Standard formed Feb 3, 1926

Initially operated single engined Fokker F-7s,

Six passengers LA-PHX-TUC
1928 - Standard became the distributor for the Alexander Eaglerock – designed to replace WW1 surplus airplanes
Standard initiated first US transcontinental service with air and rail in February 1929
North American Aviation + Pennsylvania and Santa Fe Railroads = Transcontinental Air Transport TAT “The Lindbergh Line”
COAST TO COAST

Transcontinental Air Transport

Pennsylvania Railroad

FURTHER information may be secured from sales offices of the Pennsylvania or from Transcontinental Air Transport Inc., offices at airports or from Transcontinental Air Transport Inc., offices at airports or from the TAT ticket offices listed below:

EASTERN TRAFFIC MANAGER
600 Madison Avenue
New York, N.Y.
Telephone: Rockefeller 3-4800

WESTERN TRAFFIC MANAGER
518 Pacific Union Building
San Francisco, Calif.
Telephone: Federal 2-2421

CENTRAL TRAFFIC MANAGER
333 Wabash Avenue Building
Chicago, Ill.
Telephone: Central 8-4000

Coast to Coast by Plane and Train
Clement Keys
(1876 – 1952)
Harris “Pop” Hanshue (1881 – 1937)
Auto dealer – racing driver – won CAM 4 (LA – SLC) – started Western Air Express 1926
Air-Rail Line Spans

“The Tin Goose”
Feb 13, 1930

Keys melds TAT with Maddux

Maddux operated largest Ford Trimotor fleet (15 added to TAT fleet)

Gave TAT LA – SFO route
WAE Fokker Trimotor
Wood wing spars

TAT Ford Trimotor
“The Tin Goose”
All metal construction
The Three SeaHawks

Led by Lt. “Tommy” Tomlinson USMC
March 1930
How did the mails fly?

Beacon tower and direction arrow

Grants-Milan airport NM.

Courtesy Aviation Heritage Museum NM
Transcontinental & Western Airlines formed July 16, 1930 – TAT, Maddux, WAE and Pittsburgh Aviation Industries Corporation (PAIC)

“No two airlines will operate the same route and both receive government funding” (Walter Folger Brown)

October 25 1930, T&WA receives contract for coast to coast NYC – LAX with stop at KC – central American coast to coast route
William John “Jack” Frye (1904-1959)

Director of Operations TC&W

Became President TC&W airlines

Fostered development of DC1, DC2, B307, Constellation
Paul Richter
(1898 – 1949)
Flight instructor, Stunt pilot, 13 Black Cats
Co-founder ACoFC, Standard Airways, TWA
CoS Navy Air Transportation Service
WW2

“Give me enough power, I can fly a barn door”
Walter A “Ham” Hamilton 1902-1946

V-P mechanical Operations for ACoF and TWA

Master engine tuner
Invented the Delco dual ignition system for the Curtiss OX-5 engine

“Walt Hamilton can make a washing machine fly!”
Knute Rockne
(1888 – 1931)
Player and coach for Notre Dame University
Head coach 1918 – 1930
Died March 31, 1931
(with seven other souls)
TWA flight 599 Kansas City Mo. – LAX
Fokker F.10 trimotor
Crash caused by wing failure of non inspectable wooden spars
Northrop Alpha 1930

Engine: one Pratt & Whitney Wasp R-1340-SC1, 420 hp
Max. Speed: 177 MPH
Ceiling: 19,300 feet
Range: 1650 miles
Weight: 2590 lb. empty, 4500 lb. normal load

Frye employed TWAs best pilots on his mail runs.

Weather forecasting became a skill allied to operations – strongly endorsed by Lindbergh
Douglas DC-1
First Flight
July 1, 1933

Boeing Model 247
First Flight
February 8, 1933
TWA Requirements for next airplane.....

Three engines of at least 500 hp
MTOW of 14,200 lb or 2 tons > Ford Trimotor
At least 12 passengers
185 mph max and 146 mph cruise speed
Service ceiling 21,000 ft on 3 engines
Service ceiling 10,000 ft on any two engines
Landing speed not to exceed 65 mph
All metal construction

“Fully loaded, airplane must make satisfactory take-offs under good control from any TWA airport on any combination of two engines”
(Lindbergh requirement)
February 1934  Burbank – Newark
“Big Four” early 1930s routes

Time-Life Books Inc.
DC-1
Note the absence of any dorsal fin on either airplane

DC-2
DC-1 innovations

Variable pitch propeller control

Cabin unobstructed by wing spar structure

Sound attenuation

Heated cabin

Fully controllable on one engine

Extensive use of wing-body filleting

Landing flaps (first time on such a large airplane)
Spring 1934 – Frye orders two Northrop Gammas
One modified to fly at >30,000 ft.

Tommy Tomlinson gathers data to show that even at 20,000 ft, the airplane flies above 80% of the weather
By 1937, UAL, AAL and TWA ran 60% airline revenue and the rest was shared between eighteen other airlines.

Competition between the Big Three became pretty heavy in 1938. All operated same equipment (DC-3).

Only other competition came from Lockheed L-14 Super Electra.
Boeing Model 307 Stratoliner

First pressurized airliner

First flight December 31, 1938

Gross weight 42,000 lb

Top Speed 246 mph
Cruising speed 220 mph

Range 2,390 miles
Ceiling 26,200 feet

Four 1,000-horsepower Wright Cyclone engines

Accommodation 5 crew, 33 passengers
TWA team
Hamilton
Jack Frye
Paul Richter

Lockheed team
Bob Gross
“Kelly” Johnson
Hall Hibbard and “Kelly” Johnson study drawing of the Constellation
Birth of the Lockheed Constellation

New four engined airliner with non-stop transcon capability.

6000lb payload over still air range of 3500 miles at 250 mph at 20,000 ft.

Cabin altitude of 8000 ft.

Dolphin like fuselage profile gave some additional lift

Nose droop that shortened the nose landing gear.

Incorporated Kelly Johnson’s trademark tail.
Model 49 Constellation design features

Flight controls hydraulically boosted - industrial first!

MLG retracted forward into engine nacelles

Two spar wing based on the P-38

Integral fuel tanks and Lockheed-Fowler Trailing edge flaps

Four 2000 hp P&W Double Wasps or Wright Double Cyclones

20,000ft at speeds approaching 300 mph for ranges between 2300 and 3700 miles
World War Two intervened!!

The secrecy of the Constellation could not be sustained pending the outbreak of war.

Commercial production was frozen following Pearl Harbor.

80 production L-049 models completed - operated immediately by ATC

049 first flew on January 9, 1943, Eddie Allen in control, Milo Burcham as co-pilot

TWA establishes InterContinental Division (ICD)
Robert “Bob” W. Rummel
(1915 – 2009)

TWA career
1943 – 1978

Chief Engineer

Howard Hughes consultant
Prototype XC-69 flew January 9, 1943
Transferred to USAAF on July 28, 1943 as C-69
and as World War 2 came to an end ........

Frye and Hughes fly a C-69 LA – Washington in under 7 hours and NYC – Paris in 14 hours 12 minutes

(C of A was granted for commercial use December 11, 1945)

C-69 cruised at 280 mph versus 200 mph for DC-4
Commercial Model 049 flew in August 1945

Production deliveries started in mid-1947 – beat DC-6

First wholly commercial 649 “Gold Plate” version to EAL 1948

Increased TOGW to 94,000 lb with 2500 hp Wright 3350
Trouble brewing…………TWA’s financial position is weak

July 1946 – while the TWA technical team reviews the new Convair products …………..

TWA was already committed to Martin 202 and 303 aircraft

Howard Hughes crashes the XF-11 on the LA Country Club golf course …. and is thought “near death”

... Right prop went into reverse pitch!

TWA’s financial process was frozen!
Mid July 1946, TWA ICD loses a Constellation on a training flight.

Frye grounds all TWA Constellations pending outcome of investigation.

CAB grounds all Constellations blaming airline maintenance!

CAB orders (punitive) improvements to the airplane.

TWA’s finances now critical!

Frye needed to raise capital and proposed methods anathema to Hughes and Dietrich.

Feud forced Frye’s resignation on April 24 1947.
Propjets versus pure jets for TWA????...... Now what?

In 1946, AVRO Canada had started design of a four engine jet - 30 passengers

The C102 flew in 1949 – only 13 days after the DH Comet

After C102 demise, Hughes studied the Convair YB-60, a transport version of the AVRO Vulcan bomber, Britannias DH Comet and ultimately the Boeing 707…………

But Hughes favored Convair jet transport designs

The whole US transport industry was rocked by Juan Trippe’s purchase of pure jets announced in 1955
Howard Hughes’ seemingly random actions prompted Noah Dietrich to start questioning Howard’s mental stability.

In March 1956, Dietrich was “frozen” out of Hughes life.

Hughes’ financial backstop was gone!

TWA’s competition was gobbling up Boeing 707 delivery positions.

Convair offered Hughes competitive delivery positions, subsequently cancelling the negotiations.

TWA went back to Boeing …… PAA and AAL had the early production delivery positions.
Convair 880

Boeing 707
Historic Flight Foundation wishes to thank the following for their interest and assistance

Captain Lyle D Bobzin and his wife, Rita Bobzin
Captain Glenn Stieneke
Marc Brecy - Flight Dispatch Officer CDG

Plus, members of:

- TWA Seniors Club
- TWA Clipped Wings Seattle Chapter
- TWA Directors of Customer Service Alumni Association
- TWA Retired Pilots Association