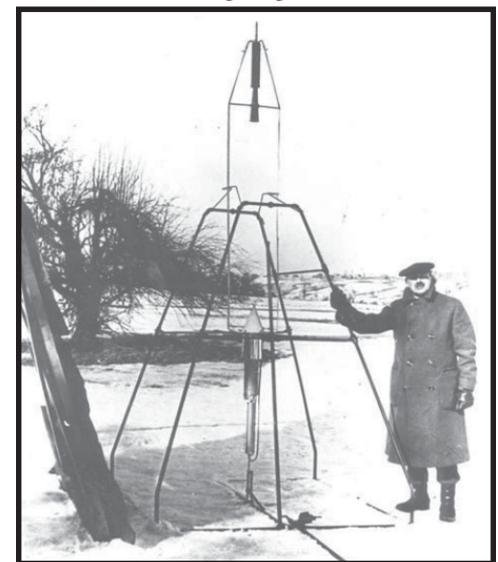
The reconstruction of Robert H. Goddard's first liquid-fueled rocket was not a trivial task, even for a team of modern, experienced NASA propulsion engineers. It entailed a great deal of explosive risk and should by no means ever be attempted by amateurs in an uncontrolled environment.

In the process of completing this project, we have gained a great deal of respect for Dr. Goddard's skills, ingenuity, persistence, thoroughness and methodical approach. We realized in retrospect the inherent personal risks he undertook using those components and combustion devices. We also realized he must have been very well supported by an excellent team of skilled technicians and engineering experts.

Most of all, we have learned that Dr. Goddard did not "tinker" with rockets. His 1926 design was based on in-depth analytical techniques and verified by months, if not years, of thorough, methodical testing.

No component on the 1926 Goddard rocket was superfluous, no part was extraneous, no function irrelevant. The 1926 Goddard rocket is the epitome of liquid rocket system design at its simplest.

[Ed.- This article is from a NASA website. For more information, visit <http://history.msfc.nasa.gov/goddard/>]



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Calendar of Events

For a free listing of your event, email us at OklahomaAviator@earthlink.net or call 918-457-3330. To allow time for printing and publication, try to notify us at least two months prior to the event.

WHEN	WHAT	WHERE	CONTACT	DETAILS
1st Thursday	Dinner Meeting- Oklahoma Pilots Assoc dinner and meeting	Wiley Post Airport, Oklahoma City, OK	Helen Holbird- 405-942-6308	
1st Saturday 7:30AM-10:00AM	Fly-In Breakfast- Ponca City Aviation Boosters Club	Ponca City Airport, Ponca City, OK	Don Nuzum- nuzum@poncacity.net Bruce Eberle- 580-762-5735	Held rain or shine
1st Saturday	Aerobatics	Claremore Municipal Airport Claremore, OK	Matt Burton 918-343-0931	Go to Ponca City for breakfast, then come to Claremore for hamburgers and aerobatics!
2nd Monday 7:00PM	Meeting- Oklahoma Chapter 99s	Wiley Post Airport	Poochie Rotzinger- 405-842-9829	
2nd Tuesday	Meeting- Spirit of Tulsa Squadron- Commemorative Air Force	Tulsa Technology Center Jones/Riverside Airport, Tulsa	Jim Dagg 918-224-6293	Restoring 1942 PT-19. Hangar space and workers needed
2nd Tuesday	Meeting- EAA Chapter 24	Aviation Tech Center OKC Airport	Martin Weaver- 405-376-5488 pacer31a@earthlink.net	Start 7:00PM
2nd Wednesday 7:30PM	Meeting- Tulsa Cloud Dancers Balloon Club	Contact Frank Capps	Frank or Cheri Capps- 918-299-2979 aerosportballoon@hotmail.com	
2nd Thursday 7:00PM	Meeting- EAA Chapter 1005	Ada Municipal Airport Ada, OK	Terry Hall 580-436-8190 or adairprt@wilnet1.com	Call or email for exact location for monthly meeting. We occasionally meet off airport.
2nd Thursday 7:00PM	Meeting- Oklahoma Windriders Balloon Club	Metro Tech Aviation Career Center, Oklahoma City, OK	Ron McKinney- 405-685-8180	For all balloon enthusiasts
2nd Saturday	Fly-In Lunch Meeting Kerr County Aviation Association	Poteau Municipal Airport Poteau, OK	Bryan Hoggatt- 918-647-4719	
2nd Saturday 11:00AM	Meeting- EAA Ultralight Chapter 98	Thompson Airport Tuttle, OK	Robert Crawford- 405-381-2840	Visitors welcome!
3rd Saturday	Meeting- Green Country Ultralight Flyers Organization (GCUFO)	Call 918-632-6UFO for location and details	Bill Chilcoat- 918-827-6566	
3rd Sunday	Tulsa Cloud Dancers Balloon Flight	Contact Frank Capps for time/location	Frank or Cheri Capps- 918-299-2979 aerosportballoon@hotmail.com	
3rd Monday	Meeting- IAC Chapter 10	Contact David Koehn for time/place	David Koehn- 918-671-0481 ffav8@sbcglobal.net	
3rd Monday 7:30PM	Meeting- EAA Chapter 10	Gundy's Airport, Owasso, OK	Bhrent Waddell- 918-371-5022 bwaddell@tulsa.oklahoma.net	
3rd Tuesday	Green Country Women in Aviation Meeting	Contact Kristen Esparza for time/location	Kristen Esparza - 918-851-36557	Men and women supporting women in aviation
3rd Thursday 7:00PM	Meeting- EAA Chapter 323	Sherman Municipal Airport Sherman, TX	Billy Dollarhide- 903-868-7609 dollarhide@ti.com	For more information, visit our website: www.eaa323.org
Saturday following 3rd Monday	Pancake Breakfast- EAA Chapter 10	Gundy's Airport, Owasso, OK	Bhrent Waddell- 918-371-5022 bwaddell@tulsa.oklahoma.net	
4th Tuesday 7:00PM	Tulsa Chapter 99s Meeting	Robertson Aviation, Jones/Riverside Airport, Tulsa*	Charlene- 918-838-7044 or Frances- flygr17102@aol.com	*Unless otherwise planned. All women pilots including students are welcome to attend.
4th Thursday 7:30PM	Meeting- Vintage Airplane Association Chapter 10	South Regional Library, 71st & Memorial, Tulsa, OK	Charles Harris- 918-622-8400	
Aug 1-3	Gatesway Foundation Balloon Festival			
Aug 15	Will Rogers Fly-In	Iron Dog Ranch Airport Oologah, OK	918-341-0719	
Aug 15-16	25th Annual Okie Derby	Wiley Post Airport (PWA) Bethany, OK	Phyllis Miller- pmiller339@aol.com	
Aug 15-17	Illinois River Balloon Fest	Tahlequah, OK	Frank Capps- 918-299-2979 aerosportballoon@hotmail.com	Hot air balloons, arts and crafts, live entertainment
Aug 23 12:00AM-4:00PM	Skiatook Fly-In and Pioneer Day	Skiatook Airport Skiatook, OK	Chet Reyckert- 918-396-3163	Parade starts at 9:00 AM. Car show, chili cookoff, antique tractor display, at the airport beginning at noon
Sep 14	National Air Tour Stop	Tulsa, OK	Charles W. Harris- 918-622-8400	A recreation of the 1932 National Air Tour. See 20s-era planes including Ford Tri-Motors, & many others
Sep 21-22	Will Rogers Claremore Air Show	Claremore Regional Airport Claremore, OK	Tim Fleetwood- 918-341-4876 lovedv@aol.com	
Sep 18-21	Powrachute Fly-In Extravaganza 2003 Powrachute Corporation	Columbus, KS	Dawn Bonet 620-429-1397	The world's largest gathering of powered parachutes! Seminars, food, fun, and flying!
Sep 19-20	48th Annual Tulsa Regional Fly-In	Frank Phillips Field (BVO) Bartlesville, OK	Charles W. Harris- 918-622-8400 www.tulsaflyin.com	Largest fly-in the South Central USA with 400-500 aircraft in attendance.
Sep 26-28	Pelican Festival	Grand Lake, OK	Frank Capps- 918-299-2979 aerosportballoon@hotmail.com	Hot air balloons, arts and crafts, live entertainment
Sep 27	Open House and Fly-in Dedication of the New Runway	El Reno Regional Airport (F28) El Reno, OK	Rick Mullaney- 405-262-4915 wmullaney@sprynet.com	Because of its new jet-capable runway, El Reno Municipal Airpark is now El Reno Regional Airport
Sep 27	Airman Acres Annual Bean Dinner	Airman Acres Airport Collinsville, OK		Good ol' pinto beans and ham, cooked by the 55-gal drum!
Sep 29-Oct 6	Registration for Winter 2003 Term	Embry-Riddle Aeronautical University Oklahoma City	Russ Tresner - 405-739-0397 or oklahoma_city_center@cts.db.erau.edu	Call or email for more info or to get your name on our mailing list.
Oct 3-5	Aerospace America International Airshow	Will Rogers World Airport Oklahoma City, OK	Carl Whittle, Director, (405) 685-9546, csw@aerospaceokc.com	Celebrating 100 years of powered flight with a salute to our military men and women.
Oct 11 10:00AM-5:00PM	Elm Creek Airpark Annual Fly-In	Elm Creek Airpark ØTX6 Seguin, TX (4 miles SSW of Seguin)	E. Staley- 830-303-6577 VEStaley@peoplepc.com	http://elmcreekap.org Rwy 14/32 (RP Rwy 32) 2200'x80' turf 122.9
Oct 11-12	2nd Annual Airshow	Silver Wings Field (5A5) Eureka Springs, AR	Errol Severe- 479-253-5008 av1cadet@arkansas.net	
Oct 24	Aviation Music Concert Tulsa Community College	TCC Southeast Campus 81st & Hwy 169, Tulsa, OK	Dr. Barry Epperly- 918-595-7776	
Oct 24-26	Flying M Ranch Fly-In/Camp Out	Flying M Ranch Airport (7TA7) Reklaw, TX	Dave Mason- 936-369-4362	Camp in the woods by your plane. Kids fishing derby. Meals all 3 days. Lots of awards

AIRPORTSPACE- News of OAOA-Member Airports



HISTORIC EL RENO MUNICIPAL GETS NEW RUNWAY, NEW NAME

The El Reno Municipal Airpark has a new name; it is now called El Reno Regional Airport and Industrial Airpark—El Reno Regional Airport (ERRA) for short.

As a primary flight training base in WWII, it was known as Mustang Field. The base trained pilots to fly in Fairchild PT-19's and Boeing Stearmans. At that time, the airport was literally a one-mile-square field of grass with no defined runways; take offs and landings were done into the wind.

The Army Air Corps had approximately 600 cadets on the field in any one class. Airmen were required to solo by their 6th or 7th hour of instruction. Mustang Field operated from 1940 to 1943, one of the shortest-lived flight training bases. After the war, the field lay dormant until the 1950's, at which time the Federal Government leased it to the city of El Reno for one dollar per year, which is still the agreement to this day.

Over the past several years, a new 5600-ft. x 75 ft. concrete runway and new taxiway have been added, designed to handle aircraft up to a Gulfstream G-4. New high intensity lighting has been installed, along with a new windsock, and the old Mustang Field WWII rotating beacon was restored. The beacon can be seen as far as 75 miles on a clear night.

New concrete ramps between the two 61-year-old WWII hangars were built. New runway end identifier lights (REILS) were added, along with a 4-box PAPI system to provide glide slope information.

El Reno now truly has jet capability,

which it has needed for many years. Pilots are encouraged to try out the new runway and new credit card self-serve fuel, available 24 hours a day.

An open house and fly-in dedication of the new runway will be held on Saturday September 27, 2003. There will be static displays, aerial demonstrations, parachuting, airplane rides, food and beverages and a band. Everyone is welcome!

GUTHRIE REGIONAL AIRPORT EXPERIENCES GROWTH

Guthrie Regional Airport is experiencing exceptional growth, due to the recent improvement allowed by approximately \$4 million dollars in grants and loans recently received from FAA, the Oklahoma Aeronautics Commission, the Economic Development Authority, and through a Community Development Block Grant (CDBG) loan/grant. Upgrades at the airport have created jobs and increased their fleet of aircraft by more than 30%.

Many towns trace the establishment of local airports to the late 1920s or early 1930s. The epic 1927 trans-Atlantic flight of Charles Lindbergh created public awareness of the need for municipal airports. Among the facilities constructed during this period were those in Guthrie, Chickasha, Ponca City, Bartlesville, and Muskogee.

The Guthrie Regional Airport is the first airport north of Wiley Post. Their goal is to develop Guthrie's airport in a manner that meets the needs of Guthrie, north Oklahoma City, and Edmond. Their long-range plan is to promote the airport as an excellent aviation-operating environment, and assure orderly and compatible development, to provide the City of Guthrie with a tool for economic diversity.

Guthrie Regional is the home of several notable aviation businesses including:

- Glen Crabtree: Crabtree Aircraft, flight training and FBO for the airport.
- Calvin Burgess: Spirit Wing Aviation, noted primarily for the Lear Jet engine modification.

- Frank Bross: Developer, and major provider of T-hangar spaces.
- Joe Underwood: Aerial pipeline inspection service.
- Bill and Judy Zivko: Builder of high performance acrobatic aircraft.

Come and visit Guthrie Regional – just 32 miles north of Oklahoma City.

CLINTON-SHERMAN AIRPARK HAS SPACEFLIGHT IN ITS FUTURE

In the 1970s, when the USAF deactivated Clinton-Sherman AFB, located 7 miles south of Interstate 40 near Burns Flat, they transferred ownership of the 2700-acre property to the City of Clinton, complete with a 13,500 ft. x 300 ft. runway, over 350,000 square yards of paved aircraft parking areas, 25 miles of paved roads, a 7 mile railway connection to the outside world, extensive utility systems, 900 housing units, and many other buildings.

With such a massive facility available for industrial use, the name was changed to Clinton-Sherman Industrial Airpark and a group, the South Western Oklahoma Development Authority (SWODA), was formed to lease it from the city, operate the airpark, and entice industrial firms to locate there.

In the last several years, more and more interest has been shown in using the facility as an inland spaceport. To facilitate that development, the Oklahoma legislature established the Oklahoma Space Industry Development Authority (OSIDA) in early 2002 and authorized tax incentives amounting to \$15 million as enticements to space development companies to locate there. Title to the property will soon be transferred to the State of Oklahoma; when that is complete, OSIDA will be in charge of signing up tenants, and SWODA will continue to manage the property.

USAF Maj. Gen. Jay Edwards (retired), the Executive Director of OSIDA, says OSIDA's goals are to establish a spaceport in Oklahoma, promote space education in the state, and to encourage space commerce. To further those goals,

OSIDA works to enhance and promote space education in the public school system, to create a space technician vocational education curriculum, and to focus public education to the possibilities of space technologies and commerce.

Gen. Edwards says OSIDA is aiming the uses of Clinton-Sherman at reusable spacecraft intended for suborbital flight, with space tourism being high of the list. He says, "Traditionally, spaceports have been located in coastal areas because they used expendable launch vehicles, so each launch involves objects falling or parachuting out of the sky. With reusable launch vehicles, we don't have that problem. Also, with suborbital flights, re-entry temperatures on the leading edges of the vehicle are limited to only about 1000 degrees, compared with 3000 degrees for orbital flights."

In the same way that an airport must be approved and licensed by the FAA, so must a spaceport be. The process requires an extensive, costly environmental impact study and a safety study. The safety study involves demonstrating that activities at the spaceport will not adversely affect people on the ground or air traffic. Both those studies are underway and are expected to be complete in the next year.

At this point, 15 companies have signed Memoranda of Understanding with OSIDA, expressing interest in locating their facilities at Clinton-Sherman Airpark. Enticed by the \$15 million tax incentives and the possibility of winning the \$10 million X-Prize, to be awarded by the X-Prize Foundation to the first privately-funded team to twice carry three people into near-space within a two-week period, several companies are currently vying for a spot at Clinton-Sherman. Gen. Edwards expects that the first tenant will be in place by the end of this year.

Meanwhile, Clinton-Sherman Industrial Airpark is a great place to visit. Manager Mark McAtee invites all general aviation pilots to come out and see what it is like to land at an "air force base" and spaceport!

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Quest Journal Preserves Spaceflight History

Among the many groups working toward preserving the history of the aerospace sector is a small journal entitled, *Quest: The History of Spaceflight*. Since 1992, Quest has been preserving the history of the space industry, one story at a time. Now in its 10th year of publication, it is the only journal to focus exclusively on the history of spaceflight -- the people, missions, and programs that have made up the last fifty years of military, civil, and commercial space activity. Articles have included a 40-page interview with Neil Armstrong; an article written by Valentina Tereshkova, the first woman in space; and an unpublished work

by Robert Goddard. Quest is edited by Prof. Stephen Johnson of the Space Studies Department at the University of North Dakota and is renowned worldwide for its content and feature articles. Quest's Web site (www.spacebusiness.com/quest) contains information on how to contribute articles and subscribe, as well as a complete bibliography of past articles and links to space history resources.

Some other random article titles we pulled off the website include:

- Sputnik: The Shot Heard Around the World (1992)
- Destination Moon: U.S. and Soviet

Manned Lunar Hardware Compared (1992)

- Rocket Men In Their Rocket Ships: The Astronauts and Their Corvettes (1993)
- The Hunt for Liberty Bell 7 [*Gus Grissom's sunken Mercury capsule*] (1993)
- "Houston, We Have a Problem": A Nitpicker's Guide to APOLLO 13 the Movie (1995)
- Buzz Aldrin's Return to Earth: The Astronaut and Social Values in Apollo-Era America (1998)
- Chicken Little was Right: The Sky(lab) is Falling Down (2002)



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