Thrust Reverser

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applications summary of the NASA Langley Innovative Thrust Reverser Test Program
Investigation of Wing Upper Surface Flow-Field Disturbance Due to NASA DC-8-72 In-Flight Inboard Thrust-Reverser Deployment
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Technical Note - National Advisory Committee for Aeronautics
Texas Advance Sheet February 2012
NASA Technical Paper
Full-scale Wind-tunnel Investigation of a Target-type Thrust Reverser on the A-37B Airplane
TFX Contract Investigation
NACA Research Memorandum
Official Gazette of the United States Patent and Trademark Office
Investigation of a Full-scale, Cascade-type Thrust Reverser

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Interference Effects of Thrust Reversing on Horizontal Tail Effectiveness of Twin-engine Fighter Aircraft at Mach Numbers from 0.15 to 0.90
Hearings, Reports and Prints of the Senate Committee on Government Operations
Theoretical and Mathematical Foundations of Computer Science
Static Performance of Six Innovative Thrust Reverser Concepts for Subsonic Transport Applications
Performance Characteristics of a Single-engine Fighter Model Fitted with an In-flight Thrust Reverser
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GUNNER HESTER

Large-scale Wind-tunnel Tests of Exhaust Ingestion Due to Thrust Reversal on a Four-engine Jet Transport During Ground Roll Springer Science & Business Media
The NASA Langley Configuration Aerodynamics Branch has conducted an experimental investigation to study the static performance of innovative thrust reverser concepts applicable to high-bypass-ratio turbofan engines. Testing was conducted on a conventional separate-flow exhaust system configuration, a conventional cascade thrust reverser configuration, and six innovative thrust reverser configurations. The innovative thrust reverser configurations consisted of a cascade thrust reverser with porous fan-duct blocker, a blockerless thrust reverser, two core-mounted target thrust reversers, a multi-door crocodile thrust reverser, and a wing-mounted thrust reverser. Each of the innovative thrust reverser concepts offer potential weight savings and/or design simplifications over a conventional cascade thrust reverser design. Testing was conducted in the Jet-Exit Test facility at NASA Langley Research

Center using a 7.9% scale exhaust system model with a fan-to-core bypass ratio of approximately 9.0. All tests were conducted with no external flow and cold, high-pressure air was used to simulate core and fan exhaust flows. Results show that the innovative thrust reverser concepts achieved thrust reverser performance levels which, when taking into account the potential for system simplification and reduced weight, may make them competitive with, or potentially more cost effective than current state-of-the-art thrust reverser systems.

Jet Engine Mechanic (AFSC 42652): Associated jet engine systems Springer Science & Business Media An investigation was conducted in the NASA Langley 14 x 22 foot Subsonic Tunnel to study the effects of engine thrust reversing on an aft-mounted twin-engine transport and to develop effective testing techniques. Testing was done over a fixed and a moving-belt ground plane and over a pressure instrumented ground board. Free-stream dynamic pressure was set at values up to 12.2 psf, which corresponded to a maximum Reynolds number based on the mean aerodynamic chord of 765,000. The thrust reversers examined included cascade, target and four-door configurations. The investigation focused on the range of free-stream velocities and engine thrust-reverser flow rates that would be typical for landing ground-roll conditions. Flow visualization techniques were investigated, and the use of water or smoke injected into the reverser flow proved effective to determine the forward progression of the reversed flow and reingestion limits. When testing over a moving-belt ground plane, as opposed to a fixed ground plane, forward penetration of the reversed flow was reduced. The use of a pressure-instrumented ground board enabled reversed flow ground velocities to be obtained, and it provided a means by which to identify the reversed flow impingement point on the ground. Gatlin, Gregory M. and Quinto, P. Frank Langley Research Center ENGINE TESTS; FREE FLOW; GROUND EFFECT (AERODYNAMICS); REVERSED FLOW; THRUST REVERSAL; TRANSPORT AIRCRAFT; DYNAMIC PRESSURE; FLOW VELOCITY; FLOW VISUALIZATION; WIND TUNNEL TESTS...

Aeropropulsive Characteristics of Nonaxisymmetric-nozzle Thrust Reversers at Mach Numbers from 0 to 1.20
Fastcase Inc
An investigation was conducted in the Static Test Facility of the Langley 16-Foot Transonic Tunnel on a dual-port, nonaxisymmetric, block-and-turn type thrust reverser model with vane cascades in the reverser ports which turned the flow in the splay direction and aided in turning the flow in the reverse direction. Splaying reverser flow is a method of delaying to lower landing ground roll speeds the reingestion of hot

exhaust flow into the inlets. Exhaust flow splay can also help prevent the impingement of hot exhaust gases on the empennage surfaces when the reverser is integrated into an actual airframe. The vane cascades consisted of two sets of perpendicular vanes with a variable number of turning and splay vanes. A skewed vane box was also tested which had only one set of vanes angled to provide both turning and splay. Vane cascades were designed to provide different amounts of flow splay in the top and bottom ports. Inner doors, trim tabs, and an orifice plate all provided means of varying the port area for reverser flow modulation. The outer door position was varied as a means of influencing the flow reverse angle. Nozzle pressure ratio was varied from 1.75 to approximately 6.00.
Bangert, Linda S. and Leavitt, Laurence D.
Langley Research Center...

Organized Crime and Illicit Traffic in Narcotics
Createspace Independent Publishing Platform
After the demise of Fokker in 1996 one feared that interest in aeronautical engineering would strongly diminish. Two years later the situation was re-appraised, and the interest in aeronautical engineering remained, so the course was reinstated. This title includes the author's lecture notes from these courses.

Report IOS Press
Since the education of aeronautical engineers at Delft University of Technology started in

1940 under tae inspiring leadership of Professor H.J. van der Maas, much emphasis has been placed on the design of aircraft as part of the student's curriculum. Not only is aircraft design an optional subject for thesis work, but every aeronautical student has to carry out a preliminary airplane design in the course of his study. The main purpose of this preliminary design work is to enable the student to synthesize the knowledge ob tained separately in courses on aerodynamics, aircraft performances, stability and con trol, aircraft structures, etc. The student's exercises in preliminary design have been directed through the years by a number of staff members of the Department of Aerospace Engineering in Delft. The author of this book, Mr. E. Torenbeek, has made a large contribution to this part of the study programme for many years. Not only has he acquired vast experience in teaching airplane design at university level, but he has also been deeply involved in design-oriented re search, e.g. developing rational design methods and systematizing design information. I am very pleased that this wealth of experience, methods and data is now presented in this book.

Synthesis of Subsonic Airplane Design Springer Science & Business Media An investigation of the wing upper surface flow-field disturbance due to in-flight inboard thrust reverser deployment on the NASA DC-8-72, which was conducted cooperatively by NASA Ames, the Federal Aviation Administration (FAA), McDonnell Douglas, and the Aerospace Industry Association (AIA), is outlined and discussed in detail. The purpose of this flight test was to obtain tufted flow visualization data which demonstrates the effect of thrust reverser deployment on the wing upper surface flow field to determine if the disturbed flow regions could be modeled by computational methods. A total of six symmetric thrust reversals of the two inboard engines were performed to monitor tuft and flow cone patterns as well as the character of their movement at the nominal Mach numbers of 0.55, 0.70, and 0.85. The tufts and flow cones were photographed and video-taped to determine the type of flow field that occurs with and without the thrust reversers deployed. In addition, the normal NASA DC-8 onboard Data Acquisition Distribution System (DADS) was used to synchronize the cameras. Results of this flight test will be presented in two parts. First, three distinct flow patterns associated with the above Mach numbers were sketched from the motion videos and discussed in detail. Second, other relevant aircraft parameters, such as aircraft's angular orientation, altitude, Mach number, and vertical descent, are discussed. The flight test participants' comments were recorded on the videos and the interested reader is referred to the video supplement section of this report for that information. Hamid, Hedayat U. and Margason, Richard J. and Hardy, Gordon Ames Research Center...

Aviation Coding Manual Independently Published

A double set of turning vanes was carried inside the jet tailpipe. To produce reverse thrust, the tailpipe opens into two side sections and the turning vanes move outward to form a V-shaped cascade, which deflects the exhaust-gas flow. Forward and reverse net thrust were measured over a range of engine speeds with the airplane stationary. Taxi tests were made to determine the comparative stopping distances using wheel braking and reverse thrust separately, and a combination of both. The effect of turning-vane spacing on thrust-reverser performance was determined by scale-model tests using unheated air.

Static Internal Performance of a Nonaxisymmetric Vaned Thrust Reverser with Flow Splay Capability DIANE Publishing

This book constitutes the refereed post-proceedings of the Second International Conference on Theoretical and Mathematical Foundations of Computer Science, ICTMF 2011, held in Singapore in May 2011. The conference was held together with the Second International Conference on High Performance Networking, Computing, and Communication systems, ICHCC 2011, which proceedings are published in CCIS 163.

The 84 revised selected papers presented were carefully reviewed and selected for inclusion in the book. The topics covered range from computational science, engineering and technology to digital signal processing, and computational biology to game theory, and other related topices.

Effect of Simulated In-flight Thrust Reversing on Vertical-tail Loads of F-18 and F-15 Airplane Models Createspace Independent Publishing Platform

Investigates DOD contract policies for F-111 tactical fighter experimental (TFX) program. Classified material has been deleted.

Federal Register James Gim

To understand the operation of aircraft gas turbine engines, it is not enough to know the basic operation of a gas turbine. It is also necessary to understand the operation and the design of its auxiliary systems. This book fills that need by providing an introduction to the operating principles underlying systems of modern commercial turbofan engines and bringing readers up to date with the latest technology. It also offers a basic overview of the tubes, lines, and system components installed on a complex turbofan engine. Readers can follow detailed examples that describe engines from different manufacturers. The text is recommended for aircraft engineers and mechanics, aeronautical engineering students, and pilots.

Static Internal Performance of a

Nonaxisymmetric Vaned Thrust Reverser with Flow Splay Capability Createspace Independent Publishing Platform AMT A&P Certification Test Preparation Combined General, Airframe and Powerplant" is the ultimate resource for individuals pursuing their Airframe and Powerplant (A&P) certification from the Federal Aviation Administration (FAA). This comprehensive book brings together all the essential knowledge required for the General, Airframe, and Powerplant portions of the A&P certification exams. Inside this comprehensive guide, you'll find: Extensive Coverage: This book covers all three major sections of the A&P certification exams—General, Airframe, and Powerplant—with in-depth and detailed explanations of essential aviation topics. From aviation regulations to aircraft systems, airframes, engines, and maintenance procedures, every aspect of the A&P certification is thoroughly addressed. Practice Questions: Test your understanding and knowledge with a vast selection of practice questions and answers that mirror the format and content of the actual FAA exams. These practice questions help reinforce your learning and prepare you for success. Detailed Explanations: Complex aviation concepts and technical information are presented in a clear and accessible manner, making it easier for readers to grasp the intricacies of aircraft maintenance and repair. Test-Taking Strategies: Gain valuable insights into effective test-taking strategies and tips that can help you approach the A&P certification exams with confidence. Maximize your chances of passing on your first attempt. Whether you are a novice aviation enthusiast seeking a career as an aviation maintenance technician or a seasoned professional looking to validate your skills and knowledge, "AMT A&P Certification Test Preparation Combined General, Airframe and Powerplant" is the go-to resource to ensure your success in obtaining the A&P certification. This book provides a comprehensive and structured approach to mastering the knowledge and skills required for a rewarding career in aircraft maintenance. In addition, we continuously upload video lectures on YouTube to make it even easier for you to comprehend complex topics and prepare effectively for your certification.

Static performance of six innovative thrust reverser concepts for subsonic transport applications summary of the NASA Langley Innovative Thrust Reverser Test Program

The NASA Langley Configuration Aerodynamics Branch has conducted an experimental investigation to study the static performance of innovative thrust reverser concepts applicable to high-bypass-ratio turbofan engines. Testing was conducted on a conventional separate-flow exhaust system configuration, a conventional cascade thrust reverser configuration, and six innovative thrust reverser configurations. The innovative thrust reverser configurations consisted of a cascade thrust reverser with porous fan-duct blocker, a blockerless thrust reverser, two core-mounted target thrust reversers, a multi-door crocodile thrust reverser, and a wing-mounted thrust reverser. Each of the innovative thrust reverser concepts offer potential weight savings and/or design simplifications over a conventional cascade thrust reverser design. Testing was conducted in the Jet-Exit Test Facility at NASA Langley Research Center using a 7.9%-scale exhaust system model with a fan-to-core bypass ratio of approximately 9.0. All tests were conducted with no external flow and cold, high-pressure air was used to simulate core and fan exhaust flows. Results show that the innovative thrust reverser concepts achieved thrust reverser performance levels which, when taking into account the potential for system simplification and reduced weight, may make them competitive with, or potentially more cost effective than current state-of-the-art thrust reverser systems. Asbury, Scott C. and Yetter, Jeffrey A. Langley Research Center RTOP 522-25-31-01...

Investigation of Wing Upper Surface Flow-Field Disturbance Due to NASA

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