

**Place Marker for Cover**



## **N34: A Logbook of History...**

Built by the Douglas Aircraft Company at Oklahoma City in May 1945 for the Army as TC-47B 44-77027

Accepted by the Navy for service as R4D -7 BuNo 99856 in May 1945

Used by the Navy for transportation until 1956

Transferred to the Civil Aeronautics Administration in late 1956

Used by the CAA and FAA for flight inspection between 1958 and 1981

Retired in 1982 but reactivated by the FAA and Aviation System Standards for airshows in June 1985

Retired again in 1993 and set aside for an air museum

Restored to fly once again in 2003... you can't keep a good bird down

## The DC-3, the FAA, and N34

The Douglas DC-3 can rightly be called the first modern airliner and the airplane that established American commercial aviation as a viable enterprise. No other single type of aircraft has done more to advance the state of air commerce since heavier-than-air machines first flew in 1903. The DC-3 design had its roots in the Douglas DC-1, a commercial airliner conceived in 1933 by Douglas Aircraft and Transcontinental and Western Air (TWA), in response to the design of the Boeing Model 247 that was scheduled to go into service with United Airlines. TWA came to Douglas seeking a comparable aircraft for its own fleet. The DC-1 (“Douglas Commercial One”) was the result and, powered by Wright R-1820 engines, the first example first flew on July 1, 1933. Entirely satisfied with the DC-1, TWA and Douglas nonetheless tinkered and stretched the DC-1 design to develop the production version, which became the DC-2. The DC-2, seating fourteen passengers and cruising at over 170 mph, was more than competition for the Boeing 247—it was rather another leap forward for aircraft development.

Airlines, though still suffering the setbacks of the depression-era economy, flocked to purchase the DC-2, whose first flight occurred on May 11, 1934. Over 193 examples were built for both civil and military customers. American Airways was not satisfied with the DC-2 as being able to provide sleeping berth service on its nightly coast-to-coast service, and requested that Douglas look to stretch the DC-2 again. Developed as a wide-bodied DC-2, the Douglas Sleeper Transport (DST) was the result of a major redesign of the DC-2’s fuselage, wings and tail section. Only ten percent of the DST remained compatible with the DC-2. The DST became the DC-3 when fitted for normal passenger service with provisions for twenty-one passenger seats, and first flew on December 17, 1935—twenty-two years to the day after the Wright Brothers had first flown. Later models of the DC-3 were powered by various versions of both the Wright R-1820 and the Pratt & Whitney R-1830 radial engines. The



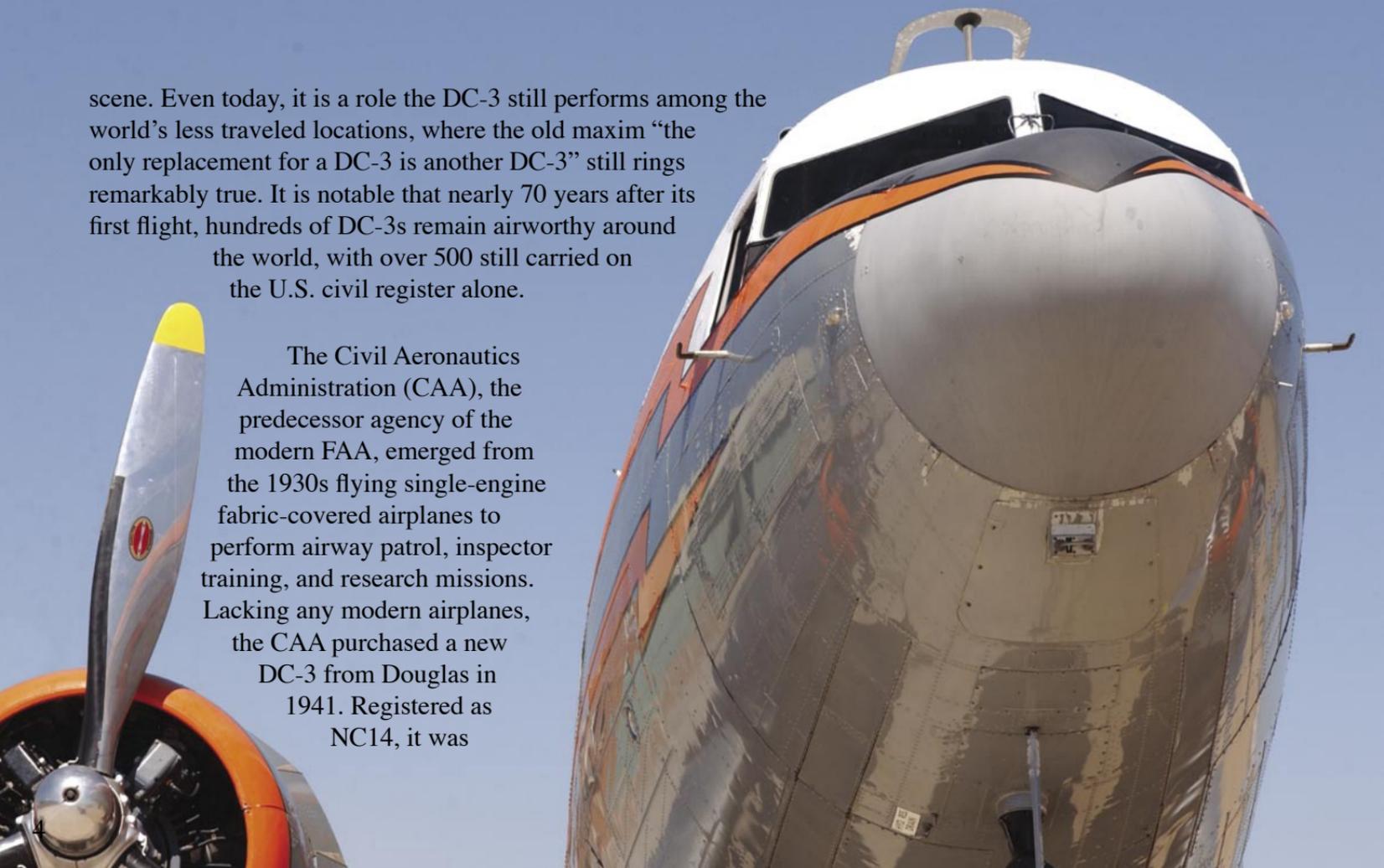
DC-3 was the major aviation success story of the late 1930s as both the airlines and the military sought the new aircraft. The military, though restricted by funding problems, nonetheless procured several DC-3s for its expanding transport requirements.

As the United States geared up for imminent war, the military began impressing already built DC-3s, took over DC-3s being built for airline customers, and would eventually purchase over 10,000 examples of the type for use as the military's basic cargo transport aircraft of World War II. The military operated DC-3s as C-47s, C-48s, C-49s, C-50s, C-51s, C-52s, C-53s, C-68s, C-84s, C-117s, C-129s, and R4Ds, indicative of the numerous uses found for the versatile aircraft. The DC-3, under the auspices of Lend-Lease, was also loaned to numerous foreign air forces, and the Russians built the airplane under a Douglas license.

After World War II ended in 1945, Douglas found itself competing against all the DC-3s it had built for the military, many of which were now available as surplus equipment at a fraction of the price Douglas could build new ones. Douglas made a half-hearted attempt to update the design, but then quickly moved on to build DC-6s and DC-7s for its post war airline customers. Hundreds of old DC-3s, however, fell into a niche market of trunk airlines, providing the same dependable and efficient transportation, with many remaining in passenger service into the 1970s. However, it was in the developing world of South America and Africa, among other places, where the DC-3 performed another fifty years of service, surviving long after jetliners had come upon the aviation

scene. Even today, it is a role the DC-3 still performs among the world's less traveled locations, where the old maxim "the only replacement for a DC-3 is another DC-3" still rings remarkably true. It is notable that nearly 70 years after its first flight, hundreds of DC-3s remain airworthy around the world, with over 500 still carried on the U.S. civil register alone.

The Civil Aeronautics Administration (CAA), the predecessor agency of the modern FAA, emerged from the 1930s flying single-engine fabric-covered airplanes to perform airway patrol, inspector training, and research missions. Lacking any modern airplanes, the CAA purchased a new DC-3 from Douglas in 1941. Registered as NC14, it was



initially used as a flying laboratory and to train aeronautical inspectors. Beginning in 1945, the CAA took advantage of the vast supply of surplus military airplanes and obtained 30 old C-47s from the Army. The CAA rebuilt two dozen of the airplanes for assignment to the CAA regional offices for navigation facility inspections, logistical support, and training programs. In the early 1950s, at least 12 DC-3s were being used by the CAA for flight inspections, supplemented by a small fleet of surplus Beech 18s.

However, with the rapid expansion of the airway system that began in 1956, the CAA needed to expand its flight inspection fleet quickly. The Navy had a large number of surplus R4Ds in desert storage at Litchfield Park, Arizona, and the CAA obtained 40 of them on loan. Each of them was withdrawn from storage, ferried to Oklahoma City, and rebuilt into what became the Type II flight inspection DC-3. The CAA engineers designed a custom interior for the upgraded airplanes that included the crew positions, radio racks, electrical system, and special equipment needed for the flight inspection mission. The engines were also replaced with higher-powered versions. Eventually, most of the old CAA flight inspection DC-3s were upgraded to the Type II configuration.

By the early 1960s, the newly established FAA had over 60 DC-3s performing the flight inspection mission



N34 as it appeared in 1958 when it became part of the CAA flight inspection fleet.

N34 performing the flight inspection mission in 1973.



across the country and around the world. The DC-3s were based at regional Flight Inspection District Offices (FIDOs) and

they became a common site as they commissioned and maintained the new VORs and ILSs supporting the expanding air navigation system. The FAA DC-3s, painted in a distinctive red, white, and black paint scheme, remained in regular service with the FAA through the mid-1970s when they began to be retired in favor of new Sabreliner jets. By 1980, there were still a few DC-3s performing the flight inspection mission but by 1983, all had finally been retired. The

DC-3 provided the CAA and FAA with over forty years of dependable service.

One particular DC-3, however, has remained to take a special place within the FAA. In recognition of the history of the CAA and FAA and our part in the first 100 years of powered flight, and also of the role of flight inspection in the development of the navigation system, FAA Administrator Marion Blakey decided to reactivate N34 for the centennial of flight celebrations. Under her direction, the FAA and its Office of Aviation System Standards (AVN) has reactivated N34, the last FAA DC-3.

N34 was built by Douglas in Oklahoma City, being delivered on May 26, 1945, near the end of C-47 production. It was known under several different guises. To Douglas, the airplane's line number at the factory was

33359. The airplane was built as a TC-47B on an Army contract, and therefore received the Army serial number of 44-77027. However, the Navy instead accepted the airplane for service and they assigned their own designation of R4D-7 and the serial number of 99856.

The Navy had no immediate use for the airplane so it was placed in storage at Clinton, Oklahoma, until December 1945. At that point, it was activated and assigned to Norfolk, Virginia. Through its Navy life, N34 was primarily used for transportation. It was subsequently based at Quonset Point, Rhode Island, and then went to VR-24, a transport squadron based at London, England. By 1950, it was assigned to a transportation pool at NAS Glenview, Illinois, and then sent back to Norfolk, Virginia, in 1953. It was retired and placed in storage at Litchfield Park in February 1956.

When the CAA came looking for DC-3s in 1956, the airplane that became N34 was placed on loan to the CAA. In early 1957, CAA pilots ferried the DC-3, temporarily registered as N7091C, to Oklahoma City. It was sent through the CAA modification shops to become a Type II flight inspection DC-3, and then registered as N34, a moniker it has carried ever since. It is interesting to note that DC-3 N34 was the fifth CAA airplane to carry that registration number: the first was a Bird CK that became N34 in 1931; the second was a Fairchild 24C in 1934; the third was a Cessna T-50 in 1940, and the fourth was a Beech 18 that became N34 in 1946 and was retired in the early 1950s.



DC-3 N34 was first assigned to the Southwest Region at Los Angeles in 1958 but eventually flew with most of the regional offices of the new FAA performing flight inspections across the country. The Navy retained the ownership of all its old R4Ds until 1966 when they were finally released to the FAA. N34 remained in active service until 1981, amassing almost 24,000 flight hours in its logbook. After being withdrawn from flight inspection duty, N34 was assigned to the Mike Monroney Aeronautical Center at Oklahoma City for use in training new flight inspection crews, a duty it continued until December 1982. As the FAA withdrew its fleet of DC-3s in the late 1970s and early 1980s, they were sent to the General Services Administration for disposal. Most were transferred to other government agencies such as the Forest Service that had a need for DC-3s, while some went to military base air museums. Those that weren't needed by the government were sold on the open market. N34 somehow escaped that fate, however, and the last FAA DC-3 was instead rolled into a storage hangar for an undetermined future.

A small group of dedicated FAA employees had a vision for the airplane, though, and with the support of then FAA Administrator Donald Engen, N34 was reactivated in June 1985 as an example of the FAA's flying heritage. Volunteer FAA employees, under the direction of the Aviation Standards National Field Office, refurbished the airplane and had it repainted in the orange and white CAA paint scheme widely used in the mid 1950s. N34 flew again in 1985, and it was used to visit large airshows around the country to tell the story of the FAA and its mission. The airplane was popularly

received and always drew a crowd at shows. In 1993, however, the airplane was again withdrawn from service and placed into storage pending its donation to a local Oklahoma City museum. N34 remained in a dusty hangar at the Mike Monroney Aeronautical Center until early 2003 when a decision was made to roll the old bird out, one more time, to become a national representative of the FAA to showcase not only the role of the FAA in the history of aviation, but also to help tell the story of where the FAA is today and where it is going. Thus, N34 was painted and polished once more, and has again spread its wings as a dynamic symbol of the FAA and its vital role—past, present, and future—in aviation.



*(Historical photos by Larry Smalley via Ed Davies collection)*



## Returning N34 to the Air

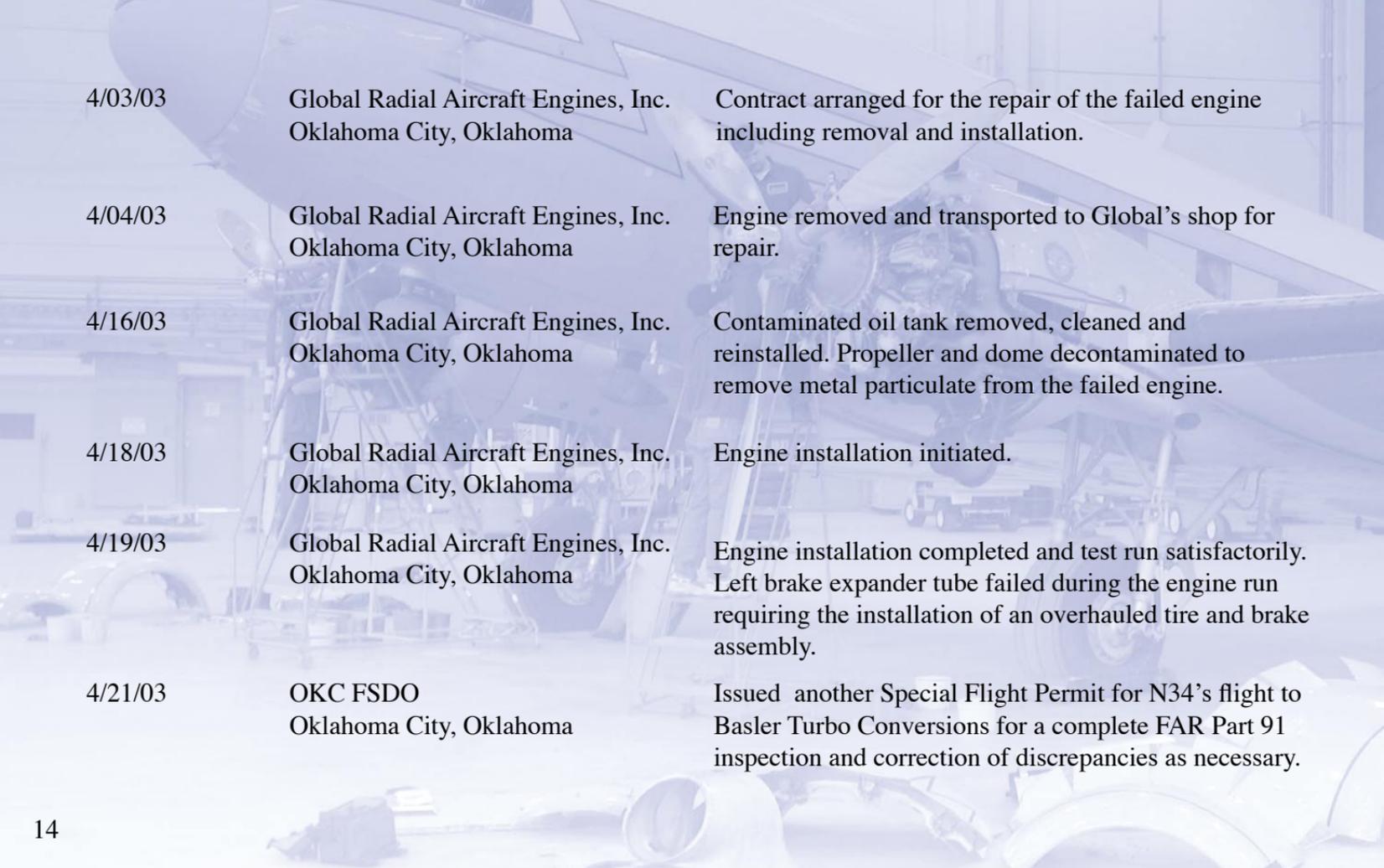
The condition of the aircraft at the time of removal from storage in Hangar 10 at the FAA Aeronautical Center reflected 10 plus years of storage and lack of maintenance. A number of Calendar Airworthiness Directives were overdue; fortunately they were of a type that could be complied with relative ease and with a minimum cost. The condition of the engines was unknown. The condition of the control surface covering was also unknown. Exterior paint was faded and large areas were peeling, especially on the upper wing surfaces. Control surfaces had been removed and later hung on the aircraft without being connected to the control system and would require complete reinstallation and rigging. Tires, brake expander tubes and all other rubber products were also suspect due to age.

## Chronological Listing of Restoration Activities

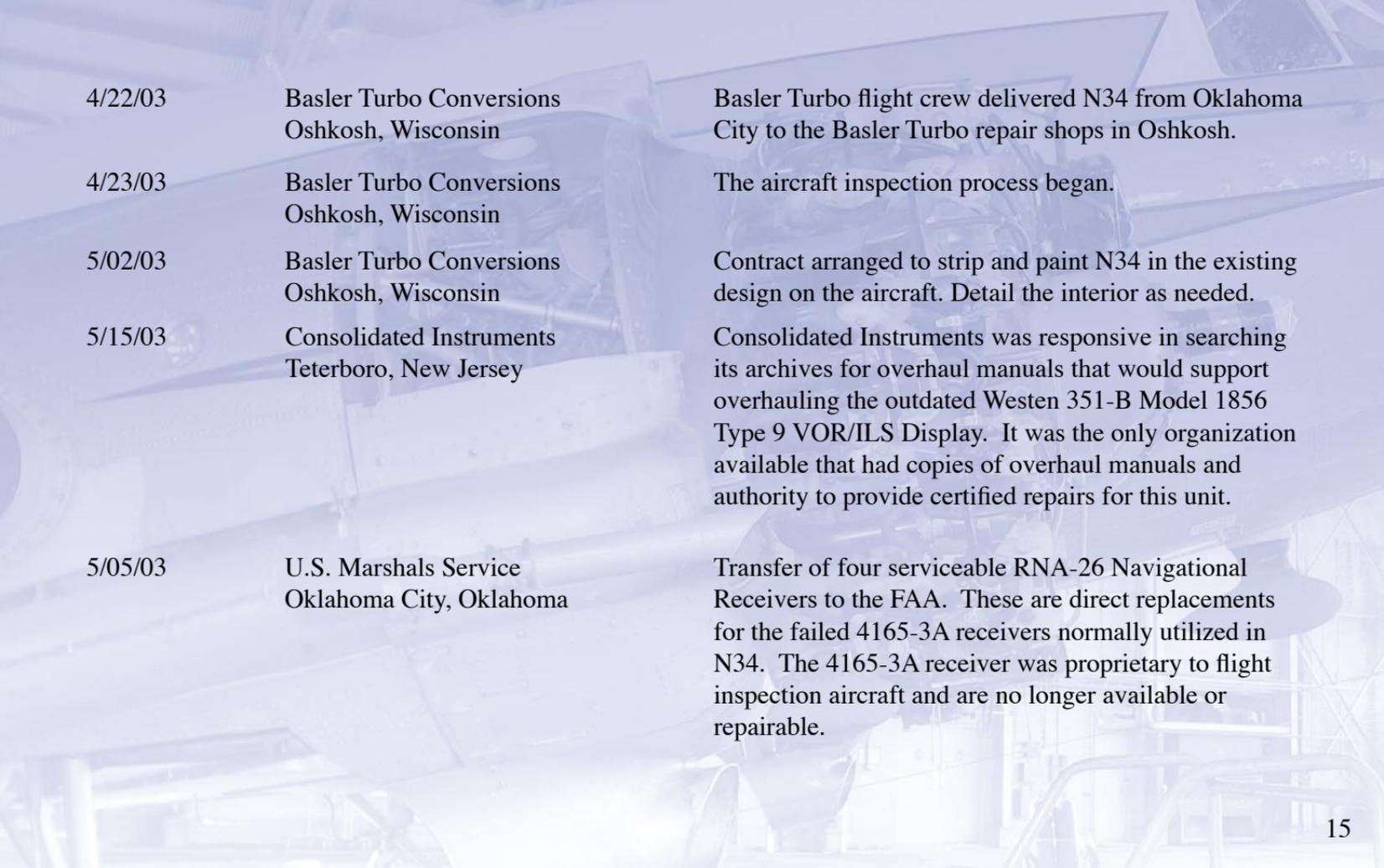
1/06/03	Global Radial Aircraft Engines, Inc. Oklahoma City, Oklahoma	Engines pre-oiled and operated to determine condition. Oil screens checked and found free of contamination.
1/14/03-5/30/03	Dustin Sloan Norman, Oklahoma	Provide management of the restoration of DC-3 N34. The records were consolidated and reviewed to determine activities necessary to return this aircraft to service. The airplane was given an initial general visual inspection.

1/31/03	The Prop Shop Oklahoma City, Oklahoma	Propellers removed for overhaul and Airworthiness Compliance.
1/31/03	Vintage Air Inc. Oklahoma City, Oklahoma	Carburetors and fuel pumps removed for overhaul.
2/07/03	Aircraft Registry AFS-700	Provided a complete history for N34.
2/07/03	LaDonna Douglas AMC-7 Aeronautical Center	Initiated activity by the Aeronautical Center Legal Office to coordinate with the State Historic Preservation Office to get approval to repair an aircraft listed on the National Historic Registry.
2/12/03	Aircraft Accessories Tulsa, Oklahoma	Carburetors and fuel pumps shipped for overhaul.
2/20/03	Aviall Inc. Dallas, Texas	Supplied new G-88 batteries.
2/24/03	Tom Accardi AVN-1	Requested the reassignment of the registration number N34 for serial number 33359.
2/24/03	Debra Entricken ASW-280	Approved the use of N34 for serial number 33359.
2/25/03	Aircraft Registry AFS-700	The registration of N34 was formally reassigned.

2/28/03	Tom Accardi AVN-1	Requested approval from the OKC-FSDO to utilize the DC-3 Master Minimum Equipment List as the N34 Minimum Equipment List.
3/03/03	Basler Turbo Conversions Oshkosh, Wisconsin	Contract to conduct a FAR Part 91 annual inspection and correct discrepancies as necessary. Aircraft scheduled to be picked up in Oklahoma City.
3/03/03	OKC Flight Standards Oklahoma City, Oklahoma	Reviewed and approved FAR Part 91 approved Aircraft Inspection Program.
3/10/03	RDJ Services Del City, Oklahoma	Reinstall the control surfaces on the aircraft.
3/12/03	Oklahoma Historical Society	Approval of the maintenance and return to service of N34 as listed on the National Historic Registry.
3/19/03	OKC FSDO Oklahoma City, Oklahoma	Issued a Special Flight Permit for N34's flight to Basler Turbo for a complete FAR Part 91 inspection and correction of discrepancies as necessary.
3/24/03	Basler Turbo Conversions Oshkosh, Wisconsin	Basler crew attempted to ferry N34 to Oshkosh. They experienced an engine failure soon after departure and returned to Will Rogers Airport.



4/03/03	Global Radial Aircraft Engines, Inc. Oklahoma City, Oklahoma	Contract arranged for the repair of the failed engine including removal and installation.
4/04/03	Global Radial Aircraft Engines, Inc. Oklahoma City, Oklahoma	Engine removed and transported to Global's shop for repair.
4/16/03	Global Radial Aircraft Engines, Inc. Oklahoma City, Oklahoma	Contaminated oil tank removed, cleaned and reinstalled. Propeller and dome decontaminated to remove metal particulate from the failed engine.
4/18/03	Global Radial Aircraft Engines, Inc. Oklahoma City, Oklahoma	Engine installation initiated.
4/19/03	Global Radial Aircraft Engines, Inc. Oklahoma City, Oklahoma	Engine installation completed and test run satisfactorily. Left brake expander tube failed during the engine run requiring the installation of an overhauled tire and brake assembly.
4/21/03	OKC FSDO Oklahoma City, Oklahoma	Issued another Special Flight Permit for N34's flight to Basler Turbo Conversions for a complete FAR Part 91 inspection and correction of discrepancies as necessary.



4/22/03	Basler Turbo Conversions Oshkosh, Wisconsin	Basler Turbo flight crew delivered N34 from Oklahoma City to the Basler Turbo repair shops in Oshkosh.
4/23/03	Basler Turbo Conversions Oshkosh, Wisconsin	The aircraft inspection process began.
5/02/03	Basler Turbo Conversions Oshkosh, Wisconsin	Contract arranged to strip and paint N34 in the existing design on the aircraft. Detail the interior as needed.
5/15/03	Consolidated Instruments Teterboro, New Jersey	Consolidated Instruments was responsive in searching its archives for overhaul manuals that would support overhauling the outdated Westen 351-B Model 1856 Type 9 VOR/ILS Display. It was the only organization available that had copies of overhaul manuals and authority to provide certified repairs for this unit.
5/05/03	U.S. Marshals Service Oklahoma City, Oklahoma	Transfer of four serviceable RNA-26 Navigational Receivers to the FAA. These are direct replacements for the failed 4165-3A receivers normally utilized in N34. The 4165-3A receiver was proprietary to flight inspection aircraft and are no longer available or repairable.

5/18/03

J.C. Pierce, AVN-320

Conducted a conformity inspection on N34 at the Basler Turbo facility at Oshkosh.

5/20/03

Basler Turbo Conversions  
Oshkosh, Wisconsin

Completed all inspection requirements except weight and balance. Required repairs were also completed at this time.

5/20/03

Avionics Specialist  
Memphis, Tennessee

Avionics Specialist was responsive in searching its archives for overhaul manuals that would support overhauling the outdated Bendix, ATC Transponder TRU-13 and TRA-61-C. It was the only organization available that had copies of overhaul manuals and authority to provide certified repairs for this unit.

5/22/03

OKC Flight Standards  
Oklahoma City, Oklahoma

Approved the N34 Minimum Equipment List.

5/24/03

Basler Turbo Conversions  
Oshkosh, Wisconsin

Delivered the aircraft to the paint facility for a complete strip and paint.

6/18/03

Basler Turbo Conversions  
Oshkosh, Wisconsin

N34 was flown from the paint facility to the Basler Turbo unit in Oshkosh, where the required weight and balance necessary to complete the inspection was conducted. N34 was then made available to the FAA as an operational aircraft.



# National Air Tour 2003

## Route and Schedule

The historic National Air Tour was conducted between September 8th and September 24th, 2003 and visited 26 cities on a 4,000 mile route to help celebrate the 100th Anniversary of the Wright Brothers' first powered flight.



1. **Monday, September 8th – 221 miles**  
**Dearborn area > Kalamazoo > South Bend > Chicago/Lansing**
2. **Tuesday, September 9th – 111 miles**  
**Chicago/Lansing > Milwaukee**
3. **Wednesday, September 10th – 324 miles**  
**Milwaukee > Wausau > Minneapolis/St. Paul**
4. **Thursday, September 11th – 424 miles**  
**Minneapolis/St. Paul > Mason City > Des Moines > Kansas City**
5. **Friday, September 12th – 171 miles**  
**Kansas City > Wichita**

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6. **Saturday, September 13th – layover  
Wichita**
  7. **Sunday, September 14th – 372 miles  
Wichita > Tulsa > Fort Worth**
  8. **Monday, September 15th – 386 miles  
Fort Worth > Shreveport > Little Rock**
  9. **Tuesday, September 16th – 348 miles  
Little Rock > Memphis > Birmingham**
  10. **Wednesday, September 17th – 150 miles  
Birmingham > Atlanta/Peachtree City**
  11. **Thursday, September 18th – 301 miles  
Atlanta/Peachtree City > Greenville > Winston-Salem**
  12. **Friday, September 19th – 258 miles  
Winston-Salem > Wilson > Manteo**
  13. **Saturday, September 20th – layover  
Manteo > Kill Devil Hills**
  14. **Sunday, September 21st – 300 miles  
Kill Devil Hills > Richmond > Frederick**
  15. **Monday, September 22nd – 164 miles  
Frederick > Pittsburgh**
  16. **Tuesday, September 23rd – 234 miles  
Pittsburgh > Dayton/Greene County**
  17. **Wednesday, September 24th – 186 miles  
Dayton > Dearborn area**

# **DC-3 N34**

## **2003 Centennial of Flight Schedule**

**N34 Centennial of Flight Launch, Washington, D.C. July 15**

**Inventing Flight, Dayton, Ohio July 17 - 20**

**EAA Air Venture 2003, Oshkosh, Wisconsin July 29 - August 3**

**Cleveland National Air Show, Cleveland, Ohio August 30 - 31**

**National Air Tour 2003, September 8 - 24 (28 stops)**

**International Air Show, Fort Worth, Texas September 27 - 28**

**Aerospace America 2003, Oklahoma City, Oklahoma October 4 - 5**

**Kitty Hawk to Miramar, San Diego, California October 18 - 19**

**Edwards AFB Air Show, California October 25 - 26**

**Centennial of Flight, Kitty Hawk, North Carolina December 17 - 18**





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