

## Delta Wing Glider Nasa

An Analysis of the Delta-wing Hypersonic Stability and Control Behavior at Angles of Attack Between 30° and 90°

Pressure Measurements Obtained in Flight at Transonic Speeds for a Conically Cambered Delta Wing

The Delta Monster

Flying beyond the stall

Modeling Flight NASA Latest Version

Flow Field Over the Wing of a Delta-Wing Fighter Model with Vortex Control Devices at Mach 0. 6 To 1. 2

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Computational Test Cases for a Clipped Delta Wing with Pitching and Trailing-Edge Control Surface Oscillations

Beyond Tube-and-Wing

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Static Longitudinal Aerodynamic Characteristics at Transonic Speeds of a Thick Delta Wing Hypersonic Glider Configuration for Angles of Attack Up to 100

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Professional Measurements Obtained in Flight at Transonic Speeds for a Conically Cambered Delta Wing

NASA Technical Paper

Computers Take Flight: A History of NASA's Pioneering Digital Fly-By-Wire Project

The Aerodynamic Characteristics of Several Thick Delta Wings at Mach Numbers to 6 and Angles of Attack 50°

Investigation of Low-subsonic Flight Characteristics of a Model of a Hypersonic Boost-glide Configuration Having a 78 Degree Delta Wing /by

Analysis of the Dynamic Lateral Stability of a Delta-wing Airplane with Frequency-dependent Stability Derivatives

*Delta Wing Glider Nasa*

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### MILA AMAYA

[An Analysis of the Delta-wing Hypersonic Stability and Control Behavior at Angles of Attack Between 30° and 90°](#) University Press of Kentucky

Den tyske flykonstruktør beskriver her udviklingen og forsøgene med Tailless- og Delta Wing-flytyper.

[Pressure Measurements Obtained in Flight at Transonic Speeds for a Conically Cambered Delta Wing](#) Createspace Independent Publishing Platform

The X-31 Enhanced Fighter Maneuverability Demonstrator was unique among experimental aircraft. A joint effort of the United States and Germany, the X-31 was the only X-plane to be designed, manufactured, and flight tested as an international collaboration. It was also the only X-plane to support two separate test programs conducted years apart, one administered largely by NASA and the other by the U.S. Navy, as well as the first X-plane ever to perform at the Paris Air

Show. Flying Beyond the Stall begins by describing the government agencies and private-sector industries involved in the X-31 program, the genesis of the supermaneuverability concept and its initial design breakthroughs, design and fabrication of two test airframes, preparation for the X-31's first flight, and the first flights of Ship #1 and Ship #2. Subsequent chapters discuss envelope expansion, handling qualities (especially at high angles of attack), and flight with vectored thrust. The book then turns to the program's move to NASA's Dryden Flight Research Center and actual flight test data. Additional tasking, such as helmet-mounted display evaluations, handling quality studies, aerodynamic parameter estimation, and a "tailless" study are also discussed. The book describes how, in the aftermath of a disastrous accident with Ship #1 in 1995, Ship #2 was prepared for its outstanding participation in the Paris Air Show. The aircraft was then shipped back to Edwards AFB and put into storage until the late 1990s, when it was refurbished for participation in the U. S. Navy's VECTOR program. The book ends with a comprehensive discussion of lessons learned and includes an Appendix containing detailed information.

**The Delta Monster** CreateSpace

The mission requirements for the performance of aerodynamic tests on a delta wing platform posed some problems, these include aerodynamic interference; structural support; data acquisition and transmission instrumentation; aircraft stability and control; and propulsion implementation. To eliminate the problems of wall interference, free stream turbulence, and the difficulty of achieving dynamic similarity between the test and actual flight aircraft that are associated with aerodynamic testing in wind tunnels, the concept of the remotely piloted vehicle which can perform a basic aerodynamic study on a delta wing was the main objective for the Green Mission - the Delta Monster. The basic aerodynamic studies were performed on a delta wing with a sweep angle greater than 45 degrees. These tests were performed at various angles of attack and Reynolds numbers. The delta wing was instrumented to determine the primary leading edge vortex formation and location, using pressure measurements and/or flow visualization. A data acquisition system was provided to collect all necessary data. Connolly, Kristen and Flynn, Mike and Gallagher, Randy and Greek, Chris and Kozlowski, Marc and McDonald, Brian and McKenna, Matt and Sellar, Rich and Shearon, Andy Unspecified Center AERODYNAMIC CHARACTERISTICS; AERODYNAMICS;

AIRCRAFT STABILITY; DATA ACQUISITION; DELTA WINGS; MISSION PLANNING; REMOTELY PILOTED VEHICLES; AERODYNAMIC INTERFERENCE; ANGLE OF ATTACK; DYNAMIC TESTS; FLOW VISUALIZATION; LEADING EDGES; PRESSURE MEASUREMENT; REYNOLDS NUMBER; TURBULENCE; VORTICES; WIND TUNNEL TESTS...

**Flying beyond the stall** Createspace Independent Publishing Platform

The final report for the research conducted under this grant (NAG1-641) are contained in the two documents attached as Apendices A and B. The first is the presentation made to NASA Langley personnel on 10 December, 1987, which gave a brief analysis of the experiments. The second is a copy of an AIAA paper given in June 1988, which describes in detail the test setup, data acquisition and reduction, and results obtained. Bragg, M. B. Unspecified Center...

*Modeling Flight NASA Latest Version* Createspace Independent Publishing Platform

Explains basic aeronautical concepts and provides a background in the history of aviation.

Activities explore the nature of flight.

**Flow Field Over the Wing of a Delta-Wing Fighter Model with Vortex Control Devices at Mach 0. 6 To 1. 2** Iowa State Press

Expanding the Envelope is the first book to explore the full panorama of flight research history, from the earliest attempts by such nineteenth century practitioners as England's Sir George Cayley, who tested his kites and gliders by subjecting them to experimental flight, to the cutting-edge aeronautical research conducted by the NACA and NASA. Michael H. Gorn explores the vital human aspect of the history of flight research, including such well-known figures as James H. Doolittle, Chuck Yeager, and A. Scott Crossfield, as well as the less heralded engineers, pilots, and scientists who also had the "Right Stuff." While the individuals in the cockpit often receive the lion's share of the public's attention, Expanding the Envelope shows flight research to be a collaborative engineering activity, one in which the pilot participates as just one of many team members. Here is more than a century of flight research, from well before the creation of NACA to its rapid transformation under NASA. Gorn gives a behind the scenes look at the development of groundbreaking vehicles such as the X-1, the D-558, and the X-15, which demonstrated manned flight at speeds up to Mach 6.7 and as high as the edge of space.

*Probing the Sky* Joseph Chambers

Two-volume collection of case studies on aspects of NACA-NASA research by noted engineers, airmen, historians, museum curators, journalists, and independent scholars. Explores various aspects of how NACA-NASA research took aeronautics from the subsonic to the hypersonic era.- publisher description.

**Computational Test Cases for a Clipped Delta Wing with Pitching and Trailing-Edge Control Surface Oscillations** University Press of Kentucky

As part of a cooperative research program between NASA, McDonnell Douglas Corporation, and Wright Research and Development Center, a flow field investigation was conducted on a 7.52 percent scale windtunnel model of an advanced fighter aircraft design. The investigation was conducted in the Langley 16 ft Transonic Tunnel at Mach numbers of 0.6, 0.9, and 1.2. Angle of attack was varied from -4 degrees to 30 degrees and the model was tested at angles of sideslip of 0, 5, and -5 degrees. Data for the over the wing flow field were obtained at four axial survey stations by the use of six 5 hole conical probes mounted on a survey mechanism. The wing leading edge primary vortex exerted the greatest influence in terms of total pressure loss on the over the wing flow field in the area surveyed. A number of vortex control devices were also investigated.

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They included two different apex flaps, wing leading edge vortex flaps, and small large wing fences. The vortex flap and both apex flaps were beneficial in controlling the wing leading edge primary vortex. Bare, E. Ann and Reubush, David E. and Haddad, Raymond C. Langley Research Center DELTA WINGS; FIGHTER AIRCRAFT; FLOW DISTRIBUTION; SUBSONIC SPEED; TRANSONIC SPEED; VORTEX FLAPS; WIND TUNNEL MODELS; WIND TUNNEL TESTS; ANGLE OF ATTACK; FLOW VISUALIZATION; MACH NUMBER; PRESSURE DISTRIBUTION; SIDESLIP; TRANSONIC WIND TUNNELS...

**Beyond Tube-and-Wing** DIANE Publishing

The X-29 was an unusual aircraft with a truly unique silhouette. It combined many features that challenged the technologies of its day and represented special problems for the developers and the team of testers responsible for documenting its features and design goals. This book is a look at the "big picture" of what this team accomplished in a relatively fast-paced test program involving the truly unique X-29.

*On the Frontier* Smithsonian Books (DC)

This provides access to a NASA History Office publication, NASA SP-468, by Laurence K. Loftin, Jr, NASA Scientific and Technical Information Branch, Washington, D.C. 1985. It traces the technical development of the airplane since World War I. It describes significant aircraft that incorporated important technical innovations and served to shape the future course of aeronautical development, as well as aircraft that represented the state of the art of aeronautical technology in a particular time frame or that were very popular and produced in great numbers. Primary emphasis has been placed on aircraft originating in the United States. The discussion is related primarily to aircraft configuration evolution and associated aerodynamic characteristics and, to a lesser extent, to developments in aircraft construction and propulsion. The material is presented in a manner designed to appeal to the nontechnical reader who is interested in the evolution of the airplane, as well as to students of aeronautical engineering or others with an aeronautical background.

**Hypersonics Before the Shuttle: A Concise History of the X-15 Research Airplane**

University Press of Kentucky

state of the art in aeronautical engineering has been continually accelerated by the development of advanced analysis and design tools. Used in the early design stages for aircraft and spacecraft, these methods have provided a fundamental understanding of physical phenomena and enabled designers to predict and analyze critical characteristics of new vehicles, including the capability to control or modify unsatisfactory behavior. For example, the relatively recent emergence and routine use of extremely power- ful digital computer hardware and software has had a major impact on design capabilities and procedures. Sophisticated new airflow measurement and visualization systems permit the analyst to conduct micro- and macro-studies of properties within flow fields on and off the surfaces of models in advanced wind tunnels. Trade studies of the most efficient geometrical shapes for aircraft can be conducted with blazing speed within a broad scope of integrated technical disciplines, and the use of sophisticated piloted simulators in the vehicle development process permits the most important segment of operations—the human pilot—to make early assessments of the acceptability of the vehicle for its intended mission. Knowledgeable applica- tions of these tools of the trade dramatically reduce risk and redesign, and increase the marketability and safety of new aerospace vehicles.

*A Note on the Drag Due to Lift of Delta Wings at Mach Numbers Up to 2.0*

"Much has been written about the famous conflicts and battlegrounds of the East during the American Revolution. Perhaps less familiar, but equally important and exciting, was the war on the western frontier, where Ohio Valley settlers fought for the land they had claimed -- and for their very lives. George Rogers Clark stepped forward to organize the local militias into a united front that would defend the western frontier from Indian attacks. Clark was one of the few people who saw the importance of the West in the war effort as a whole, and he persuaded Virginia's government to lend support to his efforts. As a result Clark was able to cross the Ohio, saving that part of the frontier from further raids. Lowell Harrison captures the excitement of this vital part of American history while giving a complete view of George Rogers Clark's significant achievements. Lowell H. Harrison, is a professor emeritus of history at Western Kentucky University and is the author or co-author of numerous books, including Lincoln of Kentucky, A New History of Kentucky, and Kentucky's Governors."

**Tuft-grid Surveys at Low Speeds for Delta Wings**

This book is an attempt to present under one cover the current state of knowledge concerning the potential lightning effects on aircraft and that means that are available to designers and operators to protect against these effects. The impetus for writing this book springs from two sources- the increased use of nonmetallic materials in the structure of aircraft and the constant trend toward using electronic equipment to handle flight-critical control and navigation function.

*NASA SP.*

With the development of supersonic aircraft, the X-plane era ushered in a new and challenging phase of flight. Researchers found that much of the knowledge accumulated from the previous, subsonic flight era did not apply to the emerging supersonic aircraft. These turbojet-powered planes also outpaced the usefulness of the wind tunnel, previously an indispensable tool of aeronautic research. This book explores the development of the X-series research aircraft, the planes that helped bridge the gap between subsonic flight and hypersonic flight.

*Wingless Flight*

Written by a pilot/engineer participant of NASA's lifting body program, this book documents the adventures, triumphs, setbacks, and fun of pioneering a technology that allowed astronauts to accomplish lifting reentries and precise runway landings.

**Innovation in Flight**

Most lifting bodies, or "flying bathtubs" as they were called, were so ugly only an engineer could love them, and yet, what an elegant way to keep wings from burning off in supersonic flight between earth and orbit. Working in their spare time (because they couldn't initially get official permission), Dale Reed and his team of engineers demonstrated the potential of the design that led to the Space Shuttle. Wingless Flight takes us behind the scenes with just the right blend of technical information and fascinating detail (the crash of M2-F2 found new life as the opening credit for TV's "The Six Million Dollar Man"). The flying bathtub, itself, is finding new life as the proposed escape-pod for the Space Station.

*NASA's Contributions to Aeronautics: Aerodynamics, structures, propulsion, controls*

**An Experimental Study of the Effect of Pitch Rate on Delta Wing Aerodynamics and Stability**

*NASA Technical Memorandum*

*FLYING W/O WINGS*