



1953

DOUGLAS AIRCRAFT COMPANY, INC.
EL SEGUNDO DIVISION
PUBLIC RELATIONS

BACKGROUND RELEASE

THE NAVY'S DOUGLAS SKYSTREAK

The Navy's bright red record breaking Douglas Skystreak is a tube-shaped, jet-propelled high-speed research aircraft with stubby, thin wings.

Conceived early in 1945 as a transonic "test tube" to explore for Science the unknown "compressibility" range of velocities near the speed of sound (761 miles per hour at sea level), the Skystreak was designed and developed for the Navy Department's Bureau of Aeronautics by Douglas Aircraft's El Segundo, Calif., plant.

A standard Allison-built General Electric TG-180 jet engine of 4000 pounds of thrust powered the Skystreak on its record flight. No special fuels; water injection, or other methods of overspeed were employed. The aircraft was not modified or "souped up" in any manner but accomplished its successful speed trials as originally designed and built.

During the entire preliminary period of test flying the aircraft performed with faultless stability and control, making it perhaps the most "squawk free" aircraft ever to fly.

It was in August, 1947, that the Skystreak set two official world speed records in the space of five days, the first 640.7 mph,

the second, 650.6 mph. The world record runs were conducted at Muroc, Calif., with the Skystreak piloted in the trials by a Navy and a Marine officer.

The critical speed of the wing is the principal item limiting the speed of most aircraft. For this reason the Skystreak's ten per cent thick wings, with low aspect ratio (4.15), and small area (150 square feet), stood it in good stead at the speeds attained. Its gross weight with normal fuel (230 gallons) is 9750 pounds. It has a wing loading of sixty-five pounds per square foot for takeoff and fifty-six pounds per square foot for landing. It has straight wings, twenty-five feet in span. It is twenty-five feet long, twelve feet high.

Though a transonic airplane, its performance characteristics are those of a normal aircraft. It takes off, climbs to service ceiling, performs its level speed runs, and returns to its starting base - at all times under its own power.

Fuel (230 gallons) is carried inside its thin wings. Wing tip tanks are provided to increase endurance, range and altitude in forthcoming phases of the research program.

The sonic explorer, equipped with 500 pounds of recording instruments, will carry a man and a powerplant, as fast as possible, at varying altitudes during the next two years. Air pressures will

be measured at 400 points on wing, tail and fuselage surfaces.

The main fuselage is fabricated of magnesium alloy. The thinness of the wing made it necessary to design special wheels, tires and brake small enough to be completely retracted into the wing. The tiny eight-ply Goodrich tires have an inflation pressure of 190 pounds per square inch, or about six times that of an average automobile tire.

Every safety precaution has been taken, including a special escape method for the pilot to bail out at high speeds at high altitudes. The cockpit or forward section of the aircraft is jettisonable. In emergency the pilot breaks the nose compartment clear of the rest of the airplane and then, after its speed is reduced, bails out in a relatively normal fashion.

The cockpit is pressurized to maintain normal conditions at high altitudes. A pressure type "G" suit gives additional protection against blacking out during sharp turns or pullouts.

Special oxygen equipment is carried as emergency provision to safeguard the pilot in the event of loss of cabin pressure at high altitudes.

A cooling and heating system maintains an even temperature in the pilot's cockpit during the changes of altitudes and speeds.

Special harnesses, pads and padded head supports are provided to give the pilot maximum possible protection against the violent, sharp jolts resulting from flying in the transonic range.

Douglas Aircraft Company, Inc.
El Segundo Plant
El Segundo, California

THE SKYSTREAK IN BRIEF

TYPE Jet-powered transonic research airplane.

BUILT BY El Segundo Plant of the Douglas Aircraft Company, Inc.

FOR U.S. Navy Bureau of Aeronautics

PURPOSE Measure aerodynamic forces acting upon airplane and controls near speed of sound to permit efficient design of future combat types.

OPERATION Takes off and lands under own power. No mother ship required.

TESTS By Douglas, Navy and NACA at Muroc, California, and Langley Field, Virginia

PERFORMANCE Speed - In transonic range. Exact figures confidential because performance vital to future military aircraft. Take-off and landing speeds approximate present day fighters.

Endurance - Normal approximately one hour, with tip tanks $1\frac{1}{2}$ hours.

WEIGHT Gross weight with normal (230 gallons) fuel is 9,750 pounds.

WING LOADING Take-off 65 pounds per square foot; landing 56 pounds per square foot (approximately the same as the Douglas Invader A26 Bomber).

SIZE Wing span 25 feet, length 35 feet, height 12 feet.

STRENGTH Approximately 60% stronger than current fighter design requirements.

MATERIAL Wing and control surfaces 75S high strength aluminum alloy. Fuselage shell lightweight magnesium alloy. Tungsten alloy required to balance ailerons due to space limitation.

POWER PLANT Allison-built General Electric TG-180 turbo-jet engine burns fuel similar to kerosene. Power rating 4000 pounds thrust - approximately equivalent to 75 average

LANDING GEAR Special wheels by Bendix and nylon tires by Goodrich. Tire pressure 190 pounds per square inch. Special small tires necessary due to thinness of wing into which wheels retract.

SPECIAL FEATURES Pilot's cockpit in addition to being jettisonable is provided with pressurization, insulation against heat and cold, refrigeration and heating. Also equipped with G suit and oxygen.

Speed brakes provided on fuselage for glide and dive control.

Fuel tanks - wing tip tanks provide 100 additional gallons of fuel. Tanks jettisonable by cartridge ejection.

RECORDING

INSTRUMENTATION 500 Pounds of special instruments automatically record all air loads imposed on the airplane during flight by measuring air pressures at 400 locations.

RED COLOR Red was chosen for visibility and contrast against the blue sky.

SPEED RECORDS On August 20, 1947 the Skystreak established a new world speed record of 640.7 mph and five days later the record was again 650.6 mph.