

# AirshowStuff

*Magazine*



## **Inside:**

*Vintage Wings  
Goodyear Airship Operations  
Reno Air Races  
Wings Over Houston  
Reports from the Field  
and more!*

December 2013

# AirshowStuff Magazine

December 2013


## Cover Photo

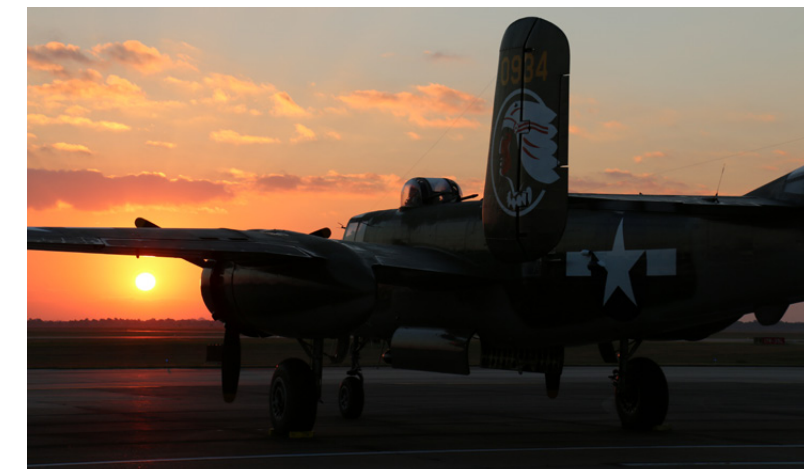
An F8F Bearcat sits on display under the faint rays of the sun at the Wings Over Houston Airshow. Photo by Sam Bulger. For more on the show, see page 48.

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We'd love to talk with you!

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- Joseph D Ahmad
- Angelo Aldrighetti
- Matthew Baker
- Alan Barbor
- Sam Bulger
- Tom Lammens
- Mark E Loper
- Tom Hedlund
- Kevin Helm
- Mark Hrutkay
- Alan Radecki

AirshowStuff Online Magazine Staff

- Editors:
- Ryan Sundheimer
  - Anthony Richards
  - Ricky Matthews
  - Patrick Barron

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Goodyear's fourth blimp, the Mayflower, which was built in 1929. While Goodyear didn't keep Puritan's NC7A registration, they did keep Mayflower's, which today is carried by the Spirit of America, based in Carson, California.

Article by Alan Radecki

The Goodyear Tire & Rubber Company dates back to 1895, when automobiles, and the need for rubber tires, hit America in a big way. In 1910, only seven years after airplane flight became a reality, Goodyear established an Aeronautics Department to manufacture and sell rubber-impregnated fabric. The original idea was that such a material would be more durable on fixed-wing aircraft (which were mostly all fabric-covered wooden structures

back then), as well as for balloons.

And the minds at Goodyear realized that what better way to demonstrate the usefulness of their material than fabricate balloons from it? So in 1912, the first of many Goodyear balloons lifted off. Subsequently, Goodyear-built craft dominated balloon racing events around the world. As business literally took off, Goodyear built a large facility, including a 200 foot-long, 90 foot-tall hangar on some rural property in Portage County, Ohio, near Akron. A small lake on the property

that was known locally as Fritch's Lake was renamed Wingfoot Lake in honor of Goodyear's corporate logo. To this day, the facility is still in use and is known as the Wingfoot Lake Airship Base.

In March 1917, the Navy ordered a series of lighter-than-air airships from three manufacturers; Goodyear, Goodrich and Connecticut Aircraft. The blimps, known as B-type and C-type airships, were quite successful, and the Navy began sending hundreds of crewmen to Wingfoot Lake for training. The place grew

further, and with WWI in full-swing, the Navy took over the facility from 1917 to 1921, when it was known as US Naval Airship Training Station Wingfoot Lake.

While still building balloons for its own corporate use, Goodyear in 1919 started building its own airships. They constructed the Wingfoot Air Express, a small dirigible with a suspended gondola, and three very small ships called "Pony Blimps", which consisted of a small gas bag and a suspended gondola. The first of these was based in Los

Angeles next to Goodyear's rubber products factory, and was used for carrying passengers to Catalina Island, as well as finding a role in the motion picture industry.

Meanwhile, the company was still cranking out larger and larger blimps for the Navy and the Army. The future, though, looked at the time to be in civilian, commercial airships. The technology had matured (thanks to all the airship experience that building for the military had provided) to the point that commercial and even private transportation by airship seemed to have a bright future.

Goodyear had learned quite well that building and racing balloons was a marketing bonanza, so they decided to do the same with airships. They built the first commercially-licensed blimp in 1925, which was christened the Pilgrim. Because the program of issuing aircraft registration numbers wasn't established by the government until after 1927, the Pilgrim didn't originally carry an "N" number.

The Pilgrim was a Type AD airship designed by Goodyear VP P.W. Litchfield, and had a 50,068 cubic foot gas bag, which was inflated by non-flammable helium (Goodyear's earlier airships, including the Pony Blimps, had used the highly-flammable gas hydrogen, which led to one of the Pony Blimps being destroyed, along with a Navy D-1 blimp, in a hangar fire at Wingfoot Lake). It is properly classed between non-rigid and semi-rigid, since it had a structural keel inside the gas bag. To propel it, Pilgrim used a single Lawrence 60hp three-cylinder rotary engine with a four-blade Reed pusher propeller on the back of the gondola, or car. For mooring, it included a self-contained collapsible

mooring mast in the nose. Overall, Pilgrim was 105 feet long, and 45 feet tall, cruised at 51 mph (max speed a brisk 60 mph), and had a 10 to 20 hour range.

The British magazine Flight carried a detailed technical article about Pilgrim in its May 6, 1926 edition, which described the type as "intended for pleasure cruising", and it foresaw "airship regattas, in the same way that motor boat and yachting clubs now have similar events." Instead of "ballooning" as a sport, the magazine suggested "blimping". Fittingly, the "interior [is] upholstered in blue mohair velvet with mahogany-finished veneer below the window lines."

Besides being the first Goodyear ship to use helium, Pilgrim was notable for a number of other firsts, including the first commercial blimp that had its car attached to the envelope, and first with a landing gear wheel instead of a landing cushion. With subsequent larger blimps in the Goodyear fleet, Pilgrim was retired on December 30, 1931, after 4,765 flights, 2,880 flight hours, 5,355 passengers and 95,000 miles. Its car is now preserved in the National Air and Space Museum.

Blimps were envisioned by Litchfield, by this time promoted to become Goodyear's President, as "yachts in the sky", and so he decreed that subsequent commercial ships would be named after the winners of the America's Cup yacht race. Thus, Goodyear's second commercial blimp, launched in 1928, was the TZ-type twin-engine Puritan, named for the Cup winner of 1885, with an 85,000 cu. ft. envelope. This design would become the prototype for Goodyear's commercial fleet. In 1929, Goodyear built the Volunteer (Cup winner in 1887),

Goodyear's version of the airship has transcended time. While the automobile has significantly evolved from the late 1920s until today, much of blimp technology has remained timeless.



The Puritan, Goodyear's second blimp. Typically, whenever a Goodyear blimp landed, a crowd quickly assembled.



Mayflower (1886 cup) and Vigilant (1893 cup). 1930's Neponset was an exception to the naming tradition.

As Goodyear gained commercial airship experience, the envelopes grew in size. The Defender (built: 1929, cup winner: 1895) was sold in 1935 to the Navy as the G-1. The Columbia (built: 1931, cup winner: 1899, 1901), Reliance (built: 1931, cup winner: 1903), Resolute (built: 1932, cup winner: 1920) were built with larger, 112,000 cu. ft. bags, and the Enterprise (built: 1934, cup winner: 1930) was even larger, at 123,000 cu. ft. The 1920s and '30s, of course, were the era of barnstorming, and Goodyear joined right in, send its fleet across the country, visiting 42 states, and raising the awareness and popularity of airships.

Meanwhile, as a result of the Armistice that ended World War I, the German industrial machine was being stripped to the bone, in

order that that nation might not rise to threaten its neighbors again. The Zeppelin company was the subject of this purge, and it looked for a time as if all of the accumulated knowledge about airship building and operations that this company had gained over the years would be lost. Goodyear saw a golden opportunity, and stepped in and brought the Zeppelin patents, and many of its engineers, to the U.S. under a new combined Goodyear-Zeppelin Corporation, which formed as a separate joint-venture company from the rubber corporation, and took over for the former Aeronautical Department. Goodyear-Zeppelin set out to build rigid airships in the line of the earlier German Zeppelins, for the U.S. Navy. During the period between 1929 and 1933, the Akron Airdock, six miles west of Wingfoot Lake, saw the erection of the USS Akron and USS Macon. Unfortunately, the loss of both airships

during storms within two years of their launching brought the whole Navy rigid airship program to a sudden close.

The TZ-class non-rigid ships, though, caught the attention of the Navy, which ordered three 123,000 cu. ft. airships, the L-1 in 1938 and L-2 and L-3 in 1941 (sadly, the Navy elected to use such lifeless designations for its blimps, rather than treating them as ships with names and the "USS" designation like the Akron and Macon).

Goodyear also produced the Rainbow (built: 1939, cup winner: 1934) and Ranger (built: 1940, cup winner: 1937). A second Ranger was built in 1942, but since WWII was underway, it went to the Navy as the L-8, rather than into commercial service. The hostilities in Europe also doomed the Goodyear-Zeppelin joint venture. Goodyear changed its name to Goodyear Aircraft Company in 1939, when it started build-

ing Martin B-26 tails under contract at Wingfoot Lake. During the war, they also license built the FG-1 variant of the F-4U Corsair, and then refined the design further as the F2G Super Corsair.

From the TZ-class (or L-class in the Navy), Goodyear developed the K-class ships which saw mass production and wide usage as coastal patrol craft during WWII. After the war, commercial airship manufacturing and operations returned, but the company also continued to diversify its capabilities far beyond airships, and in 1963 they changed their name to Goodyear Aerospace. As it progressed from Goodyear Aircraft to Goodyear Aerospace, it still remained a subsidiary company of the rubber conglomerate. Then, in 1987, the Aerospace business unit, including the airship manufacturing portions of the company, was sold off to Loral, where it was absorbed and the Goodyear name



The Pilgrim, Goodyear's first commercial blimp, probably sometime before 1928.

disappeared. However, the sale to Loral did not affect Goodyear Airship Operations (GAO), which the tire company retained because the blimp image was considered to be so iconic as to be invaluable to the company's marketing strategies.

The final version of the blimp line actually built by Goodyear is the GZ-20, the model that is cur-

rently operated by GAO. All tolled, Goodyear produced 347 airships between 1917 and 1995, with 239 being built at Wingfoot. Today, the base is home for Goodyear Tire & Rubber's airship operations as well as the "Spirit of Goodyear", and provides support for the California-based "Spirit of America" and Florida-based "Spirit of Innovation".



# Spirit of America

GOODYEAR BLIMP

On a beautiful Friday morning in mid-October, I turned off Main St in an industrial area of Carson, CA just a block away from the busy 405 freeway. I would have driven past my destination if not for a medium sized wordless sign that marked a driveway to a small 50 car lot surrounded by a chain link fence and security cameras. There were two small nondescript white buildings with blue trim, however I quickly noted a bright orange windsock and an antenna protruding from one. One look around though and I knew I was in the right place. Weather vaning in an adjacent 33 acre grass field was the branding juggernaut of one of the world's leading tire companies and the No. 1 tiremaker in North and Latin Americas. This was the Goodyear Tire and Rubber Company's west coast Goodyear Airship Operations base, the home of the GZ-20A class airship the "Spirit of America" (N10A). I was there to take a ride aboard the world famous Goodyear Blimp.

I met up with co-contributor Alan Radecki and we discussed the final details of our shooting plan for the day. In the background, a portion of the Goodyear ground crew was performing engine runs and maintenance checks in preparation for the day's flights, while others were just arriving to start their day at the Goodyear Blimp Base. There were five flights scheduled that day. Flight operations started with a noontime pilot training flight that lasted two hours. The first passenger flight of the day was the two o'clock flight - our own long anticipated opportunity. There were also passenger flights at three and four, and the final flight of the day

was a five o'clock flight that would be a sunset "visibility" promotional flight lasting about an hour and a half. It was a busy end to a busy week which saw the first three days occupied by aerial coverage of the hometown Los Angeles Dodgers and Games 3-5 of the National League Championship Series.

We met with Elizabeth Flynn, the Public Relations Manager for the Carson base. The entire Carson operation consists of four pilots, approximately sixteen ground crew, the public relations manager and an office assistant. Nationwide there are less than 100 people manning the three Goodyear blimp bases in Carson CA, Pompano Beach FL, and Suffield OH, each supporting one blimp; "Spirit of America", "Spirit of Goodyear" and "Spirit of Innovation" respectively. Goodyear Global Airship Headquarters is located in Akron, OH.

Elizabeth explained this was an exciting time of transition for Goodyear, as the current GZ-20A airships would soon "pass into history". On May 3, 2011, Goodyear announced a new agreement with German zeppelin manufacturer ZLT Zeppelin Luftschifftechnik to supply Goodyear with three custom designed and built Zeppelin LZ N07 - 101 model fly-by-wire airships. ZLT Zeppelin Luftschifftechnik said the airships and technical support cost about 21 million USD each. "Our current airships are approaching the end of their lifecycle, and we saw this as an opportunity to take the next evolutionary step in our airship program" explained Nancy Jandrokovic, Goodyear's director of Global Airship Operations.

The "GZ" class designator of current in service blimps pays homage to the Goodyear-Zeppelin Corpora-

tion which was formed in Sept 1923 and lasted until WWII. A notable result of that historic partnership was the famous US Navy rigid airships of the 1920s and 1930s; the USS Los Angeles, the USS Akron and the USS Macon. "We are extremely pleased to renew the Zeppelin connection with the famous Goodyear blimp program," said Thomas Brandt, Chief Executive Officer of ZLT Zeppelin Luftschifftechnik. "Goodyear and Zeppelin worked together almost 90 years ago to bring rigid airship technology to America and we're thrilled to be working together again."

Construction on the first semi-rigid "Goodyear NT" (for New Technology) airship began last year by Zeppelin and Goodyear airship teams at Goodyear's Wingfoot Lake Airship Hangar near Akron, Ohio. Flight trials are scheduled for the spring of 2014. The Goodyear NTs are expected to have a lifespan of 25 years, require less crew, and cost less to operate.

The current GZ-20 class airship was introduced in 1968 as part of a \$4 million expansion program. The GZ-20 was created from two WWII US Navy training blimp classes. Goodyear modified the G-type airship design and attached L-class (gondola) cars which were rebuilt and modernized. (One example, Car C-49 was originally built in 1934, eventually retired in 1986 and was donated to the Smithsonian in 2011)

The GZ-20A is 192.0 ft long, 59.5 ft in height and has a maximum envelope width of 46.0 ft. The familiar "GOODYEAR" letters are each 10 ft tall with the famous Goodyear "Wingfoot" logo measuring 15 ft high and 21 ft wide. The gas carrying envelope of the airship weighs



Alan Radecki

3,100 lbs, the 22.75 ft long gondola (control car) weighs 3,219 lbs, and the four 15 ft tall tail fins weigh 175 lbs each. The total curb weight for the entire blimp is 12,840 lbs.

The envelope is made from 2,400 square yards of two ply Neoprene-impregnated polyester fabric. The 202,700 cubic foot envelope is inflated mostly with naturally inert Helium with the remainder consisting of air contained in forward and aft air chambers, or ballonets which control buoyancy similar to fish and submarines. Internal gas pressure,

not a rigid framework, gives the GZ-20A its shape. The typical pressure on the envelope is quite low, generally around 0.05 psi. The net result is 3,330 lbs of total usable lift for fuel, passengers and/or equipment. The airship loses very little Helium in normal operations, although the gas does have to be purified about twice a year by a Goodyear designed purifying machine. As the envelopes age they have a tendency to allow gas diffusion. Typically, every two weeks the maintenance crews put a few thousand cubic feet

of Helium into the envelope.

Internally, a blimp is non-rigid, but externally there are several rigid objects. The rigid nose cone helps secure the 15 battens to the envelope, holds one of the nose mooring lines and acts as the anchor point to the mast. The battens give shape to the forward part of the envelope. The gondola is made of aluminum, fabric, and welded steel tube frames and has the capacity to hold six passengers and a pilot, or a pilot, camera operator, and TV equipment. The gondola actually "hangs" by

support cables from the "Catenary Curtain" which is cemented to the inside of the top of the envelope.

Two Continental IO-360-D 5.9-liter, 210-HP 6-cylinder engines equipped with constant speed propellers provide thrust for the blimp and are mounted to the gondola. When flying at the cruising speed of 30 mph, the engines consume 9 gallons of 100LL fuel per hour (about 3.33 mpg). The internal fuel tank carries 150 gallons, but two auxiliary tanks holding an additional 80 gallons each can be added for long

range ferry missions. Maximum endurance of the blimp is about 23 hours, but there are no bathrooms onboard the GZ-20As, but thankfully for the crew there will be one on the new Goodyear NT airship.

The "Spirit of America" (N10A) was christened September 5, 2002 during a ceremony in Akron, Ohio. The name of the ship was chosen as a tribute to the patriotic spirit of the United States. Performing the christening was Mrs. Letitia Driscoll, mother of NYPD Officer Stephen Driscoll, who was killed in the South

Tower of the World Trade Center on September 11, 2001.

Images of a bygone era are conjured up when admiring an airship anchored peacefully on a mast. Like the blimp itself, ground operations have changed very little in nearly a century of airship operations. Prior to the first flight of the day, we were allowed to be on the field as the ground crew prepped and launched the blimp. It felt as though we had stepped into a machine and gone back in time to the 1920s and 30s.

The crew of the Goodyear Blimp



Kevin Helm



Kevin Helm





Kevin Helm



Kevin Helm



Alan Radecki

consists of professional airframe and powerplant (A&P) mechanics, electrical and electronics technicians and specialized crewmen such as riggers and radio & TV technicians. Crew members are trained to serve dual roles, and all crew and pilots are trained in some form of ground handling, static watch (when the blimp is on the mast for an extended length of time) and safe passenger operations.

The crew chief is the primary ground-handler for the blimp. This on the job learned skill is critical to safe operation of the airship. Each crew person relies on the crew chief for landing instructions, usually given by hand signals, such as when to pull the nose of the ship and when to let go. The pilot communicates with the crew chief through a wireless radio headset. He (or she) listens and watches carefully as the crew chief indicates the ship's weight and balance before each take off.

The chief rigger and their assistants have one of the most unique jobs in the world - repairing and maintaining blimp fabric, cables, and valves - the chief rigger is the supervisor of this work. By its very uniqueness, being an airship rigger is not a wide-spread occupation. It is the riggers responsibility to change the major control cables when necessary, inspect and repair fabric, and to make certain that the air and Helium valves are set to open and

close at the proper pressure. Riggers learn their trade while on the job with Goodyear. The knowledge and skills are passed down from the older, more experienced riggers to the new hires in a generational tradition as old as airship operations itself.

One of the more interesting maintenance tasks of the riggers is called the "patch test". Once a year during periodic maintenance, two 12-inch diameter portions of the

envelope (one fore and aft each) are removed and sent back to Wingfoot Lake for detailed analysis to determine how well the envelope is holding up after exposure to the rigors of flight and weather. As the envelope ages and starts showing microscopic signs of wear, the experts may require more than one test taken from multiple locations to monitor that envelope more closely. As they remove the test sample, they simultaneously bond in place the

first replacement layer in order to mitigate large amounts of Helium from escaping from the envelope. Once the first layer is installed additional layers of material are bonded to the envelope resulting in a very strong permanent repair.

The chief radio and TV technician's duties cover all electronics, avionics and electrical systems associated with the blimp and its ground support equipment. It also includes

*(Continued on page 20)*

The Goodyear Tire and Rubber Company came to Los Angeles in 1920. That year saw both the West Coast tire factory open and the construction and test flights of multiple two-person "pony blimps" on the site located at Central and Florence Avenues about five miles south of downtown Los Angeles. It was common to see a promotional Goodyear Blimp moored at a field near the tire plant site, which today serves as the main post office and mail processing center for all of Los Angeles.

In subsequent decades, the Goodyear blimps rotated homes at local airports throughout Los Angeles and Orange Counties. During World War II many of the Goodyear built blimps in Navy service were stationed throughout

California, including a dozen at the then Naval Lighter-Than-Air Station – Santa Ana in the city of Tustin in neighboring Orange County.

With the advent of the larger GZ-19 class airship "Columbia" in 1963, the need for a larger base of operations became apparent. From 1963 to 1966 Columbia operated from the Lions Drag Strip on Alameda St, just south of the San Diego (405) Freeway approximately 12 miles south of downtown Los Angeles. However, a non-injury accident on Nov 10, 1966 caused over \$100,000 worth of damage to the blimp resulting in the use of the Alameda site being discontinued and the blimp temporarily operating from the nearby Torrance Municipal Airport, a previously utilized location.

Within the year, the perfect site was located. Goodyear bought 33 acres from the Watson Land Co. in Carson, CA for \$1 million in August 1967. Located adjacent to the 405 Freeway, it was an ideal, highly visible spot for the airship's permanent base. The Columbia moved into the new facility at 19200 S. Main Street on Jan. 25, 1968. Goodyear blimps have continued to operate from the site for over 45 years.

The grassy airfield is listed officially on aeronautical charts as "Private" (64CL) with 1200x900 ft grass runways. From this location the hangerless Goodyear Blimp is easily visible day and night to the 250,000 vehicles that travel the adjacent stretch of the 405 freeway every month.

The list of airships operating from the Carson blimp port includes the original GZ-19 class Columbia (N3A), the GZ-20A class airships Columbia (N4A/N10A) from 1967-1992, later renamed as Eagle (N10A) from 1992-1997, a new-built Eagle (N2A) from 1997-2002, and the current Spirit of America (N10A) from September of 2002 through today.

Due to the close proximity to Hollywood, a major sports market, Disneyland, miles of coastline and the general "favorable weather", the Carson-based blimp spends much time in the air flying over either events or for publicity purposes. "The Goodyear blimp is one of the most recognizable brand icons in the world. An event isn't considered truly special unless the Goodyear blimp is there to provide aerial coverage," said Richard J. Kramer, Goodyear chairman, chief executive officer and president.

Prior events for the blimp in-

clude the Academy Awards, the Emmys, the World Cup, the Tournament of Roses Parade (since 1955), the Rose Bowl, the Super Bowl, World Series games, MLB All Star Games, NBA Finals, NHL Finals, and USC Trojans and UCLA Bruins collegiate football games. The Goodyear Blimp "Volunteer" actually provided a local radio station a bird's-eye view of the Olympic Games in Los Angeles in 1932, and during the 1984 Olympics held in Los Angeles, the resident blimp Columbia (N4A) was temporarily joined by the Midwest-based America (N3A) to provide enhanced television and security coverage. The Carson base itself has even made a notable movie appearance when it was featured for the landing and hijacking scenes in the 1977 disaster thriller "Black Sunday".

When not covering events, the blimp is often busy making 45 minute long passenger flights around

the regional "South Bay". These flights typically carry Goodyear corporate clients and sales personnel, invited media and lucky members of the public. Goodyear does not offer public rides, however, every year Goodyear donates hundreds of flight certificates to local non-profit charitable organizations. In 2012 alone, these certificates raised over \$450,000 nationwide. Goodyear also maintains close ties with the armed services including flights for active duty and/or wounded service members and other programs like the USMC's Toys for Tots. In 2012, the Carson base collected over 16,000 toys donated by generous Californians.

The sight and sound of the blimp flying overhead is such a common occurrence that the city of Redondo Beach adopted it as the city's official bird in 1983! Southern California is known for many institutions, but very few predate the Goodyear Blimp.



Kevin Helm

*A Southern  
California  
JEON*

programming the blimps day and night sign messages. A primary responsibility for the technician staff is keeping the two-way radio communications in top operating form so that blimp and ground crew have constant communications between them. This group is also responsible for installing the TV receiver equipment and radio communications at stadiums and other remote locations for live television events. The Goodyear blimps provide hundreds of hours of public service messages on its blimps electronic signs. The technicians' duties include making certain the latest files are programmed and run at the appropriate time. These important messages can include simple text, but can also involve complex animation and video. The more involved animations can often require several hours of manipulation by a technician to result in the desired look.

Mounted on the port side of the envelope are 3,780 LED boards and three miles of wiring that make up the blimp's "EagleVision" sign. These boards hold a total of 82,656 individual LEDs with the outer LEDs glowing red while the inner three LEDs produce red, green or blue lights. Each LED glows in varying degrees of intensity in response to computer controlled power levels to produce a palette of 32,767 possible colors! For daytime messages, 1,036 of the boards are configured to scroll much brighter intensity red letters. The sign is controlled by a standard black wireless keyboard which sits on the dash and is used for official Goodyear business or public service announcements only. Our pilot for the day jokes "Only four people at Goodyear have the permission to use it, and I am not one of them. I can only turn it on or

off". One of the electronic screens in the gondola displays the message currently running on the side of the blimp.

The launch of the Goodyear Blimp was a carefully choreographed dance. The rigger donned a safety harness and climbed to the top of the mooring mast, over 40 ft in the air. The blimp was secured to the mast by a single pin through the nosecone spindle, which will keep the blimp moored in up to 90 knots of wind. The crew chief stood in front of the blimp communicating with the pilots, mostly via hand signals. Two mooring lines permanently attached to the nosecone were held by teams of three crew members each (known as "the linemen") out to the sides of the blimp. Another six crew members (known as the "car party") held onto the

hand rail that runs the base of the gondola. When signaled, the rigger pulled the pin and the ground crew slowly guided the blimp backwards away from the mast. The intensity level kicked up a notch as the mast went from being the blimp's solid foundation to earth to a potential

hazard if a sudden gust of wind pushed the blimp or crew toward it. The crew manhandled the blimp to the pilot's preferred spot on the field and direction into the wind prior to takeoff. When the signal was given by the crew chief, the car party pulled the blimp down toward

the ground and gently bounced it into the air by the single tire and the linemen dropped the mooring line. The crew chief gave the pilots a "thumbs" up to indicate when the blimp was high enough in the air that the crew were clear and the two engines roared to life as the

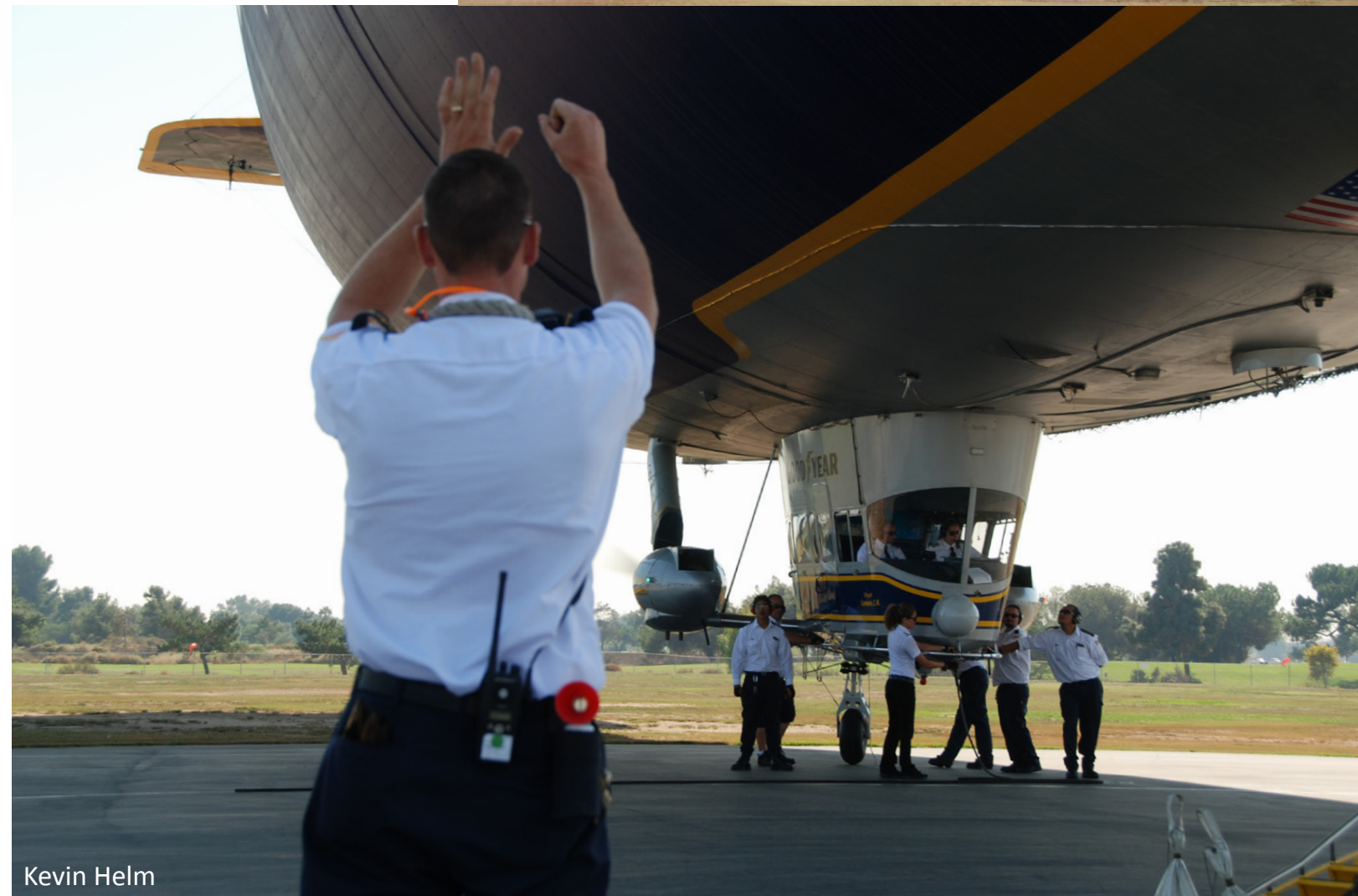
blimp pitched up skyward. In the unlikely case of a ground emergency, mounted above the co-pilot window is a red nylon/Dacron "rip cord" which disappears into the envelope. It is attached to a twenty foot long panel that runs longitudinally along the top of the envelope.



Kevin Helm



Kevin Helm



Kevin Helm



Kevin Helm



In the event of an emergency, the strength of two people is required to pull it out of the envelope while running towards the nose. When a ship is on the mast, the rip cord is attached to a cable attached to the mast, so that should the ship come off the mast unintentionally, it would safely deflate automatically.

While we waited for the blimp to return to base, we spoke at length to Elizabeth in her memorabilia laden office. Many of the items predate the "Spirit of America" and Elizabeth's time as PR Manager, showing that the blimp has a long legacy and tradition to uphold and protect by current Goodyear employees. One of the photos was of President Ronald Reagan at the Carson base.

We met our pilot for the day - Senior Pilot, Captain David Bowling. Captain Bowling is a commercial pilot with over 15 years of experience and has flown airships for the last five years. When he was nine years old, he saw the Goodyear Blimp for the first time and chased it for about a mile and a half on his bike. When the opportunity to fly this historic airship came along after years of flying airplanes, he snatched it. "It is flying history, when you are sitting up there in the sky," he said.

The typical passenger flight heads south over the Ports of Los Angeles and Long Beach seeing such sights as the Queen Mary, the battleship USS Iowa, the Trump National Golf Club and the cliffside homes of Rancho Palos Verdes. However, when our pilot learned that we both had an interest in aerospace history, he offered to take our flight west and over the aerospace rich "South Bay" area instead.

We approached the blimp at our pilot's side. The ground crew "secured" the blimp for us by pulling

tension on the mooring lines and holding the blimp by the hand rail that runs the base of the gondola. The blimp never stops moving on the ground, so we were motioned to quickly climb the yellow painted (ground support equipment) boarding ladder and enter the gondola through the 23" wide door. We had this flight to ourselves so we took the best seats in the house. The seats are large with no seatbelts (SOA's gondola was certified prior to 1987 when the FAA began to require seatbelts in airships). While we were getting settled the ground crew let go of the blimp simultaneously for a buoyancy check to see if we were neutrally floating in place, which we were. Properly balanced, the blimp weighs a mere 150-200lbs - light enough that a single crewman could push the blimp around if needed.

The control car on "Spirit of America" is serial number 4117. Car 4117 was initially put into service as the Pompano Beach, FL based "Enterprise" (N1A) which flew 11,219 flights from Nov 1979 to April 1991. Notable flights included the 1979, 1984 and 1988 Super Bowls, the Statue of Liberty dedication in 1986, the 1988 Republican and Democratic national conventions and the 1983 America's Cup. The "Enterprise" was retired and disassembled in 1991 and the car was in storage until 2002 when it became part of the "Spirit of America" and her continuing history.

For launch the crew gently "bounced" the blimp up into the air. Capt. Bowling advanced the throttles which caused the two Continentals to send out 100 dB worth of engine noise. However, we had by that point put on our intercom headsets which cut the noise down

considerably. Our pilot commented that remembering there is 100 ft of airship behind the centered gondola as one of the unique aspects of flying the blimp that he had to get used to. The blimp has a maximum 2,400 ft/min Rate of Climb. As a result, we ascended rapidly to 1500 ft AGL and headed west over the city of Torrance to where the ocean meets the land.

As the airship increases altitude, atmospheric pressure decreases and the Helium expands in the envelope. This requires the pilot to release some air from the front and rear ballonets through flap valves located on the bottom of the envelope, which are connected via cables to pull knobs just above the pilot's head. "These were all hand-made in Ohio. You can't get 'em at Wal-Mart!" Capt. Bowling reminded us about the custom built nature of the blimp. The opposite is true as the airship descends. Two scoops aft of the engines allow the pilot to force air into the ballonets as the Helium contracts.

If the blimp climbs high enough that the entire envelope is expanded Helium and the ballonets are empty the "Pressure Height" has been reached. This varies dependent of local conditions, but for the GZ-20A this dynamic ceiling is about 7,500 ft AGL. Above this height in order to prevent the envelope from tearing and bursting, precious (and expensive) Helium would have to be vented out of the valves located mid-ship in the middle of the GOODYEAR.

The flight controls of the blimp are fully manual and basic. Yaw is controlled by rudder pedals, and pitch with a self centering elevator wheel at the pilot's right side. There is no roll control of the blimp,

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although it is equipped with an attitude indicator as one of the primary instruments on the panel. Unlike in an airplane that has a control stick, a blimp pilot does a lot of “hands free” flying which can be an adjustment for new pilot. Ironically, the Goodyear NT has a fly by wire control stick but no rudder pedals which will be another adjustment for the current Goodyear pilots.

Once over the Pacific Ocean, we descended to 500 ft AGL and made a right turn to head northward along the coast. Our pilot demonstrated the stability that could be achieved when he pointed the blimp into the wind and brought the throttles back to idle. This is important for a nice smooth camera shot over an event. Due to the headwind, the airship’s forward speed decayed to zero, and we actually went slightly backwards with the air currents. “The joke I always tell everyone,” said Bowling, “is I can turn this baby on a dime with nine cents change.”

Next we continued northbound along the coastlines of Redondo Beach, Hermosa Beach and Manhattan Beach. While over the Hermosa Beach Pier I waved out the windows to people below, a few of which waved back. They are just a few of the over 60 million Americans that get a first-hand look at the three US blimps every year. The blimp’s cruising speed is a comfortable 30 mph – the same vehicle speed limit for many residential neighborhoods. The aerospace epicenter of the South Bay lay before us as we climbed back up to 1500 ft AGL and went “feet dry” over Manhattan Beach. In a panoramic view we could see Los Angeles International Airport, Los Angeles AFB, and the facilities of Boeing, Raytheon, the Aerospace Corporation and



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Northrop Grumman. However, soon the time had come to make our way back to the Carson base area, so we turned south to follow the 405 freeway. Capt. Bowling commented that one of the perks of flying above the LA freeways at rush hour was the ability to serve as his own traffic reporter for his commute home.

When asked about the pitch limitations of the airship, Capt. Bowling kindly gave us a demonstration. Turning the elevator wheel rearward, the horizon almost disappeared below the dashboard as the blimp pitched to +30 degrees. The opposite was true when we pitched -30 deg back down with forward turns of the wheel filling the entire windshield with nothing but houses and roads full of people and cars. During these maneuvers our altitude didn’t change very much despite the engines running. We simply floated along nosing up and down— a behavior much different than an airplane. Capt. Bowling recounted that “During my initial blimp pilot training the instructor came in for a landing with steep nose down and applied full power to fly the ship to the ground. I thought to myself ‘Is this guy crazy? What is he doing?’ You would never do that in an airplane!”

Since there was a little bit of time remaining before our scheduled landing Capt. Bowling offered to dive down toward the base and perform a “high speed pass” as the ground crew and the next flight’s passengers walked onto the field. The maximum attainable speed of the GZ-20A is a blistering 50 mph. We were in luck though as we had a tailwind behind us which probably closed the gap a little more between us and the cars driving 65 mph on the adjacent 405 freeway!

As we climbed back up to 1,500 ft AGL, Capt. Bowling gave us a quick landing briefing and indicated that we should pack up our extra camera equipment. For one final demonstration, he performed a “constant turn” camera shot maneuver over the Stub Hub Center Major League Soccer stadium. This maneuver provides the image of an event that people are most familiar with, the 10 second Goodyear promo that airs once an hour during a broadcast. Remarkable for this day and age, Goodyear provides these courtesy shots without any sort of legal contract but as verbal “on your honor” barter arrangements with the various television networks.

I looked out my window and watched as the shadow that traversed the rooftops below grew larger and larger. We pass over the nearby Victoria Golf Course and saw the golfers practicing at the driving range. Capt. Bowling joked ““Every time we fly over, we see guys pull out the driver. But we figure if they hit us, they should be on the tour.”

Despite the light-hearted joke, it was obvious that landing was the hardest part of the entire flight. Winds at ground level can be variable and unpredictable, so there are no less than ten orange windsocks lining the boundary fences of the base to help the pilots visualize the flow over the entire facility. As the airship’s airspeed decreases, the control surfaces have less effect and begin to feel “mushy”. Our pilot had his entire body engaged, full throws of the rudder with both feet, rapid hand over hand manipulating of the elevator control wheel, and adjustments in the throttle settings, all while changing his focus from landmarks on the field to the ground crew and back again.



Just as the ground crew reacted to the crew chief's signal to run up and capture the blimp mooring lines, our pilot changed the propellers' pitch for reverse thrust to bring us to a halt. The remaining ground crew members walked up and grabbed a hold of the gondola hand rail to complete our capture. The entire crew then walked the blimp over to an area where the ladder was attached and we were helped off the airship. Finally, Capt. Bowling departed the airship, pulled the ladder off the gondola and carried it over next to us as the ground crew "bounced" the blimp for the next launch. With that, we were once again firmly on terra firma in awe (and some denial) as the engines roared and the sun was eclipsed by the blimp as she climbed away on another flight.

I feel that Captain Bowling summed up the spirit of Goodyear airships and their operations when he said, "It seems like something that big shouldn't be flying. The majesty of it is pretty awesome. It is a throwback to a bygone era, it harkens back to a simpler time, a romantic era. It's almost like a flying museum when you're flying it, you are flying history. The Goodyear Airship definitely carries on a proud tradition."

Taking a ride in the Goodyear Blimp was an incredible experience. Unlike an airplane or helicopter, I felt like I was literally part of the sky. The air blew by the open windows as we gently cruised slowly along and looked at the scenery below. We were able to move around the gondola freely to look out to see what view was available on either

side of the blimp. It was almost like taking a Sunday drive down some lazy two lane road in your car, but in a highway in the sky.

We enjoyed the entire day we spent at the Carson Goodyear Blimp Base. We not only treasured our flight experience, but also meeting some of the staff and crew, watching everyone work together as a team, and seeing how much they care about their guests and ensured that we had a fun and safe flight. This dedication is evident among the entire Goodyear Airship Operations personnel.

The author would like to sincerely thank the members of the Spirit of America Goodyear team; Elizabeth Flynn, David Bowling, and the entire Carson staff who made the experience possible.



Kevin Helm



Kevin Helm



# 50<sup>TH</sup> RENO AIR RACES



Article by Mark Hrutkay

There have been few events in sports that manage to last 50 years. Fortunately the National Championship Air Races at Reno is one of them. This year marks the 50th running of this race during September 11th-15th, and the current gathering has grown so much from its humble beginnings.

In a way, the beginnings were a bit strange. Most of the racers were former unlimited hydroplane racers. In those days, the hydroplanes were powered by a Merlin or Allison engine from a WWII fighter. The hydros were actually several orders of magnitude more dangerous to race than the WWII fighters were to fly.

The races are currently held at the former Stead Air National Guard Base, which in 1964 was an active military base. The base was named for 1st LT Croston Stead who died in a 1949 crash of a P-51 Mustang. His brother Bill Stead came up with the idea of restarting National Championship Air Races which had effectively ended in Cleveland after Bill Odom's crash. Air racing didn't exactly grind to a screeching halt in 1949; while there were some races, they were so far and few in between that there was no real organization. Even Reno wasn't the only source of unlimited racing after 1964. Closed course (like Reno) and cross country races were held in various locations until the early 1970s, when Reno became the only game in town.

Bill Stead was a well known cattleman and sportsman who liked big toys; fast airplanes and boats. Bill raced boats including unlimited hydroplanes, and he was also an accomplished pilot. His air racing seemed confined to the 190 cubic

inch midget racers. While I can't confirm he raced in 1964, he did race in 1965 in N36C "Miss Cosmic Wind". Bill died in a midget racer crash in St. Petersburg, FL on April 28, 1966.

Of course the first races weren't held at the current location, they were initially held at the Sky Ranch in Spanish Springs, Nevada about 20 miles east of the present location. The runway was a narrow 2000' dirt strip. To get things moving Bill contacted Duane Cole to plan the races. Duane Cole was a monumental power in aviation. He started his career at the end of barnstorming, literally invented precision aerobatics and shaped what is the modern airshow. Needless to say he got the Reno Air Races off to a good start. The races were held September 12-20, 1964.

They started with a cross country race for the unlimiteds sponsored by Harold's Casino. The race was from St. Petersburg, FL to Reno. Eight P-51Ds started and five eventually finished the race. The winner was Wayne Adams in P-51D N332 averaging 319 MPH.

The unlimited closed course race was held with five Mustangs and three Bearcats. The only airplane that was significantly modified was the Bearcat N1111L owned and flown by Lockheed test pilot Darryl Greenameyer. In the months preceding the race, Darryl had installed a formula one canopy and sealed the wing flaps. That Bearcat went on to win races and set records. You can currently find it in the National Air and Space Museum's Udvar-Hazy Center.

Another notable in the unlimited race that year was Clay Lacy. Clay still flies at airshows and performed an aerobatic routine in Chi-

no this spring in a Lear Jet 23. If there is a renaissance man in aviation, Clay is it. He was an airline pilot, air racer, and set countless records. For all practical purposes he invented modern business aviation. When the Lear Jet was introduced, he partnered with golfer Arnold Palmer and figured out how

to sell them to corporations who had no idea how badly they needed them. Clay has flown about everything from a Piper Cub to the old "Super Guppy". He runs Clay Lacy Aviation out of Van Nuys, CA and is a real power house in aviation. Clay flew his purple P-51D N64CL in the cross country race and came in 3rd

place. He brought that airplane in the same basic paint scheme back to the races this year.

The legendary Bob Hoover also appeared at the 1964 races, performing aerobatics in his P-51D "Ole Yeller". The aircraft's current owner, John Bagley, was nice enough to bring back Ole Yeller to join Bob at

the races this year.

Another interesting pilot was Bob Love in a P-51D. Bob was an Ace, shooting down six planes in the Korean War. Mira Slovak flew a Bearcat in the race, and was an airline pilot from Czechoslovakia. He commandeered his own airliner in 1953 and flew out of the com-



Mark Hrutkay



Mark Hrutkay



Mark Hrutkay



Mark Hrutkay



Mark Hrutkay



Mark E Loper



Mark E Loper



Mark Hrutkay



Mark E Loper



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unist block to Frankfurt Germany and freedom. He also raced hydroplanes starting in the mid 1950s.

There were rules; one of which was that you had to land and take off on that narrow short dirt runway or be disqualified. Greenameyer couldn't land the Bearcat there because of a lack of flaps and the tiny canopy with little visibility so he operated out of Reno Municipal Airport. He raced, but ultimately was disqualified.

The races were set up to run in heats and the pilot with the most points would be champion. Bob Love had the fastest airplane but was penalized for cutting pylons in a prior heat. That penalty cost him the first unlimited championship and it went to Mira Slovak at 356 MPH.

What kind of money was awarded? A good example comes from the unlimited category in 1966, almost certainly more than would have been awarded in 1964. The total purse was \$10,000 plus 8% of the gate. By the time you split it all up, there wasn't much even for the winner. For comparison, Roscoe Turner won about \$42,000 in 1938 at the air races.

Jump forward to 2013, with the 50th running of the National Championship Air Races. The field this year was smaller than normal with only 14 unlimited racers appearing. Normally there are three classes of racing; Gold, Silver and Bronze with six aircraft competing in each class. Due to the low number of entrants, the pilots voted to limit the racing to only two classes.

Perhaps the most significant effort this year was from the Sanders Team, who brought three Sea Furys with them; Argonaut, Dreadnought, and "924". All three are very different airplanes. While Dreadnought and 924 are 2-seat dual control TMK20 trainers, 924 has the original Bristol Centarus engine installed and Dreadnought has the massive 4360 in it. Argonaut has a 2800 in it. Make no mistake, all are fast.

Also present were P-51 "Strega" flown by Matt Jackson and supposedly sponsored by actor Tom Cruise. Steve Hinton Jr (not to be confused with his father), who has dominated the races for the last four seasons, would be putting his fluid flying style to good use in P-51 "Voodoo". Rod Lewis brought a pair of racers: Sea Fury "232", piloted by former As-

tronaut Robert "Hoot" Gibson, who took second place overall last year, and Rare Bear, back after some extensive work at Nelson Ezell's shop in Breckenridge Texas and flown by Stewart Dawson.

The races were fairly uneventful for the first few days. While many emergencies were called, there were no real accidents and unlike in past years, nobody was injured. Things started heating up when 232 suffered a unique failure. The carburetor intake scoop, which was made of carbon fiber, failed and the pieces were sucked into the intake trunk and then into the carburetor. That significantly changed the mixture in the engine, resulting in a severe backfire. This blew the cowling open and engine parts damaged the windscreen as well as the horizon-

tal stabilizer. Fortunately the pilot Hoot Gibson is well-trained in dead stick landings as a pilot for the Space Shuttle and NASA's Chief Astronaut. As Hoot said, "if I can land the space shuttle at 40,000 feet per minute rate of descent; then dead sticking Sea Fury is nothing". Hoot went on to make a picture perfect landing with no engine. However 232 could not be repaired and was out of the competition. It was unfortunate, as it had set a course record for a Sea Fury of 480 MPH. Race pundits believed that 232 would have been the fastest radial-engine racer on the course.

Strega suffered a problem early in the week when the canopy imploded during a test run. Pilot Matt Jackson was not hurt in the incident. As you may guess the canopy was a

custom-built part and the team did not have any spares on hand. However, they were able to have another canopy flown in. They spent two days installing the new canopy and another windshield since both parts are a custom fit. The downtime caused Strega to be dropped to the Silver class, which Matt Jackson won to gain entry to the Gold race. However, he did have to start at the back of the pack, putting him at a severe disadvantage.

Getting "Precious Metal" #38 to Reno was a problem. Thom Richards had done a lot of work to this airplane. Not only did he get a new canopy, but probably the most attractive paint job ever done on unlimited air racer. It is powered by a Rolls Royce Griffin engine, a V-12 with 2250 cubic inches of displace-





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ment compared to a Merlin's 1650. It also has a gearbox and a pair of counter rotating props which zero out the engine torque. Precious metal suffered a failure of the race engine while being ferried to Reno. That engine was ultimately replaced in the field by a stock back up engine. This doesn't sound too difficult until you consider that most of the accessories on the backup engine were actually installed on the race engine. So not only did they have to change the engine, but they had to remove the intake systems, etc. and put them on the other engine. Having a stock engine doomed Precious Metal to fifth place.

Rare Bear spent a lot of the off season in Breckenridge, Texas at Nelson Ezell's shop. For those who don't know Nelson, he is a unique combination of master metalworker, master mechanic, and master pilot. In the past Nelson has raced

Howard Pardue's Sea Fury at Reno. He was also responsible for the magnificent restoration of Lefty Gardner's former P-38 N25Y for Red Bull. He maintains more warbirds than anyone else I can think of. His shop is constantly packed with planes to work on. On top of all of that Nelson is one of the nicest people you'll ever meet. He took over crew chief for Rare Bear. I had the opportunity to talk to him during the week and he told me he was doing his best for the team. Last year Rare Bear didn't even finish the Gold race because of overheating problems, but this year the overheating problems were solved.

Another strong contender was the modified YAK-11 "Czech Mate", flown by Sherman Smoot. It's powered by an R-2800 engine that produces 2,000 HP before any racing modifications. That's a major increase over the 700 HP engine origi-



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nally installed in this airframe when it was trainer in the Egyptian Air Force. Needless to say the majority of this airplane is custom-built. Compared to a Bearcat, Czech Mate is a very small airplane. In the past it's always been a contender in the gold races, but has never really won anything significant.

Voodoo ran well all week. This was Steve Jr.'s first race season in this airplane. In the past Voodoo has never done anything really significant, but owner Bob Button has put many years time and piles of money into this airplane. There

always seemed to be something standing in the way to snatch defeat from the jaws of victory. However, this year the airplane simply worked well and ran fast. Steve flew it in qualifying, qualified first, and stayed on the pole position.

In every race the start is the most important part. The first one into the first turn has the lead. In the case of the Gold Race, the one who gets out in front first pretty much has it as long as the engine doesn't melt. The racers line up and dive onto the course from about 3000'AGL, I've always seen the su-

per low drag Mustangs jump out in the lead and the more powerful radial-engine racers can't seem to make it up.

This year was no exception. Voodoo pulled ahead of the pack on the start, never to be challenged again. Strega was hot on his tail but couldn't catch up; the canopy failure earlier in the week got them with a poor starting position. Czech Mate and Rare Bear slugged it out for 3rd place. Rare Bear ended up in 4th, but at least finished the race. Griffin powered Precious Metal was a distant fifth. Brian Sanders in

the 4360 powered Sea Fury Dreadnaught took 6th place, and Space Shuttle pilot Curt Brown was 7th in the 3350 powered Sea Fury Sawbones. The other Sanders Sea Fury Argonaut was 7th. P-51 Miss America, which has been racing since the 1960s and is fairly stock looking, was last.

How fast was the race? Voodoo won with a speed of 482 MPH and a time of 07:59.313; Strega was at 474 MPH and just about 7 seconds behind him. Czech Mate ran 455 MPH, 20 seconds behind Strega for 3rd. Rare Bear was 4 MPH and 5

seconds slower than Czech Mate. The speed difference from 1st to 4th place was 31 MPH, but the time over 8 minutes of the race was only 32 seconds. All of them were very fast and competitive. The disappointment for many was not having Hoot Gibson and 232 in the race. With his speed of 480 and amazing piloting skills, he could have easily been 2nd or even won if Voodoo coughed.

Father Steve Hinton Sr. in the T-33 pace plane did his usual aerobic display celebrating his son's victory. It was a great day for the

Button and Hinton Family. Voodoo finally won. The victory celebration in front of the grandstands was great. As far as I know, nobody has won 5 Gold Unlimited Races in a row. The scene looked like a smaller version of New Year's Eve at Times Square. Everyone was happy and everyone was safe. Reno Air Racing Association President Mike Houghton has already announced that the races will be held next year. So it's time to start making plans for 2014.

I'd like to thank Valerie Miller of the Reno Air Racing Association for helping make this story possible.



Mark E Loper



Mark Hrutkay



# Wings Over Houston



morning downpour, the crowds and aircraft continued on; the weather couldn't disrupt this airshow or its loyal fans.

Randy Ball brought his MiG-17, a Russian high performance subsonic fighter aircraft, and filled in as a MiG-15 for the Korean War tribute. a Lockheed T-33, flown by Steve Higgs, was another Korean vintage aircraft on display. A major draw to the show, especially for families, was Dusty the crop duster, flown by Rusty Lindeman to promote the new Disney "Planes" movie. The aircraft was painted to resemble the main cartoon character and came with the message to inspire our youth to fulfill their aviation dreams and take challenges head on. Another new and welcomed feature was a general aviation flyby and static displays of homebuilt aircraft.

Traditionally the show warms up with the local remote control aircraft clubs demonstrating their great skills and modeling abilities. The loops and buzzing of the R/C aircraft always tends to draw the crowd down the flight line. Opening ceremonies were held as the colors were presented by the RE/MAX skydiving team. This year saw once again an amazing display of the Texas Flying Legends Museum's stunning fleet of aircraft including an original Japanese A6M2 Zero, one of only three authentic Zeros flying in the world. Watching pilot Warren Pietsch doing aerobatics in the Zero is nothing short of breathtaking. At what seemed like the end of their performance, the aircraft fly over in beautifully precise 6-ship formation only to be interrupted by the Zero, which leads to a dogfight

between the B-25 and the Zero.

Once the Texas Flying Legends Museum cleared the box, the audience took a step back in time to December 7, 1941 as the Commemorative Air Force demonstration team Tora! Tora! Tora! set about re-creating what it must have been like that fateful day. The aircraft recreate dog fights and bombing runs complete with simulated bombs done by an award-winning pyrotechnic team. Next up was the trainer parade featuring a most diverse line up of aircraft including the Stearman, L-3, PT-19, BT-13, multiple T-6s, T-34s, O-2s and a sharp Twin Beech 18.

Warbird flight demonstrations were mixed in with thrilling aerobatics from John Klatt, Michael Goulian, Debbie Rihn-Harvey and one of the smoothest aerobatic demonstrations, Paul Fiala in his lovely

Great Lakes biplane.

Flying late in the show was Lewis Legends Flying Museum with a pair of F8F Bearcats and an F7F Tigercat along with the CAF SB2C Helldiver, TBM Avenger, F4U Corsair, and F4F Wildcat all representing naval aviation. That demonstration led to the classic "heavy metal" part of the show featuring the CAF B-17 "Texas Raiders", B-24 "Diamond Lil" and the great B-29 "FIFI", followed by the C-60 "Goodtime Gal", flown by the Houston Wing. A number of P-51 Mustangs escorted the big iron. This airshow had four Mustangs, two P-40s, two Wildcats, including the Oshkosh Warbird Reserve Grand Champion and two F4U Corsairs.

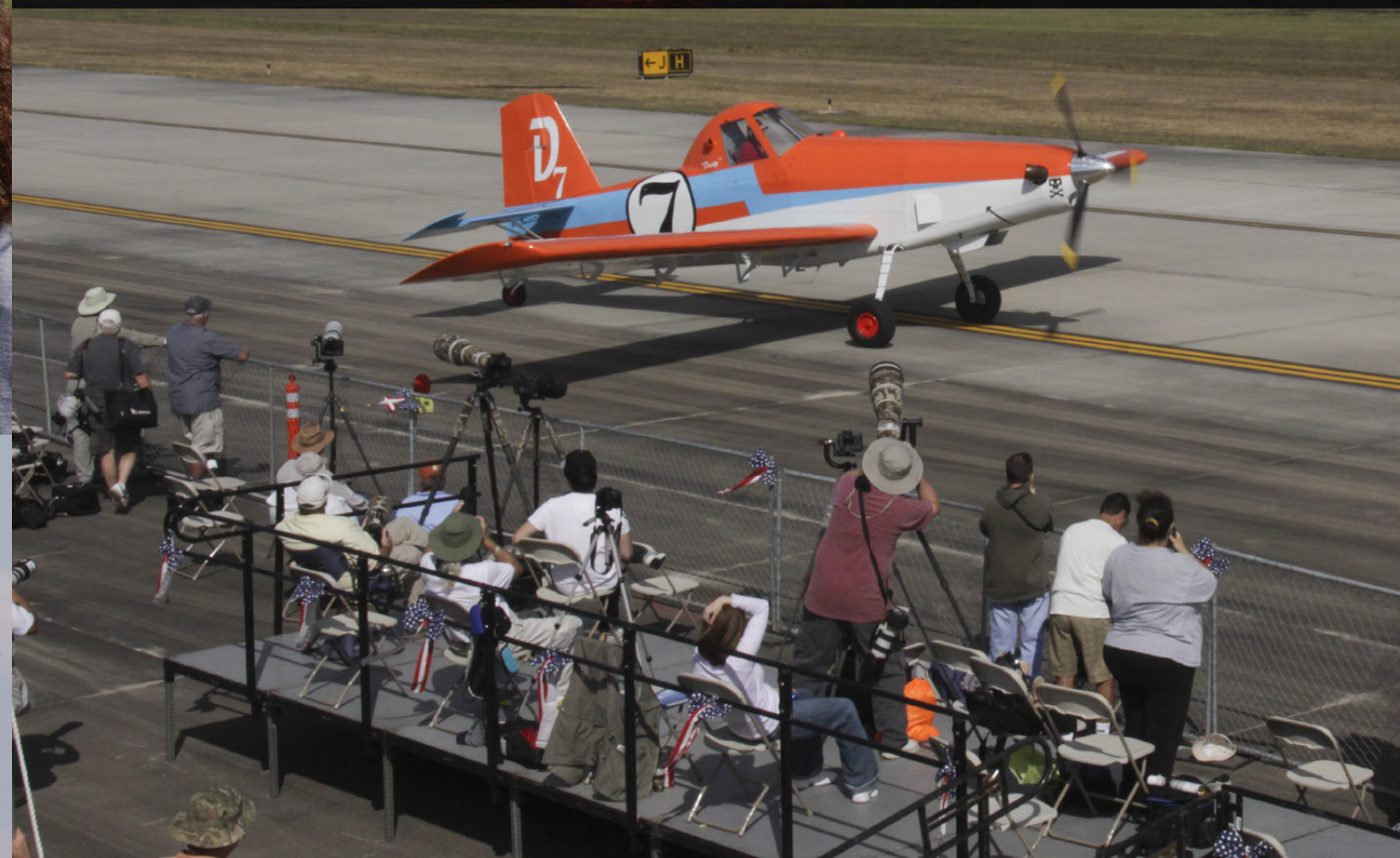
The closing act each day was Matt Younkin in his Twin Beech 18

probably shouldn't do. Younkin's performance in the classic Twin Beech is right among the top demos in the world of airshow performances. This year was the 70th anniversary of this particular aircraft being assigned to flight training at Ellington Field.

What could be missing from that airshow? Warbirds: check. Great aerobatic acts: check. Jet truck: check. Disney's "Dusty": check. Current military support, both static and flying, including the marvelous USAF Thunderbirds: well, not this year. However, for vintage warbird fans, aviation fans, and people just wanting to come out and have a great time, this year's Wings Over Houston Airshow had it all. It looks like the Thunderbirds will return next year, so we will see all of you modern military lovers in 2014!









# REPORTS FROM THE FIELD

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We have some of the best airshow photographers helping us bring you amazing photographs and informative reviews from airshows all over North America and even the world. The following pages are stuffed with this outstanding coverage of recent airshows and aviation events.

If you would like to see your own photos and reviews here, just contact us and ask how to contribute. The only requirement is a passion for aviation!

*Hahnwiede Oldtimer Airshow  
Hahnweide, Germany*

Photos by Tom Lammens







*Wings Over Waukegan - Waukegan, IL*





Alan Barbor



Tom Hedlund



Tom Hedlund



Tom Hedlund



Tom Hedlund



Alan Barbor



Alan Barbor



Tom Hedlund



Alan Barbor



Tom Hedlund



Alan Barbor



Alan Barbor



Ryan Sundheimer



Alan Barbor



Alan Barbor



Tom Hedlund



Tom Hedlund

**California International Airshow - Salinas, CA**  
Photos by Mark E Loper





# Memphis Airshow - Memphis, TN

Photos and Review by Angelo Aldrighetti



Although sequestration has put a damper on military involvement in this year's air show season, the Memphis Air Show organizers took advantage of the absence of the military demos and gave air show goers a glimpse of the origins of air shows, barnstorming. When the military jet teams aren't tearing up the skies, the talents and skills of America's aerobic take center stage.

Such was the case at the 2013 Memphis Air Show, held at Millington Regional Jetport, where hometown pilot Skip Stewart as well as Mike Wiskus, John Klatt, Julie Clark, Greg Koontz, Matt Younkin, Kyle Franklin, Gene Soucy with Teresa Stokes, and Mike Goulian displayed their high energy and intense aerial acts, with Manfred Radius displaying a graceful routine in his glider.

The sponsor of the Memphis Air Show, FedEx, showed off a Boeing 767 transport jet with flybys during the weekend. The Raiders formation group, flying the Yak-52 and CJ-6, provided one of the two team demos for the air show.

Chris Darnell in Shockwave, the Guinness record holder for the fastest jet truck, became one of the main attractions throughout the air

show as he was pestered and challenged to races by Kyle Franklin, Skip Stewart and Gene Soucy. Needless to say, with three J34-48 engines, the prop powered planes were no match for Shockwave. If the speed of Shockwave wasn't enough to excite the crowd, the 1000' wall of fire in the background as Shockwave, Stewart and Soucy passed down the runway added more excitement.

Closing out the air show were our friends to the north, the Canadian Snowbirds (431 Squadron), who provided a graceful display in their CT-114 Tutor.

The air show also focused its intentions of creating a family fun environment by having carnival rides throughout the entire air show weekend. Each civilian act participated in the Friday night portion

of the air show that incorporated Shockwave jetting down the runway with the wall of fire, all capped off by a fireworks display as the finale.

The 2013 Memphis Air Show was excellent, filling in for afterburners with the best civilian pilots and keeping the excitement rolling at a fast pace. This show will be one to keep an eye on in the coming years!







*Vero Beach Airshow - Vero Beach, FL*  
*Photos by Matthew Baker*



*California Capital Airshow - Sacramento, CA*  
*Photos by Mark E Loper*





*Green Flag West 14-3 - Nellis AFB, NV*  
Photos by Joseph D Ahmad





***Thanks for Reading!***