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# PALMETTO AVIATION

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May 1995

## B-2 Bomber Named For South Carolina

During a one-of-a-kind event, an Air Force B-2 Bomber was named the "Spirit of South Carolina" at the Columbia Metropolitan Airport April 15.

The event was highlighted by remarks from Governor David M. Beasley, Sen. Strom Thurmond, Congressman John Spratt, Gen. John Michael Loh, Air Combat Command commander and Northrup Grumman president and CEO Kent Kresa.

"It is a high, but fitting honor for this plane to be named after our state," Thurmond said "After all, South Carolina has a long and proud military heritage. Throughout history some of our nation's most famous generals have been natives of our state and the South Carolina Air National Guard performed with distinction during Operation Desert Storm."

The Air Combat Command's Blue Aces band performed at the ceremony with a spectacular flyover of an additional B-2 Stealth Bomber concluding the remarks.

The Spirit of South Carolina name was selected to recognize those South Carolinians who have worked diligently to add this technologically advanced aircraft to the United States' arsenal and the state's continuing history of aviation and military heritage.

The B-2 is the Air Force's newest and most advanced bomber and was designed to operate anywhere in the world while avoiding radar detection.



## Lanford, Stoia Receive Charles Taylor Master Mechanic Award

South Carolinians Waymon M. Lanford of Greenwood and the late William Stoia of Manning each won the Charles Taylor Master Mechanic Award recently during a ceremony held at the Midlands Tech airport campus in Columbia. The award, named after the mechanic who serviced the Wright Brothers' plane, recognizes 50 years of service in aviation maintenance. Names of the award winners are placed on the FAA's "Roll of Honor" in Washington, DC.

Lanford, now retired, received his engine maintenance certificate in 1941 and his airframe certificate in 1943. In 1957 these certificates were converted to an Airframe and Powerplant certificate, which he still holds. In June 1946 Lanford became a Designated Maintenance *cont. on page 3*



*Palmetto Aviation is an official publication of the South Carolina Department of Commerce, Division of Aeronautics. It is designed to inform members of the aviation community, and others interested in aviation, of developments in aviation and aviation facilities, and to keep readers abreast of state, national and international trends in aviation. The Division of Aeronautics is a state agency created in 1935 by the South Carolina General Assembly to foster and promote air commerce in the state.*

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## *From the Editor:*

# *Aviation Has Its Share of Honors*

Spring is always a time to see what's fresh and new as the winter doldrums subside. But it's also a time of year to look back at all those people who have gone ahead of us contributing great things to the world of aviation.

In the past weeks, many events around the state have honored those people who have given their time and talents to an industry filled with high technology and high expectations.

The Warbirds honored Admiral Thomas H. Moorer as Warbird of the Year in a special banquet held in Spartanburg. Past Warbirds of the Year, Col. Francis "Gabby" Gabreski, Gen. Joe Harold Moore, and Col. Bob Morgan were all on hand to celebrate the achievements of all military aviators.

Thousands of South Carolinians went to their airports in March and April to visit the Collings Foundation's B-17 Flying Fortress and B-24 Liberator that flew to Charleston, Columbia, Florence, and Greenville on their statewide tour which included fly-overs

Both aircraft are pivotal to our air heritage and many people enjoyed seeing them fly and talking to the airmen and women who made them great.

The Greenville Downtown Airport honored nine of their aviators by erecting a monument at an observation point at the north end of runway 18-36 to the late Mitz McDowell Martin whose death deeply affected his friends.

The other aviators memorialized were Leonard J. Povey, a barnstormer and a pioneer aviator who lead the Cuban Air Force in the 1930s; Dr. Jack Frasher, Charles R. West Jr.,

Charles A. Pool, Donald W. Pool, Ralph H. Cutherbertson Sr., and Col. Frank J. MacNeas.

Aviation history has always been an integral part of our state's heritage. In April, Lake City native Ron McNair was remembered for his contributions to aeronautics with the unveiling of a life sized statue dedicated to the Challenger astronaut.

No part of aviation is complete without mention of what is going on in the Breakfast Club. Hundreds of aviators from all over the southeast come to Breakfast Club meetings on Sundays.

In April our state was part of our present day history by hosting the naming ceremony for a B-2 Stealth Bomber, "The Spirit of South Carolina."

"The Spirit of South Carolina."

The Division of Aeronautics was fortunate to be a part of the ceremony with Governor Beasley, Sen. Strom Thurmond, and other dignitaries from Northrup Grumman.

The presentation featured plenty of opportunity to wave flags, hear patriotic marches and see a spectacular flyover of an other B-2 overhead.

If your interests turn to aviation history or aviation in the making, our state is ready with events to enlighten and entertain.

Clearly, South Carolina is in the forefront of aviation's milestones yesterday and today.

*- Helen Munnerlyn, editor*

## Aviation Education Resource Organization Now Tax-Exempt

After 14 months of hard work and effort, the board of directors of the Aviation Education Resource Organization (A.E.R.O.) are glad to report that the organization has achieved its full tax-exempt status. Now any donations of services, equipment, time, facilities, money or anything else can and may be deducted from your taxes.

The purpose of A.E.R.O. is to help make aviation in South Carolina safer by providing resources and materials to existing and future safety programs. A.E.R.O. can help reduce the number of accidents and incidents in our state. Those who make an income from the aviation business will benefit from the reduced accident and incident rate. When an

accident occurs, we all suffer—FBOs, flight schools, 135 operators, CFIs and airport managers, and others.

A.E.R.O.'s board of directors are a concerned group of dedicated FAA safety counselors. For the past 14 months they have been supporting A.E.R.O. through their own personal donations. Now that A.E.R.O. is tax exempt, you have an opportunity to participate in the growth, success and prosperity of aviation through a better safety program. If you would like to participate in this effort to help all of us in aviation, please send your contribution to Aviation Education Resource Organization, P.O. Box 456, Columbia, SC 29202.

— Frank Reid, Member of the A.E.R.O. Board

## Charles Taylor Master Mechanic Awards from p. 1

Aircraft Inspector, which was later converted to an Inspection Authorization, which he continues to hold.

Lanford spent his entire career working in General Aviation. From 1954 to 1981 he owned and operated Lanford Flying service in Greenwood, where he continued to work as a mechanic and as an aircraft inspector. From 1981 to 1994 he continued to work as a self-employed mechanic and inspector.

Stoia, who passed away unexpectedly this past February, began work as an aviation mechanic in 1940 with the Glenn L. Martin Company. He continued as an aircraft mechanic with the U.S. Navy from 1942 to 1945. Among other positions, Stoia worked as a mechanic for Eastern Airlines and was maintenance director for Southeast Airlines, Marco Island

Airways and Transport Facilities.

Stoia was also Chief of Maintenance and Chief of Operations for the famous Wings and Wheels Museum in South Carolina. From 1974 to 1995 Stoia owned and operated Precision Air, Inc., an FAA-certified repair station in Manning.

The awards were presented by the South Carolina Flight Standards District Office at the biennial maintenance/operations seminar and IA renewal.

To be eligible for The Charles Taylor Master Mechanic Award, candidates must be U.S. citizens and must have been FAA-certified mechanics or repairmen for at least 40 of the 50 years of maintenance service. The remaining 10 years may be accepted if candidates served as a mechanics in the military or worked in the aviation maintenance or manufacturing industry.

## AVIATION CALENDAR

### Breakfast Club Meetings:

May 14 Breakfast Club  
Summerville-Dorchester County

May 20 Open House  
Columbia Owens Downtown  
call 771-7915

May 20 Spring Fly-In  
Newberry Municipal Airport  
call 321-9046

May 28 Breakfast Club  
Broxton Bridge Plantation

June 4 Breakfast Club  
Donaldson Center  
Greenville Air Tech School

June 11 Breakfast Club  
Holly Hill

June 25 Breakfast Club  
Greenwood Municipal Airport

July 9 Breakfast Club  
Davis Field, near Estil

July 23 Breakfast Club  
Alan Smoak Field, near St. Matthews



## B-17 & B-24 Visit South Carolina

Two vintage aircraft, a B-17 and a B-24, created a stir when they crisscrossed the state in April.

The "All American" and the "Nine-O-Nine" commemorated the end of World War II during their flights to Myrtle Beach, Charleston, Columbia and Greenville. Thousands of people toured the planes and got a taste of World War II history at the same time.



B-24 Liberator, "All American"  
 Speed 300 mph  
 Range 3,000 miles  
 Altitude 30,000 feet  
 First flight in December 1939  
 Built by Consolidated Aircraft  
 B-17 Flying Fortress, "Nine-O-Nine"  
 Assigned to combat duty February 1944. Flew 1,129 missions in 1945, dropping 562,000 lbs. of bombs. Built by Douglas Aircraft Co.

## Open House At Columbia Owens Downtown Airport May 20th

The Open House at Columbia Owens Downtown Airport (CUB) will be held Saturday, May 20. All EAA members are encouraged to make the Open House a successful event.

Chapter 242 is cosponsoring this event with the Airport Commission for the benefit of Habitat for Humanity. Pilots will be asked to use their airplanes to give rides for a fee. The proceeds will help a needy family find a home.

Members of Chapter 242 will be handling all aspects of the Open House—collecting fees, selling food, parking airplanes, providing security, etc.

When the first Open House was held two years ago, people stood in lines for food and rides from 8 a.m. to 8 p.m. If everyone assists, no one will have to work all day. As much help as possible is needed. Mark the calendar now and plan to be present. For more information call (803) 771 7915.

## Phase I of Terminal Redevelopment Begun At Columbia Metropolitan Airport

The Columbia Metropolitan Airport began phase one of the terminal redevelopment project with a ceremony in February.

During the ceremony, dignitaries and airport staff placed dated bricks for each year the airport has operated while a significant event was noted for that year.

Phase one includes construction of the new concourse and connector which, upon completion, will feature moving sidewalks, integrated commuter gates, a food court, various concessions and a state-of-the-art energy efficient ice storage mechanical system. A connector leading from the main terminal to the new concourse will be 280 feet long and will include moving sidewalks. Construction of phase one is expected to be completed within 18 months.

Bids for phase two of the terminal redevelopment project will be taken in the Fall of 1995. This phase will include renovations to the terminal building to include both upper and lower levels.

1995 promises to be a very busy and exciting year for Columbia Metropolitan Airport with phase one of the terminal redevelopment project scheduled to begin by mid-January.

## Profile: Florence Regional Airport

The Florence Regional Airport is looking mighty fine these days. The terminal building, built in 1979, underwent remodeling in 1993, during which 7,000 square feet were added, a new heating and air conditioning system was installed, an emergency generator was added as was a fire sprinkler system.

The project cost \$1.98 million, 85 percent of which was federally funded.

Expansion was necessary because of the growth in passenger boardings. In 1980, the terminal boarded more than 29,600 passengers; last year it boarded more than 69,500. The increase allowed three car rental agencies to have a record business year in 1994.

The airport, located about two miles east of the central business district of Florence, currently encompasses more than 1,400 acres. There are two Air Carriers operating from the airport, U.S. Air Express and Atlantic South East Airlines (ASA). U.S. Air Express provides eight round-trip flights from Florence to Charlotte. ASA provides five round-trip flights from Florence to Atlanta.

Carolina Air Services is the fixed base operator. This company performs not only refueling and basic maintenance repairs but also major

mechanical repairs. It can also secure 60 aircraft at any one time.

The airport is operated by the City-County Airport Commission, a 12-member organization whose members are nominated by the city and the county and appointed by the governor. The commission was created in 1962 by the state legislature. Airport management is provided through a full-time director and a staff of 21 full-time and six part-time employees.

Although built over 50 years ago, the airport maintains one of the most modern airfields available. Its crossing runways consist of runways 9/27 and 18/36. The lighting system has a permanently installed generator to provide emergency power. Primary runway 9/27, which is 6,500 feet long, is equipped with a modern Instrument Landing System. Other instrument approaches that serve the airport are RNAV, NDB, VOR and TACAN-A systems. Each runway is also equipped with a VASI system to assist approaching aircraft as well as specifically placed lighted wind socks.

The airport also has an FAA radar facility (TRACON) and an air traffic control tower. The TRACON facility controls IFR aircraft in the Florence area and serves as a feeder

into the Charlotte area. The air traffic control tower, which operates from 6:30 a.m. to 10:00 p.m., is responsible for the safe, expeditious and orderly control of all air traffic arriving at or departing from the airport. With its advanced and modern systems, this airport is capable of accepting a wide range of aircraft, from the smallest private plane to the B-737, B-727 or the military's C-141 Transport.

The airport was originally constructed as a training base during World War II by the U.S. Army Corps. It was originally named Gilbert Field, in honor of H.K. Gilbert, Florence's mayor from 1907 to 1931.

After the war, the airport was turned over to the city of Florence, which in turn leased the airport to the South Carolina Aeronautics Commission for 25 years. After the lease expired in 1971, control of the airport was returned to the city. In 1973 the city and the county agreed to share ownership of the airport, and in June of that year the new name, Florence City-County Airport, reflected this change. The name was later changed to Florence Regional Airport to reflect the airport's growing role in serving the needs of a growing market area.



# Water In Aviation Fuels Contributes To Accidents

(The following is from the Federal Aviation Administration.)

**W**ater in fuel continues to contribute to aircraft incidents and accidents and, at times, fatal accidents. Aviation fuel can only serve its ultimate purpose if it is delivered to the aircraft engine(s) free of water. Care and attention are necessary to keep fuel dry (free of water) during transportation from the refinery, storage at airports, storage in refueling equipment, dispensing from refueling equipment into the aircraft, while in the tanks of an aircraft, and from the aircraft tank to its engine(s). Accordingly, if all persons involved in fuel handling will accept their responsibility to keep fuel dry, water-in-fuel incidents and accidents can be prevented.

## Source of Water in Aviation Fuel

Water can enter an airport fuel system through leaks in underground tanks, leaks in the seals of such items as dome covers, floating roofs, and hatches during rain or snow storms, when equipment is being washed, by marine or surface transport equipment delivering fuel to the airport, and by condensation and precipitation of dissolved water in fuel.

Water can enter an aircraft fuel system through leaks in the vents, seals or poorly fitting fuel caps on filler openings during rain or snow storms or when the aircraft is washed, from refueling system equipment, by condensation and precipitation (especially when an aircraft has partially filled tanks), and when refueling during rain or snow storms.

If aircraft fuel tanks are left less than full, there will be an air space

between the top of the fuel and the top of the tank. This air contains water vapor in the form of humidity. As the day cools off, the air in the fuel tanks also cools. This causes water to condense out of the air and get into the gasoline. To prevent this, pilots should, if possible, fill up their gas tanks after they land.

## Two Types of Water

Water occurs in aviation fuels in two forms: dissolved and free.

**Dissolved water.** All aviation fuels dissolve water in varying amounts depending upon the fuel composition and temperature. Dissolved water in fuel is similar to humidity in air.

Lowering fuel temperatures will cause dissolved water to come out of solution as free water somewhat like fog comes out of air.

Dissolved water is not a problem for aircraft operation as long as it remains in solution. Dissolved water cannot be removed by filtration but can become free water with temperature change.

**Free water.** Any water in excess of that which will dissolve is called free water. Free water can appear either as water slugs (in bulk quantities) or as entrained water.

Water slugs are, as the name implies, a relatively large amount of water appearing in one body or layer.

Entrained water is suspended in tiny droplets in the fuel. Individual droplets may or may not be visible to the naked eye, but they can give fuel a cloudy or hazy appearance depending upon their size and quantity.

When a water slug and fuel are violently agitated (for instance,

when passing through a pump), entrained water results. Entrained water will settle out in time depending upon the droplet size, specific gravity and viscosity of the fuel and currents with the tank. For this reason, a water haze may be seen in turbine fuel but the haze is seldom seen in aviation gasoline. Entrained water may also be formed by the lowering of the temperature of a fuel saturated with dissolved water. Furthermore, entrained water droplets can join together to form large drops or slugs of free water.

Aircraft will tolerate a small amount of free water (30 ppm. is usually considered to be the maximum) if it is in a fine, uniformly dispersed state. The best way to minimize the amount of water entering a system is through inspection and maintenance of equipment and by making certain that only clean and dry fuel is received into storage and delivered into an aircraft.

## Responsibility for Dry Fuel

The responsibility for maintaining dry fuel should be recognized as a joint responsibility of the aircraft manufacturer, maintenance personnel who work on an aircraft, each person who handles the fuel from the refinery to the aircraft, and the pilot who flies the aircraft.

Particular attention should be given to checks for water and to the removal of all water from fuel tank sump drains, fuel system line drains, gascolators, strainers, and filters where drain plugs/caps are provided to check and drain an aircraft system of water. Drain plugs/caps should be removed for checks and properly installed. If quick drains are not installed in places required by an airworthiness directive, recommended by the manufacturer, or at points that can be checked frequently, such

information should be brought to the attention of the owner/operator for corrective action.

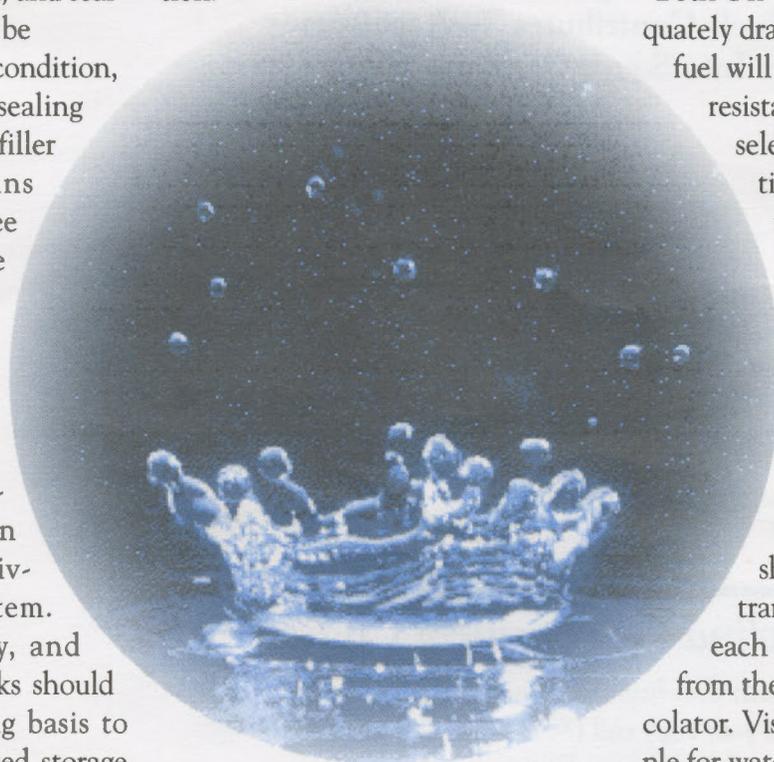
For airplanes equipped with bladder type fuel cells, the general condition and security of each of the cells and the installation should be inspected to assure that the bladder has not deteriorated or loosened from its mountings. These conditions will cause wrinkles, wells, or depressions to form where water can accumulate, avoid drainage, and eventually find its way to the engine(s) in flight.

Fuel tank filler openings and attachments should be checked for security, general condition, and sealing. Fuel tank caps should be checked for their general condition, plus security and proper sealing when installed. Fuel tank filler opening scupper drains should be checked for free flow to prevent both the accumulation of water in the tank and the entrance of water into the fuel system.

Fuel-handling personnel should have procedures to assure that clean and dry fuel is being delivered to the storage system. Daily, weekly, monthly, and other calendar time checks should be made on a continuing basis to assure that the fuel in fixed storage and dispensing units and systems is free of water prior to delivery to an aircraft. Personnel dispensing fuel should be recurrently trained in fuel handling to assure that only clean and dry fuel is dispensed.

The pilot-in-command has the final responsibility to determine that the aircraft is properly serviced. An important part of the preflight inspection is to drain aircraft fuel tank sumps, reservoirs, gascolators,

filters, and other fuel system drains to assure that the fuel supply is free of water. A review of National Transportation Safety Board Briefs of Aircraft Accidents involving 114 accidents due to fuel contamination with water occurring between January 7, 1980, and September 11, 1981, showed that the probable cause in 85 of those accidents was "Pilot-in-Command—Inadequate Preflight Preparation and/or Planning." Since water in fuel accounts for a major share of fuel quantity accidents, pilots should make it a practice to include this check beginning with the next preflight inspection.



The pilot-in-command should also be present during the refueling operation to inspect a sample of the fuel from the dispensing unit prior to fueling the aircraft.

#### **Water Removal and Preventing Water Contamination**

On certain tailwheel-type aircraft, raising the tail to level flight attitude may be necessary to get any water in a tank to flow to the gasco-

lator or main fuel strainer so that it can be drained.

In aircraft containing crossfeed system, the crossfeed system should be utilized, and fuel should be passed or pumped through the system and subsequently drained to make sure the crossfeed lines are free of water. If water that accumulates in the crossfeed system is left undrained, it will flow through the fuel lines to the engine(s) and may cause the engine(s) to lose power or stop operating.

On aircraft having fuel tanks located in each wing, positioning of the fuel tank selector valve to the "Both On" position may not adequately drain the system because the fuel will take the path of least resistance. In this case, the fuel selector valve should be positioned at each respective tank in turn, and the sump should be checked for water and drained of all water after each individual tank selection.

During preflight, a generous sample of gasoline (10 ounces or more) should be drained into a transparent container from each of the fuel sumps and from the main fuel strainer or gascolator. Visually check the fuel sample for water and by the clean-bright test. Remember bright is dry. For jet fuel, the white bucket or steel bucket test is appropriate to check fuel for water. Continue to drain fuel from the contaminated sump until certain the system is clear of all water. The use of quick-drain valves in the sumps and gascolators makes it easier to keep tanks free of significant quantities of water.



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- Water In Aviation Fuels Contributes To Accidents
- Historic Aircraft Fly Into South Carolina

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