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AERONAUTICAL ENGINEERING
A SPECIAL BIBLIOGRAPHY
JANUARY 1973
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SPECIAL NOTICE

The abstract sections of the monthly supplements of *Aeronautical Engineering* can be bound separately. Individual abstracts can be located readily by means of the page numbers given at each entry, e.g., p0319 N72-20013. To assist the user in binding Supplements SP-7037 (15) through SP-7037 (26), a title page is included in the back of this Cumulative Index.
A CUMULATIVE INDEX
TO
AERONAUTICAL ENGINEERING
A Special Bibliography

This Cumulative Index supersedes the indexes contained in supplements SP-7037 (15) through SP-7037 (26).
This Supplement is available from the National Technical Information Service (NTIS), Springfield, Virginia 22151 for $9.00.

For copies mailed to addresses outside the United States, add $2.50 per copy for handling and postage.
INTRODUCTION

WHAT THIS CUMULATIVE INDEX IS

This publication is a cumulative index to the abstracts contained in NASA SP-7037 (15) through NASA SP-7037 (26) of Aeronautical Engineering: A Special Bibliography. NASA SP-7037 and its supplements have been compiled through the cooperative efforts of the American Institute of Aeronautics and Astronautics (AIAA) and the National Aeronautics and Space Administration (NASA).

Entries prepared by the two contributing organizations are identified as follows:
1. NASA entries by their STAR accession numbers (N72-10000 series).
2. AIAA entries by their IAA accession numbers (A72-10000 series).

HOW THIS CUMULATIVE INDEX IS ORGANIZED

This Cumulative Index includes a subject index, a personal author index, a corporate source index, a contract number index, and a report/accession number index.

HOW TO USE THE SUBJECT INDEX

Two types of cross-references appear in the subject index:
1. Use (U) references indicate that the subject term is not "postable," i.e., not a valid term, and the following term or terms are used instead. For example:
   AIRCRAFT PROTUBERANCES
   U PROTUBERANCES
   FLIGHT PERFORMANCE
   U FLIGHT CHARACTERISTICS
2. Narrower Term (NT) references refer the user to more specific headings in the same subject area, under which additional material on the subject may be found. For example:
   FLOW RESISTANCE
   NT AERODYNAMIC DRAG
   NT FRICTION DRAG
   NT SUPERSONIC DRAG

In addition, a searcher may use the notations of content in the index to narrow further his quest for particular items. This is because subject terms can readily include more than one class of document. For example:

AIRLINE OPERATIONS
   All-weather operations, including pilot role, instrument landing systems and guidance aids.
   Airport congestion as constraint on air travel, considering runway capacity and adjusted demand.

illustrates a case where two references on different topics are listed under the same subject term.

HOW TO USE THE PERSONAL AUTHOR INDEX

All personal authors used in the abstract-section citations in the individual Supplements appear in the index. Differences in transliteration schemes may require multiple searching of the index for variants of an author's name. For example:

EMELIANOV, M.D.
and
YEMELYANOV, M.D.
HOW TO USE THE CORPORATE SOURCE INDEX

The corporate source index entries are abridged versions of the corporate sources used in the abstract-section citations in the individual Supplements. The corporate source supplementary (organizational component) does not appear in the index. For example:

BOEING CO., SEATTLE, WASH. MILITARY AIRCRAFT SYSTEMS DIV.

BOEING CO., SEATTLE, WASH.  

(Corporate source index entry)

HOW TO USE THE CONTRACT NUMBER INDEX

All contract numbers that are identified in the abstract-section citations in the individual Supplements appear in this index. Changes by agencies in the style in which contract numbers are presented may require multiple searching for variants. For example:

AF 33(615)-71-C-1758
F33615-71-C-1758

HOW TO USE THE REPORT/ACCESSION NUMBER INDEX

All report numbers that have been assigned by the corporate source, monitoring agency or cataloging activity appear in this index. Variations in initial cataloging may result in different report number series. For example:

TP-924
ONERA-TP-924

IDENTIFICATION OF DESIRED SUPPLEMENT

The abstract and descriptive cataloging for any accession number selected from the indexes may be found in the appropriate Supplement. The page-number range of each Supplement appears on the inside front cover of this index. Once the range of page numbers containing the selected accession number is located in the second column, the desired Supplement number will be found in the first column. For example:

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AVAILABILITY OF DOCUMENTS

Information concerning the availability of documents announced in the Aeronautical Engineering supplements is found in the Introduction to the most currently issued monthly supplement.
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Analysis of US air carrier accidents during 1964 to 1969 (PB-20872)
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Aircraft accident involving Beechcraft D18S aircraft near Honolulu, Hawaii on 22 Feb. 1972 (PB-20841)}
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conditions...

Computer controlled production test system for
airborne phased array antenna, describing various measurement capabilities...

Vertical dipole antenna design for CW Doppler
radar midair collision avoidance system...

Received signal spectrum gravity center and
effective antenna centers of airborne Doppler
velocimeter in horizontal flight...

Test facility for aircraft and spacecraft antennas
radiation patterns and optimal installation
determination...

Preproduction OMGMA aircraft receivers and
antennas development and flight testing, noting
signal loss problems in high noise or
precipitation static environments...

Test flights into weather at midlatitudes and
tropical systems with airborne OMGMA navigation
system, discussing E field and H field antennas...

Aircraft antennas design for radio links to
satellites for aeronomical communication and
ATC, proposing use of beam steering system...

Experimental investigation regarding Archimedean
spiral antennas for the L-band, and discarding groups constructed from them whose radiation
directions are controlled by a conduction matrix...

Determination of the radiation characteristics of
aircraft antennas in flight...

Linear HP radar antenna array aperture synthesis
for ionospherically propagated signal reception
in airplane for achievement of ideal directivity
without ionospheric compensation...

Adaptive antenna arrays for aircraft communication
systems...

Dual output ultrahigh frequency aircraft antenna
feed incorporating coaxial magic tee, transistor
and step recovery varactor diode frequency
multipliers...

Crossed slot antenna array pattern coverage for
ultrahigh frequency aircraft system...

Characteristics of ultrahigh frequency and very
high frequency aircraft antennas for
aircraft-satellite data link...

Numerical-analytical techniques for predicting
radiation patterns and impedance of aircraft
antennas including effects of outboard members
of aircraft structure...

Requirements for high-frequency aircraft antennas
and dual antenna method for suppressing reflections
from underside of moving aircraft...

Procedure for using high frequency standard gain
ground reference antenna for calibrating C-131
and KC-135 aircraft for antenna radiation patterns...

Feasibility analysis of whole aircraft as aperture
antenna...

AIRCRAFT APPROACH INSTRUMENTS

AIRCRAFT APPROACH SPACING

ATC separation minima and navigational errors on
airways in general and long range oceanic
environment...

Mathematical analysis of separation standards and
aircraft navigational collision risk for
parallel tracks in radar monitored areas...

Statistical analysis of track keeping Strumble FOR
data for lateral navigation separation standards
and collision risk in continental environments...

Terrain clearance during descent and approach of
aircraft using radar control, discussing optimum
profile, ATC, nav aids and rules...

Area navigation requirements by general aviation,
discussing random routing, NTC system and
aircraft approach spacing...

Operation principles, capabilities and tests of
midair collision avoidance system with aircraft
separation control by nonsynchronous techniques...

Independent parallel runway landing system to
relieve air traffic congestion, evaluating
minimum spacing required to minimize collision
risk...

Curved final approach and landing flight path for
increased airport capacity...

Economical satellite aided vehicle avoidance
system for preventing midair collisions...

Change in aircraft congestion due to introduction
of STOL aircraft into airport operation...

Design of automatic ground control system for
controlling aircraft arriving in random fashion at
terminal areas...

AIRCRAFT BASES

U MILITARY AIR FACILITIES

AIRCRAFT BRAKES

AT LEADING EDGE SLATS

AT SPLIT FLAPS

AT TRAILING-EDGE FLAPS

AT WING FLAPS

Ti effects on aircraft equipment design,
considering use of Ni plated brake linings,
wheel, engine control rams, tie bolts and rings...

Environmental tests on carbon fiber helicopter
airbrake flap, including thermal cycling,
sustained loading, immersion, corrosion and
lightning strike tests...

Carbon-epoxy composite material for high
performance aircraft braking systems, noting
weight savings and thermal characteristics
improvements...

Performance tests of aircraft tire under cyclic
braking conditions and evaluation of aircraft
antiskid braking system...

CURVED FINAL APPROACH AND LANDING FLIGHT PATHS

INCREASED AIRPORT CAPACITY

ENVIRONMENTAL TESTS ON CARBON FIBERHELICOPTER
AIRBRAKE FLAP

CARBON-EPoxy COMPOSITE MATERIAL FOR HIGH
PERFORMANCE AIRCRAFT BRAKING SYSTEMS, NOTING
WEIGHT SAVINGS AND THERMAL CHARACTERISTICS
IMPROVEMENTS

PERFORMANCE TESTS OF AIRCRAFT TIRE UNDER CYCLIC
BRAKING CONDITIONS AND EVALUATION OF AIRCRAFT
ANTISKID BRAKING SYSTEM

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IMPROVEMENTS

PERFORMANCE TESTS OF AIRCRAFT TIRE UNDER CYCLIC
BRAKING CONDITIONS AND EVALUATION OF AIRCRAFT
ANTISKID BRAKING SYSTEM
AIRCRAFT COMMUNICATION

Simulator for physical forces experienced by carrier aircraft during catapult launch and arrested landings, considering external stores safe suspension

Direct lift control feasibility for integration into F-14A automatic carrier landing system \([\text{AIAA PAPER 72-073}]\)

Measurement of noise levels on aircraft carrier deck during aircraft operations and effects on deafness risk and verbal communication comprehension

Development and characteristics of turbine type energy absorber arresting gear for use on aircraft carriers

Spring constants for shock analysis of aircraft carrier catapult installations

Performance of vertical contact analog display system used in carrier landing

Operational evaluation of aircraft landing aid stabilization system installed on aircraft carrier

Computerized system for numerical analysis of carrier aircraft

Development of method for determining ramp altitude clearance of aircraft approaching aircraft carrier for landing and identification of unsafe situation

Factor analysis and statistical data for human carrier landing performance criteria

Flight tests to determine suitability of aircraft for operation on aircraft carriers

Jet blast deflector for controlling shipboard flight deck environment

Accuracy of vertical contact analog display in simulating carrier landings, and error contributed by display resolution, temporal loading, and control complexity

Flight evaluation of simulated carrier approach task considering engine response, flight path stability, tail lift, and direct lift control

Accelerated life tests to determine effects of arrested landing stresses on C-2 aircraft structure

Air traffic control procedures for aircraft carrier operations based on trajectory optimization and computer-aided realignment

Optimization and performance prediction of computer simulated cable type aircraft recovery system

Safety precautions, visual checks, static proof loads, and hydrostatic tests of type C13 Mod 1 catapults and associated launcher equipment

Evaluation of method for predicting performance of steam catapults used for shipboard aircraft launching

Inflight variable stability airplane investigations during carrier approaches to determine effects of flying qualities parameters on approach performance

AIRCRAFT COMMUNICATION

Civil aviation communication systems, discussing short and long range communications, satellite channel capacities, digital data link systems, ITC, weather broadcasts, etc

Communications and navigation trends in ITC, emphasizing use of improved existing systems

SOVIET BOOK ON AIRCRAFT RADIO EQUIPMENT COVERING TRANSMISSION AND RECEPTION, VELOCITY CHANGES, COORDINATES MEASUREMENTS, SITTING AND NAVIGATION, FLYING TARGET INTERCEPTION, RECONNAISSANCE, LANDING SYSTEMS, ETC

Airline pilot performance in automated ATC system involving use of surveillance data and instantaneous discrete communications

Airline air/ground radio communication and data link service implementation for San Francisco-Hawai center

Automation in planning and execution of flights, considering navigation, communication, flight instruments monitoring, control/stabilization and warning systems

Airborne VHF omni range \(\text{VOH}\) systems minimum operational standards for navigation and communication in air traffic control

Aircraft and water vehicles mobile communications via stationary satellite, discussing optimum multiple access and repeater configuration

Pacific Ocean meteorological data collection from military and civil aircraft in-flight reports, discriminating computer processing for daily analysis and monthly and seasonal means

ATC operational systems, discussing for national surveillance and voice and data communication between aircraft and earth station

Aeronautical communication satellite technical and economic survey, considering wave propagation, noise, aircraft antennas and VHF and UHF links

Economic analysis of aeronautical communication system via satellite, noting cost estimates and annual charge per user

Ground-based Doppler navigation waveguide slot antenna design for optimal directional multilobe reception from aircraft

VHF/UHF ground-air-ground communications siting criteria and field manual

Technologies of computerized flight management and control systems, automated communications systems, and navigation and surveillance systems in future avionics

Adaptive antenna arrays for aircraft communication systems

Fokker engineering and development programs for aircraft safety, landing, navigation, communication and support services
Pilots in aircraft systems management involving machine and air traffic environment continua.  
Control technique and flight quality for crew workload reduction to improve military and civil aircraft flight safety.  
Aircraft integrated data systems applications to flight safety analysis, engine performance monitoring, crew proficiency, autoland evaluation, operations and logistics.  
Aircraft landing microwave guidance and control systems, considering general dynamic model for aircraft translational motion determination in earth fixed coordinate system.  
Airplane hydraulic control systems digital simulation, using method of characteristics for distributed parameter analysis of transmission line dynamics.  
Feedback gains for STOL aircraft display pilot interactive flight director design, using computerized approach-landing simulation and optimal control theory.  
Aircraft steering dynamics model with translational and rotational equations, considering acceleromap, angle of attack and lift bank angle transfer functions.  
Dynamic stability, control and structure response of transonic jet transport to atmospheric turbulence.  
Optimization algorithms for jet transport aircraft inerterially based flight trajectory control in turbulent atmosphere, comparing with ILS.  
Aircraft flight control system MTBF field operations, and MIL-STD-781 training, establishing data baseline for reliability predictions.  
Direct side force control by rudder deflection and asymmetrical drag utilization to cancel yawing moment, discussing variable stability T-33 flight tests.  
Aircraft proximity control for AFC systems using national secondary surveillance radar (CSSR) for CAS-PWI functions.  
Extremal field properties in optimal control problem applied to aircraft flight over assigned distance with minimum fuel consumption.  
Flight simulator for aircraft design, emphasizing compromise between performance and control requirements to avoid excess weight and drag.  
Multiplier method for discrete optimization problems with equality constraints, applying to time optimal control for V/STOL aircraft.  
Aircraft optimal control for case of continuous data flow on time variable flight conditions.  
Singular surfaces for time optimal control in zero sum differential games between two aircraft in three dimensional space, assuming spherical acceleration vector norm.  
Optimal thrust reversing in pursuit evasion games between two aircraft in horizontal plane, considering cost functions and termination criteria.  
Model-following control for nonlinear systems, using implicit algorithms solution and application to variable stability aircraft control synthesis.
Aircraft electronic display for pilot precise control in complex tasks, discussing clarity, stability and readability of CRT images

Aircraft CRT electronic displays discussing operational flexibility versus control and monitor complexities, economics, reliability and human factors

Digital attitude and heading reference system computer for aircraft heading control, discussing design and performance features

Flight test instrumentation system for measurement of aircraft performance, stability and control characteristics during nonsteady flight.

Russian book on flight dynamics covering for mental flight, takeoff, climb and landing characteristics, meteorological conditions, helicopters, trajectory problems, stability and controllability analysis, etc

A pilot's opinion - VPOL control design trade-offs for the instrument approach task. [AIAA PAPER 72-690]

Russian book on aircraft design covering flight conditions, structure and control characteristics, production and stress analysis

Hybrid mechanical-electrical mechanism designs for techniques for aircraft control systems

Development of STOLAND, a versatile navigation, guidance and control system. [AIAA PAPER 72-789]

STOL transport stability and control derivatives prediction methods and accuracy requirements.

A versatile Kalman technique for aircraft or missile state estimation and error analysis using radar tracking data.

Advanced fighter control flight simulator for all-systems compatibility testing.

Optimal selection of stability augmentation parameters for excellent pilot acceptance.

An optimal model-following flight control system for manual control.

A generalized method for the identification of aircraft stability and control derivatives from flight test data.

A versatile Kalman technique for aircraft or missile state estimation and error analysis using radar tracking data.

Advanced fighter control flight simulator for all-systems compatibility testing.

Synthesis and analysis of a fly-by-wire flight control system for an F-4 aircraft.

Maneuver load control and relaxed static stability applied to a contemporary fighter aircraft.

System analysis and synthesis for B-52 Control Configured Vehicle program, discussing flutter mode and maneuver load control and augmented stability configurations.

Fast safe hydraulic actuator flight control for jet aircraft.

Test of direct lift control in the case of the experimental aircraft DFW-488-482 JATO [AIAA PAPER 72-883]

Flight-test experience in digital control of a remotely piloted vehicle. [AIAA PAPER 72-883]

Instruments installation effect on Soviet passenger aircraft pilot performance, discussing Tupolev aircraft control systems

Operation principles, capabilities and characteristics of midair collision avoidance system with aircraft separation control by nonsynchronous techniques

Concorde electrically signalled fly by wire control system with mechanical linkages for standby fail-safe redundancy

Improved qualitative flight data rating scales.

Evaluation of flight instrumentation for the identification of stability and control derivatives.

An analysis of aircraft lateral-directional handling qualities using pilot models. [AIAA PAPER 72-963]

The optimal control of merging aircraft - Kalman filtering of the hybrid air traffic controller.

Liquid and solid precipitation on aircraft structure surfaces, discussing potential hazards to engine components and aircraft controls due to ice formation

Effects of variations in lift and drag response to longitudinal control on the ease and quality of landing.

Application of linear mathematical model to represent human operator performance in controlling attacking fighter aircraft.

Analyzing and calculation of basic parameters of aircraft automatic control system components.

Acquisition and analysis of aerodynamic stability and control data for vertical takeoff aircraft configurations.

Hydraulic actuator design for aircraft vehicle control systems.

Advanced control technology for future civil aircraft configurations

Technologies of computerized flight management and control systems, automated communications systems, and navigation and surveillance systems in future avionics

Wind tunnel tests for slot spoiler direct lift control system

Deteriorating stability and control derivatives of airplanes from flight data using modified Newton-Raphson minimization technique

Advanced control technology for jet fighter aircraft extracted from flight test data by utilizing maximum likelihood estimation.

Fly by wire and integrated actuator package techniques for developing survivable flight control system in jet aircraft.

Determining stability and control derivatives of aircraft from flight test data using modified Newton-Raphson minimization technique

Aerodynamic control system for controlling flutter.

Terminal guidance system for guiding aircraft into preselected altitude and/or heading at terminal point.

Maximum likelihood parameter estimation for extracting stability and control derivatives of aircraft from flight test data using real time digital computer.

Development of thrust control system for application to control of aircraft and spacecraft.

Design and testing of a flight control system for light aircraft extracted from flight test data using maximum likelihood estimation.

Aircraft configurations

Aircraft control systems

Aircraft CRT electronic displays discussing clarity, stability and readability of CRT images

Aircraft electronic display for pilot precise control in complex tasks, discussing clarity, stability and readability of CRT images

Aircraft CRT electronic displays discussing operational flexibility versus control and monitor complexities, economics, reliability and human factors

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Aircraft CRT electronic displays discussing operational flexibility versus control and monitor complexities, economics, reliability and human factors
of light, propeller-driven aircraft
[AIRCRAFT DESIGN][NASA-TM-6800]
Aircraft accident investigation of DC-8 crash at Kennedy International Airport, New York on 8 September, 1970
[NTSB-AR-71-12]
Statistical analysis of XB-70 aircraft responses and control inputs
[AIRCRAFT DESIGN][NASA-TD-6872]
Repeatability of advanced information systems considered as element in automatic control system
[REPT-64]
Aircraft position and motion control by photometric three reference point method noting coordinate transformations
[SABB-TN-68]
Attitude control and guidance mechanism for spacecraft and aircraft
[AIRCRAFT DESIGN][NASA-CS-12768]
Development of control volume concept in aeronautical engineering based on laws of
[AD-741132]continuity, momentum, and energy
[p0627 NT2-29001]Development of controller synthesis techniques for large aircraft using distributive parameters and time delays
[AD-740873]
Development of linear and nonlinear models of electrohydraulic aircraft control surface system and analysis of system performance
[AIRCRAFT DESIGN][NASA-TD-6528]
Aircraft accident involving Boeing 720B aircraft during missed approach simulation at Ontario, California airport on 31 Mar. 1971
[p058a NT2-31018]Proceedings of conference on handling qualities and performance criteria for conventional and V/STOL aircraft
[AIRCRAFT DESIGN][AGARD-CP-106]
Comparison of French and US criteria for aircraft performance and control with application to
complicated, high performance aircraft
[p0619 NT2-32017]Comparison of flying quality criteria documents for United Kingdom and US aircraft to show areas of inadequacy in assessing acceptability of aircraft
[p0619 NT2-32018]Procedures for application and revision of Federal Aviation Regulations in determining handling qualities and performance of aircraft
[p0619 NT2-32019]Revisions to handling qualities criteria for V/STOL aircraft with emphasis on instrument flight characteristics
[p0620 NT2-32021]Development of V/STOL aircraft handling qualities criteria specification and analysis of deficiencies
[p0620 NT2-32022]Analysis of criteria for evaluation of high performance aircraft and results obtained on aircraft equipped with control augmentation systems
[p0620 NT2-32025]Analysis of design and functioning characteristics of flying control systems and effect on flight qualities of transport aircraft
[p0621 NT2-32032]Measurement of human operator performance in single axis tracking task during simulated turbulent conditions
[p0621 NT2-32034]Evaluation of translational rate for V/STOL aircraft in hover condition using six degree of freedom motion simulator
[AIRCRAFT DESIGN][NASA-TK-62196]
Design and development of visual approach and landing simulator using F-105 aircraft components and closed circuit television system
[AD-7652001]AIRCRAFT DESIGN
ST HELICOPTER DESIGN
Aircraft productivity considerations in preliminary design and production planning phases
[SAE PAPER 710766]
Aircraft design producibility to reduce production cost and enhance product profitability, using joint engineering and manufacturing teams
[p0003 AT2-10245]Aircraft design trends for commercial transport aircraft at supersonic speeds
[SAE PAPER 710768]
Future aircraft design trends for transcontinental and short haul operation, considering traffic forecasts, current transport aircraft and potential derivitives and technology
[p0003 AT2-10247]TriStar commercial jet transport aircraft design development, discussing design and flight tests for operating efficiency, reliability and safety
[SAE PAPER 710759]
Aircraft design producibility to reduce production cost and enhance product profitability, using joint engineering and manufacturing teams
[p0003 AT2-10252]Assessor wing jet STOL research aircraft development progress report covering design, engine tests, performance, control simulation and stability augmentation
[SAE PAPER 710757]
Propulsion system optimization for commercial transport aircraft design under Advanced Transport Technology study, considering impact on aircraft gross weight
[SAE PAPER 710760]
Propulsion system optimization in transonic transport aircraft design, considering nacelle integration, engine choice, noise attenuation and technology utilization
[SAE PAPER 710762]
Airliner Propulsion system approach to DC-10 aircraft power plant design for maximum operational effectiveness
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Variable speed constant frequency power generation equipment influence weapon system effectiveness, considering weight and cost
[p0011 AT2-11067]Aircraft ride comfort problem in turbulent air, comparing fixed and近年 wing aircraft responses
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[p0018 AT2-12226]Aircraft design interactive computer simulation technique, using human decision input response to computer output information
[DGLR PAPER 71-107]
Resolved aerodynamic problems in sub- and transonic civil and military aircraft design, considering flow problems during transonic flight, takeoff and landing
[DGLR PAPER 71-105]
B-222 aircraft design and operation, examining marketing problems
[p0054 AT2-13098]Services and systems integration into total aircraft design, considering utilization and type effects
[p0055 AT2-13413]Supersonic Tu 144 aircraft design, discussing engine and aerodynamic characteristics, stabilization and control, propulsion, wing structure, landing gear and operation
[p0056 AT2-13873]Transonic air transport design, discussing wind tunnel tests, supercritical flow technology, sonic boom avoidance, cruising speed, operating costs and transport family development
[p0057 AT2-13847]Ti effects on aircraft equipment design, considering use of Ti plated brake cylinder, wheel, engine control rams, tie bolts and rings
[p0058 AT2-13518]FPF-614 short range twin jet passenger transport aircraft, analyzing service performance and economic efficiency requirements influence on design characteristics
[p0059 AT2-13643]Metal-skin honeycomb composite structure design and manufacture for Concord rudder, noting structural adhesive bonding in aircraft construction
[p0069 AT2-15090]Canadian STOL design, development, production, airports and civil air transportation applications
[p0115 AT2-15775]Wave drag reduction by antisymmetric wing and body arrangement, discussing application to transport aircraft at supersonic speeds
[p0112 AT2-16534]Airbus A-300 B design and characteristics for passenger transport on short and medium haul
Eight-place turbofan powered business jet aircraft

Wing structural weight estimation for civil

Emergency life saving instant exit system in

Aircraft preliminary design procedure with

French, British, Italian, D.S., German and Israeli

Aircraft design for acceptable vibration level,

VTOL transport aircraft use in densely populated

Urban areas, discussing travel time, airport

requirements, noise and design problems

Atmospheric turbulence effects on aircraft flight

and design, covering accidents and costs,

Turbulence generation, prediction, measurements

and load alleviation devices

[AIAA PAPER 72-219]

Model following variable stability system for

X-15B VTOL aircraft, discussing hardware design

and flight evaluation

[AIAA PAPER 72-96]

French civil aircraft displayed at 1971 Le Bourget

Air Show, discussing design and performance

characteristics of Airbush, Concorde, Caravelle,

Corvette, Falcon, Frejout, STOL of 90% and Mercure

[AIAA PAPER 72-1913]

Flight simulator for aircraft design, emphasizing

on compromise between performance and control

requirements to avoid excess weight and drag

[AIAA PAPER 72-19245]

Tail first /canard/ and tandem wing configurations

for natural STOL, discussing low cost serial

work aircraft

[AIAA PAPER 72-19285]

Value engineering based cost data application to

design of aircraft in production

[AIAA PAPER 72-19435]

Procedures followed by test pilot on first flight

of new aircraft design

[AIAA PAPER 72-18408]

Crashproof rotorcraft STOL aircraft for rescue

operation, discussing orthodox rigid and special

rotatory wings design, air tunnel experiment and

flight tests

[AIAA PAPER 72-18582]

Government role in wide body aircraft introduction

to air carrier service, discussing aircraft

maintenance, design and fail-safe structural

configurations

[AIAA PAPER 72-18831]

Air jet propelled flight vehicles optimal design

parameters for constant altitude flight at given

speed

[AIAA PAPER 72-18991]

Aircraft performance parameters in terms of effect

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on design

[AIAA PAPER 72-19111]

VJ-101A and B V/STOL weapon system design,

describing various propulsion system

configurations

[AIAA PAPER 72-19250]

V/STOL weapon system VJ-101, describing B-231

design development from tail-launched concept to

canard configuration with lifting wing engines

[AIAA PAPER 72-19251]

Aircraft design for acceptable vibration level,

discussing flight vibration and response

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Mitsubishi T-2 two-place supersonic trainer,

describing prototype, airframe and propulsion

system design and operational features

[AIAA PAPER 72-20306]

French, British, Italian, U.S., German and Israeli

military aircraft, presenting design and

performance data

[AIAA PAPER 72-20308]

Mercey short haul transport aircraft, emphasizing

lightweight structural design with extensive use

of integral machined components for fatigue safety

[AIAA PAPER 72-20310]

Aircraft preliminary design procedure with

integrated performance simulation, using time

sharing computer facility

[AIAA PAPER 72-20353]

Eight-place turbofan powered business jet aircraft

design, discussing structure, fuel system,

engines crew station and safety features

[AIAA PAPER 72-21572]

Emergency life saving instant exit system for

aircraft fuselage for use after crash landing,

discussing design and ground testing

[AIAA PAPER 72-21583]

Wing structural weight estimation for civil

aircraft preliminary deriving generalized

formulas based on wing root bending moment for

specified flight condition

[AIAA PAPER 72-22909]

Fixed wing agricultural aircraft, comparing

different designs in terms of performance,

safety, handling and economic efficiency

[AIAA PAPER 72-22940]

Airfoil ram-wing air-water hybrid vehicle X-113 A

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aerodynamic ground effect, discussing flight

tested performance characteristics

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DC-10 aircraft structural design, flight handling

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Deterministic optimization of aircrafter design

undercarriage suspension characteristics for

taxing induced vibration simulation,

discussing damping and stiffness functions and

hybrid computer solution

[AIAA PAPER 72-23058]

Simply supported sheet plates stability under

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AIRFOIL PROFILES

NT WING PROFILES

NT WING SPAN

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AIRFOIL THICKNESS

AERIAL BOILS

AIRFOIL PROFILE

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AIRFOIL THICKNESS

AERIAL BOILS

AIRFOIL PROFILES

AERIAL RUSES

AIRFOIL THICKNESS

AIRFOIL STATIONS

AIRFOIL RPRLICES

AERIAL RUSES

AIRFOIL THICKNESS

REFERENCE

MT HORIZONTAL TAIL SUBSURFACES

MT INFINITE SPAN WINGS

MT JET FLAPS

MT LAMINAR FLOW AIRFOILS

MT LEADING EDGE FLATS

MT LIFTING ROTORS

MT LOW ASPECT RATIO WINGS

MT PARABING

MT PROPELLER BLADES

MT RECTANGULAR WINGS

MT RIGID ROTORS

MT RIGID WINGS

MT RING FLAPS

MT ROTARY WINGS

MT SLENDER WINGS

MT SPLIT FLAPS

MT SPOILER SLOTS ALLEBOR

MT POURERS

MT SUPERCRITICAL WINGS

MT SUPERSONIC AIRFOILS

MT SWEEP WINGS

MT SWEEPBACK WINGS

MT THIN AIRFOILS

MT THIN WINGS

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Reliable interconnections for U.S. Army avionics, determining best technique for terminating flat cable connectors

Avionics systems-electrical interface design information document creation and dissemination, using REMPRET computer program

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Configuration and flight test of the only operational Air Force area navigation system. Multifunction microwave apertures - Concepts and potential.

Technical experience in operating the equipment in the IL-62 aircraft.

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Application of computers for improved maintenance of avionics equipment, fault isolation, and verification of fault correction.

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Cascade technology for centrifugal compressor blades, vaned diffuser design, comparing performance results with conventional diffuser data. (AD-739574)

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Velocity profiles for three dimensional turbulent boundary layer on end wall of axial flow compressor cascade passage under adverse pressure gradients. (NASA-TM-X-2425)

Unsteady aerodynamic and aeroelastic effects in turbomachinery blade cascades supersonic flow, discussing trends in fan and compressor technology. (NASA-TM-X-2425)

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Bibliography of air traffic control systems to include control centers, operators, communication equipment, computer applications, signal display devices and navigational aids

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Aesop program for ATC and communications via four geostationary satellites over Atlantic and Pacific Oceans, discussing technical and financial international provisions

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Reliability program for SAA 37 Viggen airborne computer, discussing prototype and components operating tests and failure rates.

Reliability requirements and optimization for complex systems, discussing methods to improve component reliability of aircraft weapon systems.

Achieving fail safe design in rotors.

Effects of projectile damage on critical components.

Flightweight components and water cooled test adapters for hypersonic engine.


Carbon/epoxy composite reinforced plastic for materials feasibility for application to aircraft landing gear wheel fabrication.

Large automated tape placement machine tool design and construction for laying up aircraft structures from composite materials.

Titanium-boron-epoxy composite materials selection and fracture mechanics criteria for B-1 bomber structural design.

Layered anisotropic fiber composite /Tetra-Core/ for sandwich construction and aircraft applications, discussing design, fabrication and strength characteristics.

Boron/epoxy and graphite/epoxy composites - application to aircraft structural design, discussing flight test and developmental programs.

Coring technique optimization for primary aircraft components composite materials, discussing mechanical and dimensional properties test data, production cost analysis and cure time.

Composite materials fabrication, emphasizing high strength/stiffness to weight ratio as critical performance requirements.

Carbon-carbon composite material for high performance aircraft braking systems, noting weight savings and thermal characteristics improvements.

Composite materials application to gas turbine fan guide vane fabrication, noting economic factors and prototypes performance in engine test data.

Long range transport aircraft structures and composite materials technology for airframe and engine systems.

Dynamics of composite materials - ASME Conference, La Jolla, California, June 1972.

Aircraft structures design and development with composite materials, considering materials characteristics relations to structural dynamic response.

Results of preliminary studies of a bearingless helicopter rotor concept.

Ballistic-damage-tolerant composite flight control components.

The integration of composite structures into aircraft design.

Graphite-epoxy composites application to commercial transports for weight and cost reduction.

Boron polyimide composite development.

Boron fiber reinforced composites technology assessment and utilization, stressing cost reduction.

Design and development of numerically controlled machine for laying composite tape used in building aircraft structures from filament reinforced resin matrix composite materials.

Concept development and feasibility analysis of aircraft all structures reinforced with filamentary composites.

Stress analysis of crack propagation in orthotropic strips with edge stiffeners and application to aerodynamic structures design.

Conference on mechanical shock and vibration damping of aerospace structures.

Vibration damping and acoustic fatigue resistance of aircraft structural composites with viscoelastic core.

Physical and structural properties of mixed-modulus composite materials of graphite and S-glass fibers.

Development of technique for analysis of instability of class fiber reinforced plastic panels under axial compression.

High temperature resins for use in graphite fiber composite for jet engines.

Ballistic impact tests to determine vulnerability of boron/epoxy double-wall drive shafts for helicopter rotors.

End oriented, fiber reinforced plastic composites as rain erosion resistant materials.

Thermal aspects of using filamentary composite materials for airframes on atmospheric entry spacecraft.

Development, stress analysis, and manufacturing of horizontal stabilizer for -4 aircraft using graphite-epoxy laminates in primary structure.

Development of criteria for application of composite materials in construction of helicopter synchronizing drive shafts.

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Optimal modes of operation of a centrifugal-compressor wheel with prewirling of the flow

Analytical correlation of centrifugal compressor design geometry for maximum efficiency with specific speed

Supersonic axial flow shock-in-rotor type compressor performance tests, discussing factors responsible for low efficiency

Performance of axial flow compressor rotor with different casing treatment configuration

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Computer simulation Applications - Conference, New York, December 1970

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Soviet book on control system technology for flight vehicles covering production of mechanical, hydraulic, pneumatic, electronic and electronic elements

Nonlinear dynamics of flight vehicle - Conference, University of Technology, Loughborough, England, March 1972

Nonlinear dynamic motion response analysis of flight vehicles considering continuously changing vibration damping and frequency

Flight vehicle angular velocity measurement by accelerometers, deriving equations of motion

Russian book - Calculation and analysis of flight-vehicle motion: Engineering handbook

Russian book - Assembly and testing of hydraulic and pneumatic systems of flight vehicles

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DENSITY
DENSITY
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Deterioration of shaft bearings of electromotor driving aircraft centrifugal fuel pump, determining lateral force acting on impeller

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Fire and explosion protection fuel tank fumes, including oxygen reduction, vapor or mist inerting, and plastic foam fillers

Lightning discharge ignition of fuel vapors beneath titanium alloy aircraft skin

Pressure tight seal for superalloy used in hypersonic aircraft fuel tank joints

Evaluation of several halogenated hydrocarbons for ignition and explosion suppressants in aircraft fuel tanks damaged by incendiary ammunition

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Development of optimization method for computing optimal open loop inputs for dynamical system by observing only output and application to STOL aircraft operation

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FUNCTIONAL INTEGRATION
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- Functional [p0503 A72-38514]

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- NT COORDINATE TRANSFORMATIONS
- NT ERROR FUNCTIONS
- NT FOURIER TRANSFORMATIONS
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- NT NORMAL DENSITY FUNCTIONS
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- Gas Composition
- Gas Flow

- Two-dimensional flow of gas jet around dihedral
- Vertical asymptotic hyperboloid in air of thermochemical equilibrium
- Interactions between gas dynamics, aerodynamics, airfoils, wind tunnels, propellers, turbomachines, blade cascades, etc.
- Development of mechanisms of turbulent jet flows
- Electrofluid dynamic energy conversion for wind tunnel augmentation

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- Aerodynamics
- Thermodynamics
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- German book on flow technology and fluid flow machines covering hydrodynamics, gas dynamics, aerodynamics, airfoils, wind tunnels, propellers, turbomachines, blade cascades, etc.
- Acoustic, turbulent, and thermal fluctuating motions interdependence in gas flow, considering application to aerodynamic noise suppression
- Cascade nozzle gas particle flow properties, discussing flow pressure experiments and theory at different streamlines
- Film cooled turbine vane's external heat transfer distribution in turbulent gas stream, measuring heat transfer coefficients with and without blowing
- Fundamental concepts of gas jet around dihedral obstacle, investigating screen proximity and fluid compressibility effects
- Cascading turbine blades vibration measurement in subsonic and supersonic high temperature gas flows, describing test facility
- Gas particle flow trajectories, velocities and pressure distribution in axial flow turbine stages, using cascade tunnel and high speed photographic techniques
- Film cooling effectiveness for air gas flow section of gas turbine engine under actual operating conditions
- Electrical analog simulation of internal combustion engines intake and exhaust systems
- Nonstationary gas flow, considering cylinder, turbine and supercharger operation

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- Holographic interferometry and laser light velocimetry techniques for flow visualization and flow distribution measurement in aircraft turbine engines
- Application of aerodynamic data to design of passenger aircraft with emphasis on laws of gas motion flow and boundary layer theory
- Effect of flap set back and gas temperature on Coanda attachment to curved plate with application to air flow patterns on flap of scale propulsive wing model

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- U Engines
- Gas Generators

- Gas generator performance shifts involving military tria level variations by TF-30 engines in high relative humidity environment caused by condensation in inlet duct
- Detail design of turbopit lift fan for use with YJ97-GE-100 turbojet gas generator to V/STOL transport research aircraft
- Development of techniques for evaluating performance of air breathing engines and measurement of significant operating parameters
- Effect of air injection on the torque produced by a trailing vortex

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- Atmospheric Ionization
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- Aerodynamic noise produced by gas jet flow around airfoil, discussing sound reduction

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- Gas lubricated bearings

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- Detonable Gas Mixtures

- Blends, boiling methane and ethane mixture characteristics, noting advantages as potential rocket, aircraft and motor vehicle fuels

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- Turbine inlet gas temperature limiting systems design and operation in turboprop engines, describing blocking mechanisms, delaying element and altitude compensation
- Time constant of aircraft gas turbine engines gas temperature regulating system, using two thermocouples with different rise times
- Turbine engine sensors for high temperature applications

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Analysis of OS general aviation aircraft accidents

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Forecasts of aviation activity for fiscal years

Aircraft accidents involving air taxi operations

Aircraft accidents involving corporate executive aircraft

Compilation of United States general aviation accidents

Use of shoulder harness in general aviation

Briefs of US general aviation accidents involving air taxi operations

Compilation of DS general aviation accidents for calendar year 1968

Computer program for determining characteristics and behavior of rotorcraft for United States general aviation

Flight test investigation of effect of wing tip vortices generated by large jet transport aircraft when intersected by smaller general aviation type aircraft

Computer program for determining characteristics of propellers used in general aviation aircraft to include blade shape parameter and integrated design lift coefficient

Briefs of US general aviation accidents involving air taxi operations during 1969

Compilation of US general aviation accidents for 1968

Compilation of accidents involving helicopters and rotor craft for United States general aviation during 1969

Compilation of aerial application operations during 1969

Compilation of accidents involving helicopters and rotor craft for United States general aviation operations during 1969

Compilation of United States general aviation accidents occurring in OS general aviation for calendar year 1970

Aircraft accidents involving corporate executive aircraft in US general aviation for calendar year 1970

Aircraft accidents involving air taxi operations in US general aviation for calendar year 1970

Flight tests to determine effects of various approach angles on performance of executive transport type aircraft

Forecasts of aviation activity for fiscal years 1972 to 1973 to indicate expected status of commercial and general aviation

Passenger, cargo, and mail statistics for commuter air carriers FY 1971

Capital cost analysis of airport alternatives for San Francisco urban airports for general aviation and commercial aircraft

Analysis of US general aviation aircraft accidents for calendar year 1969

Reports of accidents involving missing aircraft of US general aviation for 1968

Briefs of US general aviation accidents involving corporate/executive aircraft in 1968

Summary of NASA research and experience related to wind and recovery characteristics of light general aviation aircraft

Recommendations for improving general aviation safety

Urban general aviation airport economics, planning, and management

Environmental impact statement on proposed extension and widening of existing paved runway at Baxley Municipal Airport, Baxley, Georgia

Environmental impact statement on proposed connection of Dade County Airport, Trenton, Georgia

Environmental impact statement on proposed construction of Jasper-Pickens County Airport, Jasper, Georgia

Computer program for predicting performance, noise, weight, and cost of general aviation aircraft propellers for 1980 time period

Application of unconventional wing pivoting about spanwise axis forward of aerodynamic center for gust alleviation in general aviation aircraft

Conditions, circumstances, and probable causes of aircraft accidents occurring in US general aviation during calendar year 1970

Design and development of system for aircraft collision avoidance for use on general aviation aircraft

Airport facility requirements for corporate/executive/business aircraft operations

San Francisco Bay area airport and airspace capacity analysis to meet 1965 demand forecast

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U MILITARY AIRCRAFT

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Airport geometric coordinates computation from radar range measurements and flight altitude over earth ellipsoid

Great circle navigation for inertial equipped aircraft, describing procedure for determining waypoint coordinates with reference to VORTAC stations

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U MAGNETIC ANOMALIES

GRASSMAGNETIC EFFECTS

GEOMETRIC FIELD

GEOCRITICAL TAIL

Outer magnetosphere near midnight at quiet and disturbed times.

GEOCRAGENESIS

Approximate compensation in airborne magnetometry for changing inductive field of aircraft moving through varying geomagnetic field

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U RELATIVITY

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UT CORSICS

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UT CURVES (GEOMETRY)

UT FLOW GEOMETRY

UT GREAT CIRCLES

UT LINE (GEOMETRY)

UT PROJECTION

UT SPHERE GEOMETRY

UT POINTS (MATHEMATICS)

UT PROJECTIVE GEOMETRY

UT TENSOR ANALYSIS

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Environmental impact statement on proposed extension and widening of existing paved runway at Baxley Municipal Airport, Baxley, Georgia

Environmental impact statement on proposed connection of Dade County Airport, Trenton, Georgia

Environmental impact statement on proposed construction of Jasper-Pickens County Airport, Jasper, Georgia

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U SYNOCHRONEO SATELLITES

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GEOGRAPHIC HEATING EQUIPMENT

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GROUND HANDLING

Development of theories for speed, stability, maneuverability, and seaworthiness of ground effect machines [AD-742425]
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Resistance characteristics in smooth water of hulls of planning and hydrofoil craft [AD-742752]
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Static load deflection and vertical drop tests of quarter scale model of CC-115 aircraft equipped with air cushion landing system [AD-743829]
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Air cargo intermodal and interline containers handling in warehouse storage, transportation and distribution, considering total pack and interlock requirements [AD-743847]
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Simulation of an air cargo handling system [AD-744372]
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- Critical lift and flow separation on helicopter rotor under dynamic loading as function of flow and blade characteristics
- Flow separation effects on critical lift of helicopter rotor, using blade angle of attack criterion
- Hughes 500 and OH-5 helicopter tail rotor causered blades, comparing thrust and stall characteristics with symmetrical blades
- German Bo 105 five/six seat light utility helicopter with rigid glass-fiber reinforced plastic rotor blades, presenting design and performance
- American Helicopter Society Noise Subcommittee report on physical characteristics and major controlling parameters of rotor induced aerodynamic noise
- Boundary layer velocity profiles on a helicopter rotor blade in hovering and forward flight
- The controllable twist rotor performance and blade dynamics
- Flight investigation of design features of the S-67 winged helicopter
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Hypersonic nonlinear aerodynamic loading effect on panel flutter, examining stability for various initial conditions.[ATA PAPER 72-345]
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Automation in planning and execution of flights, considering navigation, communication, flight instruments monitoring, control/stabilization and warning systems.

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Pulse operated multichannel annunciator system for pilot warning of aircraft systems malfunctions, describing circuit design.

Avionics effects on airline operations - timekeeping, considering gains due to all-weather capability and engine monitoring vs possible losses due to equipment failure.

The use of airborne magnetic tape recorders for fatigue life monitoring.

Engine condition monitoring - The Fan dm approach: Phase II.

In-Flight and flight-line monitor system to detect foreign object damage in jet engines.

Variable impedance transducer measuring instruments for in-flight aircraft performance tests under environmental thermal effects.

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U IN-FLIGHT MONITORING
U THREAT MONITORING
U SITUATION AWARENESS

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Viscous incompressible flow past longitudinally cambered small aspect ratio slinger wing near solid interface.

Two-dimensional airfoil unsteady stall in incompressible flow, comparing calculated loading during transient and sinusoidal pitching motions with measured values.

Jet flaps for high turning compressor cascades in incompressible axial flow, calculating blade pressure and jet slope distributions.

Unsteady aerodynamic forces on flat plate in incompressible potential flow, investigating angle of attack frequency response to periodic local perturbations.

Incompressible potential flow model of porous parachute canopy flow field, using Stokes stream function for axisymmetric vortex sheet in infinite flat plate in uniform steady stream.

Inviscid incompressible flow past longitudinally curved small aspect ratio slender wing, investigating aerodynamic characteristics.

Incompressible boundary layer velocity profile on swept wings, comparing critical Reynolds number to straight wing value.

French monograph on velocity profile in laminar boundary layer of an infinite flat plate in baroclinic oscillation of uniform incompressible flow.

Aerodynamic properties prediction procedure for thin jet-flapped airfoil in incompressible inviscid flow bounded by different types of boundaries.

Vortex induced wing loads.

The inviscid flowfield of an unsteady airfoil.

Prediction of the stalling of a wing section in incompressible flow.

Uniformly exact solution of the problem of the flow past a slender profile.

Calculation of separation points in incompressible turbulent flows.

Velocities induced by distributions of infinite kinked sources and vortex lines representing wings with sweep and dihedral in incompressible flow.

Analysis of basic flow elements in unsteady stall of two dimensional airfoil rotary wing in incompressible flow.

Numerical procedure for predicting airfoil stall occurrence in incompressible flow conditions.

Computer program for coordinates, incompressible inviscid section characteristics, and twodimensional drag-rise for NASA airfoils.

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Nonlinear calculation of three dimensional flow of perfect incompressible fluid around wing of finite span with arbitrary form.

Nonlinear unsteady potential flow of incompressible fluid past slender wing, using linearized vortex distribution method.

Plate stationary flow of ideal incompressible fluid past large camber profiles of arbitrary shape and thickness, using computerized Fourier expansion.

Downwash behind lifting surface related to loading in ideal incompressible gas by equations of motion linearization.

Plate laminar semi-infinite incompressible fluid jet propagation into slipstream along moving plate, solving boundary layer equations.

Turbulent flow between rotating disk and turbine engine body calculated from equations of axisymmetric viscous incompressible fluid flow.

Plate stationary flow of ideal incompressible fluid past large camber profiles of arbitrary shape and thickness, using computerized Fourier expansion.

Vortex distribution technique applied to three-dimensional bodies moving through incompressible fluid.

Nonlinear theory of lifting surfaces applied to locally perturbed incompressible potential flow, investigating angle of attack frequency response to periodic local perturbations.

Inconel (trademark)

Forged Inconel alloy 718 metal powder preforms for dense aircraft engine compressor rotor blades.

Hot corrosion effects on Inconel-700 and Inconel-I gas turbine rotor blades during burning of high sulfur concentration residual oil fuels.

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ATTITUDE INDICATORS

CLOUD HEIGHT INDICATORS

Gyro HORIZONS

GYROCOMPASSES

HOT-WIRE AMMETERS

POSITION INDICATORS

RADAR DIRECTION FINDERS

SPEED INDICATORS

STRAIN GAGE BALANCES

WEIGHT INDICATORS

Wind VANEs

Airfield Vehicle Obstacle Indication Device short range high-definition radar system for aircraft navigation aid.

Soviet book on course-indicating systems and automatic navigation aids for civil aviation aircraft covering design, operation principles, error analysis and reliability.
Combined inertial/radio navigation systems for cost reduction, noting superior accuracy of VOR and DME

Area navigation systems, discussing VOR/DME, Doppler and inertial systems, CRT displays, data links, etc

Omega effect on oceanic airway safety, noting improvement over inertial navigation systems

Aircraft inertial navigation systems, discussing mode selection unit, digital computer and control display for operator communication with system

Great circle intermediate waypoint computation method for inertial navigation equipped aircraft

Coordinate and speed error dependence on instrumental errors of inertial navigation system using gyrocompass

Integrated inertial-VOR-DME or inertial-TACAN navigation system, presenting slant range and bearing adjustment procedure via least squares method

Helicopter testing of inertial navigation systems. [AIAA PAPER 72-848] p0504 N72-39081

USAF development of electrostatic gyros for inertial air navigation, noting flight tests and associated airborne digital computer

Motion stability of inertial navigation gyroscopic system with gyro horizon compass, noting constant and time dependent coefficients of motion equations

Inertial platform pursuant to ARINC-571 specifications, noting capability for integration into surface navigation system or autonomous navigation

The impact of gravimeter techniques on the performance of inertial navigation systems. [AIAA PAPER 72-850] p0504 N72-39079

Error analysis of hybrid aircraft inertial navigation systems. [AIAA PAPER 72-948] p0504 N72-39081

Optimum aiding of inertial navigation systems using air data. [AIAA PAPER 72-947] p0504 N72-39082

Updating inertial navigation systems with VOR/DME information. [AIAA PAPER 72-846] p0504 N72-39083

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Advanced Doppler-inertial navigation system for transport helicopters

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Analysis of inertial navigation system performance to determine effects on aircraft safety and collision avoidance during flight over North Atlantic Ocean f1000-73-73753 p0263 N72-18670

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Air traffic control analysis of North Atlantic commercial aircraft operation based on inertial navigation and satellite surveillance [DOT-TSC-PAA-71-13] p0319 N72-21629

Development of air traffic control procedure using inertial navigation position reports as input

Passenger aircraft onboard automated inertial navigation devices, emphasizing accelerometer and gyrocompass design and construction [NASA CR-124721] p0019 N72-13351

Military aircraft inertial navigation system design, discussing gyrocompass, gyro compensating alignment, accuracy and performance [NASA CR-172-11118] p0012 N72-11118

Flight control systems development, discussing onboard computers use in subsystems functional integration, stabilization and landing systems, inertial navigation and flight simulation [NASA CR-172-15666] p0072 N72-15666

All-weather landing aids for civil VTOL aircraft and discussion Doppler and inertial navigation, instrument landing systems, ground visibility improvement [NASA CR-172-16736] p0127 N72-16736

Book on mechanization and error analysis of inertial navigation systems, stressing terrestrial applications [NASA CR-172-16780] p0127 N72-16780

Inertial platform pursuant to 4RIRC-571 [AHS PREPRINT 634] p0143 N72-35447

Configuration and flight test of the only operational Air Force area navigation system. [AHS PREPRINT 634] p0143 N72-35447

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- Navigation performance of high cross-range space shuttle orbiter approach using optimally augmented inertial navigation system
- Numerical analysis of cause and effect of errors in inertial navigation systems based on gyro horizon operation
- Kalman-Schmidt filters applied to optimal control of air subsystems inertial navigation systems
- Measuring air velocity and temperature for inertial navigation using DBC-5 aircraft
- Improved navigation by combining FOG/DME information with air or inertial data
- Analysis of factors affecting accuracy of inertial navigation systems

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- Inertial platform pursuant to ABNC-571 specifications, noting capability for autonomous operation
- Autonomous navigation systems, discussing Doppler navigation, inertial platforms and onboard computers
- In-flight alignment and calibration of inertial measurement units
- System methodology application to filter design, for inertial reference unit calibration

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- System methodology application to filter design, for inertial reference unit calibration in digital test station for FB-111 aircraft navigation system
- Rotor downwash variation by changing vortice diameter, flapping, rotor speed, and radius and placing infinite span wing in flight field
- Numerical analysis of velocity potential of supersonic flow past semi-infinite plane sector based on linearized theory of supersonic flow

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- INFLATABLE STRUCTURES
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- Development of an inflatable fabric structure for the early stabilization of the B-1 crew escape capsule

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- Parachute opening shock and filling time calculation based on aerodynamic drag, air mass and effective porosity time functions, using momenta and continuity equations
- Parachute inflation loads and times, presenting calculation method based on unsteady pressure distribution on decelerating inflating parabolic shell of revolution with unstaggering starting vortex

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- Supersonic aerodynamic influence coefficients matrices calculation for wings of arbitrary planform, constructing computer program
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- Information measurement tests and development for aircraft maintenance jobs

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- Information dissemination
- Cost effectiveness model for evaluating general aviation weather dissemination techniques, streaming design variables and time periods
- Engineering information service for aeronautical engineering, mechanical engineering, chemical engineering, industrial fluid mechanics, and stress and strength

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- Aircraft optimal control for case of continuous data flow on time variable flight conditions
- The Gander automated air traffic system

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- United Air Lines computerized information retrieval system for message switching, flight planning and monitoring and aircraft parts inventory control

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- NT MANAGEMENT INFORMATION SYSTEMS
- United Air Lines computerized information retrieval system for message switching, flight planning and monitoring and aircraft parts inventory control

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- Information theory approaches to air navigation, discussing ATC, collision avoidance and computer applications

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- Basic requirements for airborne infrared forest fire detection system
- Nd:Te photodetectors for high temperature infrared detectors of aircraft engine fire detection systems

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- Airborne remote CIT detection equipment, examining pulsed Doppler laser and IR radiometry

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- NT INFRARED SCANNERS
- NT INFRARED SPECTROPHOTOMETERS
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- Infra-red photographic apparatus and rotating systems, for measuring surface temperature of turbine vanes and blades

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Coherent and incoherent structures of aerodynamic noise, analyzing compressor near field and jet trailing edge emission sources [W. Earle, TP 4983]

In measurement of hot jet turbulence intensity, axial and transverse profiles, noting application to sound sources detection

In infrared energy emission from conical jet exhaust of jet turbine aircraft

Description and use of a method for characterizing noise sources in jets

Infrared spectrophotometer used for detection of infrared suppressors to determine their effectiveness in masking aircraft infrared emissions

Infrared sensors
Airborne external instrumentation pod containing IR scanner and associated test equipment for land and water surveys

Infrared spectra
Electro-optical device for recording infrared caseous oxygen spectra in pressurized aircraft cabin atmosphere

Infrared spectrophotometers
Infrared spectrophotometer used for detection of jet exhaust trace contaminants from Pegasus and Olympus engines in aircraft cabin atmospheres

Infrasonic frequencies
Portable detector-recorder for automobile, blast furnace, railroad car, engine room and helicopter infrasonic noise measurements, discussing peak frequencies and subjective effects

Infrasonic observations of natural background and signals from Apollo 14 and aircraft, using thermistor flowmeter microphone array

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Simulated testing of jet turbine engine ingestion of missile exhaust, determining design criteria for aircraft engine inlets from altitude chamber test data

Gas turbine engine icing, discussing atmospheric conditions, damage to ice ingestion and icing systems

Erosion effects on gas turbine engine compressor blades due to dust ingestion, discussing means for alleviating performance and life losses

In-flight investigation of installation effects and aerodynamic characteristics of local flow field on auxiliary inlet ejector nozzle on F-111A aircraft

Recirculation mechanism in jet powered V/STOL aircraft

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Inlet pressure
Turbulent intensity induced by wakes near secondary air jet inlet to gas turbine engine flange tube

The development of inlet flow distortions in multi-stage axial compressors of high hub-tip ratio

Installation caused flow distortion and its effects on noise from a fan designed for turbofan engines

Inflight research on the two-dimensional retarded cascade, I, II.

High response two-transducer pressure measurement for evaluating nonuniform and unsteady inlet airflow distortion effects on supersonic jet engine stability and performance

Experiment of supersonic air intake noise

Engine-aircraft interference, thrust, inlets, nozzles, and propulsion systems - conference

Data and recommendations for transonic tests of inlets

Inlet steady state and dynamic performance tests with F-111A and YF-12 aircraft

Flight test analysis of flow characteristics of Inlet steady state and dynamic performance tests with F-111A and YF-12 aircraft at supersonic speed

Effects of radial and circumferential inlet velocity profile distortions on performance of short-length double-annular ram-injection combustor

Unsteady response of turbocompressor with inlet flow distorted by square wave and triangular spoilers

Interference problems of airframe engine interference and performance of inlet/airframe combination in supersonic aircraft design

Quantitative method for determining jet mixing flow in jet turbine design optimization

Vorticity and stall-inducing inlet distortion in turbocompressors

Inlet nozzle tests
Thermal shock fatigue tests on aircraft gas turbine engine inlet nozzles, showing cracks as function of material

F-111A inlet nozzle dynamic distortion diagnostics for airframe-propulsion integration based on flight and transonic wind tunnel tests

In-flight investigation of installation effects and aerodynamic characteristics of local flow field on auxiliary inlet ejector nozzle on F-111A aircraft

Survey of wind tunnel testing procedures for nozzles and exhausts

Inlet, engine, and exhaust nozzle tests for supersonic propulsion system

Performance of jet stretcher diffuser system

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Circumferential inlet pressure distortion index derivation, for high hub-tip ratio multistage axial flow compressor from one dimensional isentropic flow expressions
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Steady state radial inlet pressure distortion index for axial flow compressor, examining radial velocity, continuity equation and mathematical model [ASME PAPER 72-GT-109] p0299 N72-25673

Inlet radial pressure fluctuation effects on turboramjet engine stall characteristics p0748 N72-27022

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U ANIMALS

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U NOZZLE INSERTS

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Approaches to verification and solution of magnetic particle inspection problems. p0610 A72-44903

Ground and air tests of flight inspection marker beacon receiving system [FAA-R-71-110] p0033 N72-10173

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Responsibilities of fixed base operators regarding aircraft inspection p0252 N72-18016

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U STABILITY

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Civil aviation approach and landing guidance systems evolution, simulation II, development, state of art and future requirements p0350 A72-29018

A pilot's opinion of VTOL control design requirements for the instrument approach task. [AHS PREPRINT 644] p0447 A72-38504

Simulation of city-3D Comanche light aircraft - performance and autopilot operation during final approach configuration [AD-733757] p0255 N72-18043

Operational evaluation of portable scanning beam guidance system for improved instrument landing capability [FFA-BD-72-26] p0280 N72-19720


Flight evaluation of vectored-thrust jet VTOL aircraft during simulated instrument approaches using Kestrel (FY-6A) aircraft [NASA-T3-D-6791] p0420 N72-24902

Application of discrete address beacon for surveillance system used with independent ground approaches to closely spaced runways [ATC-13] p0578 N72-30587

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Development and characteristics of simulation of continuous error of localizer beam of conventional instrument landing system used with space shuttle.

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[MA-CA-2024]

Design, development, and characteristics of aircraft approach control systems and application to typical jet transport aircraft.

[MA-CA-2023]

Development of mathematical model to illustrate multipath transmission of instrument landing system.

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Criteria for installation of instrument landing systems and effects of site on operation of system.

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Requirements for channel splitting to accommodate increased VHF omnirange navigation instrument landing systems, and distance measuring equipment facilities.

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Evaluation of STOL modular instrument landing system.

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- Wind tunnel models for determining inlet interference and performance of inlet/airframe combination in supersonic aircraft design.
- Wind tunnel test results of exhaust nozzle/airframe interference drag for optimization of subsonic aircraft design.
- Wind tunnel test requirements for simulating nozzle parameters and nozzle interference characteristics.
- Determination of thrust and drag characteristics for integrated aircraft engine design optimization.

**INTERFERENCE LIFT**

- Low subsonic region unsteady interference effects on harmonically oscillating wing-tailplane model with variable sweep wing.
- A new method for the evaluation of slotted wind tunnel interference parameters applicable to subsonic oscillatory tests.
- An experimental investigation of a jet issuing from a wing in crossflow.
- Multiturboprop slipstream and wing interference, noting lift, drag, pitching moment, normal force distribution, and wakes.

**AERODYNAMIC LIFT CHARACTERISTICS OF OSCILLATING TWO DIMENSIONAL AIRFOIL SUBJECTED TO SINUSOIDAL QUANTUM**

**INTERFEROMETERS**

- Microwave interferometers: Tracking platform for two interferometers and one radiometer for airglow survey.
- Interferometry: Stressors and wall thickness of turbine blades determined with laser holographic interferometry.
- Application of lasers to rotary gyroscopes: Vibration interferometry, gyroscoppe balancing, and gravimetric accelerometers.
- Retrodiffusion holographic interferometry: Visualizing turbocompressor flow.
- Experimental technique for measuring in-plane displacements by holographic interferometry.

**INTERFERENCE FREQUENCIES**

- Flight test method for determination of stability and performance characteristics from maneuvers in low and intermediate frequencies.

**INTERMETALLICS**

- Gas turbine superalloys high temperature oxidation resistance by fiber strengthening, rare earth alloying, precipitation hardening and intermetallic compounds.

**INTERNAL COMBUSTION ENGINES**

- GT GAS TURBINE ENGINES
- HT HELICOPTER ENGINES
- HT JET ENGINES
- HT PULSEDJET ENGINES
- HT RAMJET ENGINES
- HT SUPERSONIC COMBUSTION RAMJET ENGINES
- HT TURBOFAN ENGINES
- HT TURBOPROP ENGINES
- MT TURBOPROP ENGINES

**INTERNAL COOPERATION**

- International survey of air pollution by aircraft engines and fuels.
- European unity and cooperation for development of advanced aerospace technology.

**INTERNAL LAW**

- Air law concept as totality of legal regulations related to atmosphere use by flying devices, discussing relation to international environmental protection.
- Legal aspects in prevention of aircraft unlawful seizure in view of international cooperation, noting German Democratic Republic agreements.
- The onboard authority of the aircraft commanding officer as provided by the 1963 Tokyo Convention and the 1971 Montreux Convention.

**INTERNAL STRESS**

- Internal stress and wall thickness of turbine blades.

**SUBJECT INDEX**

- NT WAKE ENGINE ENGINES
- Electrical analog simulation of internal combustion engines intake and exhaust systems.
- Nonstationary gas flow, considering cylinder, turbine and supercharger operation.
- Internal compression inlets: Tolerance of Mach 2.50 axisymmetric airjet compression inlets to upstream flow variations causing changes in free stream Mach number and angle of attack.
- Internal friction: Applicability of methods for determining internal drag and momentum loss for small ducts.
- Internal trade.

**EARTH TRENDS**

- Earth trends, international aspects, available flight levels, weather conditions and long haul conflicts.
- Earth and D requirements for international standard VHF instrument landing system for Category I, II and III operations in next decades.
- Flight safety and ATC planning in German Federal Republic and on international level, discussing regional control stations, radio frequencies, navigation systems, automation, etc.
- Aerospat program for ATC and communications via four geostationary satellites over Atlantic and Pacific Oceans, discussing technical and financial international provisions.

**INTERNATIONAL COOPERATION**

- Earth and D regulations for international standard VHF instrument landing system for Category I, II and III operations in next decades.
- International cooperation: Presenting ATC system, presenting AIC (air traffic control) system.
- International cooperation: Analyzing multilateral international agreements, national aviation interests and competitive situation.
- European Airbus program, noting international cooperation between sources, content and organization, aircraft performance, financing, project chronology and Franco-German agreement.
- International survey of air pollution by aircraft engines and fuels.
- European unity and cooperation for development of advanced aerospace technology.

**INTERNATIONAL RELATIONS**

- International relations: Book on IATA organization and functions.
discussing international aviation history, conference machinery, enforcement of conference resolutions, air transportation economics, public corporations, etc

Markets for civil and military aircraft and missiles, airline operations, and exports and imports for European Economic Community, United Kingdom, and United States

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Determination of interference lift, aerodynamic coefficients, and pitching moment for cruciform wings by iterative solution

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J-75 engine heat transfer characteristics of chordwise-finned, impingement-cooled vane in modified J-75 research engine and four-vane cascade

J-52 engine Design, development, and characteristics of variable delivery, positive displacement fuel pump for use with J-55 turbine engine fuel system

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TL-2200 and 9,300 pound thrust 0-52 engines

Jaguar powered flight controls, discussing wing spoilers, slat trailing edge, rudder, autostabilization system and integrated packaging of actuators

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JEEPS NT AUTOMOBILES

JET AIRCRAFT

NT BUCCANEER AIRCRAFT

NT CONCORDE AIRCRAFT

NT ELECTRA AIRCRAFT

NT JINDIVIDUAL TARGET AIRCRAFT

NT LEAP JET AIRCRAFT

NT TURBOPROP AIRCRAFT

NT TURBOFAN AIRCRAFT

NT VISCOUNT AIRCRAFT

Acquaintor wing jet STOL research aircraft development program report covering design, engine tests, performance prediction, control simulation and stability augmentation

Handing qualities simulation program for acquaintor wing jet STOL research aircraft considering control devices design

Carrier system for controlled approach of Naval aircraft to provide pilot window to deck for tactical jet guidance for poor visibility landing

Externally blown flaps for STOL characteristics, comparing flight weight, size, and dynamic pressure landing data

Jet aircraft brake parachute loads under engine wake, evaluating velocity and drag coefficient influences

U.S.S.R. high-subsonic freight transport aircraft IL-76 for arctic areas, Siberia and Far East, noting independence of large airports availability

Trainer-combat turbojet or turbofan aircraft characteristics, comparing flight weight, size, maintenance and development costs

Dynam stability, control and structural response of transonic jet transport to atmospheric turbulence

Cockpit instrumentation for jet transport aircraft flight path management, emphasizing dependability, safety and economy

Physiological evaluation of modified jet transport passenger oxygen mask from altitude chamber experiments

Jet-STOL augmentor wing consisting of moderately thick airfoil with full span leading edge slat and double surface trailing edge flap

MYSTIC business jet aircraft flight instruments, acceleration, control and stall characteristics

Corrosion resistant fabrication methods in jet transport fuselage skins

Combat jet helicopter maneuverability, considering aircraft flying characteristics, pilot capability, flight configuration, altitude and load factor

Mitsubishi X-2 jet trainer aircraft, presenting design, structural and performance data

NASA aerodynamic technology program, emphasizing airframe and engine development for next generation subsonic CTOL jet transport requirements

Jet aircraft gas turbine engine technology impact on safety, reliability, airline profitability and international trade

Statistical correlation techniques applied to jet aircraft autoland system dynamic ground tests with simulated engine and aerodynamic characteristics

Numerical study of the characteristics of turbulence on the far sound field radiated by a subsonic jet

Flower noise testing of commercial jet airplanes

High performance jet aircraft variable feel flight control system, research engine and four-vane cascade STOL flight test program, detailing general task plan, test equipment installations and test schedule

Dynamic input to cargo in turbojet aircraft studied during C141 and C5A flights, discussing instrumentation, test procedures, data reduction processes and results

Jet aircraft gas turbine engine technology impact on safety, reliability, airline profitability and international trade

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Synthesis and properties of aliphatic ester for jet aircraft turbine lubrication in jet aircraft

Normal acceleration data for jet aircraft and trainers

Polarization observations of outer corona of the sun from KC-135 aircraft over Gulf of Mexico

Development and flight test of survivable aircraft control system using fly-by-wire and integrated actuator package techniques

Lateral-directional handling qualities and roll control power requirements of jet aircraft in landing approach

Flight tests of heavy jet transport aircraft to determine characteristics of vortex systems generated within ground effect and vortex systems descending into ground effect

Long time-history characteristics of vortex systems of four engine jet transport aircraft in terminal area operation

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Jet noise suppression near airports, discussing noise physical description, noise-measurement technology and ICAO certification standards.

Air breathing propulsion systems for reducing engine noise level, discussing stochiometric gas turbine engines, V/STOL propfans and variable-geometry supersonic inlet and exhaust nozzles.

NASA Quiet Engine experimental program for jet aircraft noise reduction, discussing aerodynamic and acoustic evaluation and tests of three fans.

French jet aircraft noise reduction research facilities, discussing in-flight and overflying noise measurements, various silencer configurations and Concorde engine tests.

Turbojet engine noise causes and reduction techniques, noting U.S. antinoise standards.

Jet aircraft noise reduction, discussing engine design modifications.

Noise generation from turbulent supersonic shear layers, including low supersonic and transonic ranges for jet noise applications.

Turbofan multiple pure tone noise analysis, discussing rotor geometry, relative Mach number and incidence angle effect on sound emission.

Directionality and far field structure of combustion generated noise, using premixed turbulent flame models.

Jet noise simple-source theory experimental verification, determining relation between measured sound power and jet pressure levels of turbojet engine.

Hybrid computer method of nonstationary spectrum analysis of aircraft noise, applying to flyover and jet aircraft noise statement under operational conditions.

Spectral measurements of jet turbulence noise in core and annular mixing region, using subsonic test experiments.

Ground focus location of sonic bang propagating in stratified atmosphere with wind for transsonically accelerating aircraft.

Jet noise intensity reduction by screens across nozzles exit, using acoustic and hot wire measurements.

Circular jets sound generation analysis, using Lighthill equation and Michalke spectral method.

Turbojet and turbofan engines noise signatures and sonic boom effects, discussing frequency spectra, atmospheric attenuation and noise suppression systems.

Olympus engine flight testing for repetitively and anticiyclic, engine control and noise and vibration assessments in support of Concorde aircraft development.

Subsonic jet noise directivity prediction from acoustic pressure measurements.

Supersonic jet noise and sonic boom sources, propagation and reduction, considering airport community disturbances, aircraft cabin noise and fatigue problems.

Stress levels and fatigue in aircraft structures subjected to jet noise, noting stress calculation for skin panels and control surfaces.

Supersonic jet exhaust noise radiation from turbulent shear layer instability waves, noting acoustic energy flux dependence on trans sonic distance.

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Force survival model for analysis of strategic bomber basing concepts in prelaunch survival mode.

Fly by wire and integrated actuator package techniques for developing survivable flight control system in jet aircraft.

Application of differential games technique to determine aircraft propulsion versus engagement parameters.

Special events of meteorological origin affecting civil jet aircraft operations obtained from flight recorders for period Jan. 1966 to Nov. 1968.

Bibliography of control devices to provide improved tactical agility for jet fighter aircraft.

Tests of pneumatic servomechanisms for use in aircraft control systems.

Numerical analysis of finite amplitude waves generated by aircraft trailing vortices to indicate growth of waves on pair of parallel infinite vortices.

Statistical analysis of flight time, takeoff and landing weight, fuel weight at takeoff and landing for transport jet aircraft.

Design integration and noise reduction for jet STOL transport aircraft - Vol. I.

Analysis of problems encountered by pilots of jet aircraft and application of engineering psychology to eliminate difficulties.

Calculation of required controls for minimum time-to-turn based on three dimensional formulation for aircraft dynamics.

Development of thrust-augmentor device to assist in takeoff of jet aircraft.

Analysis of parameters affecting service life of jet powered civil transport aircraft.

Aerodynamic characteristics and performance of Russian M-4 supersonic long range aircraft.

Analysis of engine and airframe characteristics used in determining performance of turbojet powered aircraft.

Configuration and specifications of integrated engine-generator mounted on turbine engine shaft for secondary electric power generation.

JET AIRCRAFT NOISE

Liquid-base foam sound absorbing properties for jet aircraft noise reduction.

Acoustic power radiated by jet aircraft fuselage structure exposed to turbulent boundary layer pressure field, evaluating noise reduction treatments.

Jet aircraft turbofan engine fan compressor noise reduction by acoustic linings, giving R and D results.

Jet noise reduction technology, hardware and tests for NASA Quiet Engine Program to develop low noise subsonic civil transport aircraft.

High speed jet noise source physical properties interpretation by theory and scale-model experiments for supersonic transport aircraft noise suppression problems.

Q/STOL jet aircraft engine design for low noise levels, describing takeoff thrust, bypass ratio and turbine stages.

Aladin 2 noiseless STOL jet aircraft project, describing exhaust nozzle configuration, design and economics.
Marine overpressures of supersonic aircraft maneuvering-produced sonic booms occurring at geometrical acoustic ray focus points / acoustic cues /

To-10% turboprop aircraft flight noise measurements and spectral changes at different distances from landing strip, evaluating public nuisance and resident reactions

Jet noise measured during night free and underexpanded operation modes of supersonic cold model jet at moderate altitude number

Aerodynamic noise and structural fatigue failure research and test facility, concerning supersonic jet and V/STOL aircraft

Rotating flow introduction effects on jet noise levels, combustion and turbulent mixing processes and flame stability

Supersonic jet noise reduction by screen placed across jet flow, investigating acoustic properties, velocity and pressure in mixing zone

Supersonic jet noise mechanisms and scaling laws, studying acoustic fields for rectangular and axisymmetric nozzle configurations

Jet sonic noise pressure source model for radiated sound power and jet pressure frequency spectrum ratio derivation with application to noise suppression

Noise generated by STOL core-jet thrust reversers.

Forward flight effects on mixer nozzle design and noise considerations for STOL externally blown flaps system.

Flight evaluation of three-dimensional area navigation for jet transport noise abatement.

Jet aircraft noise sources in subsonic and supersonic exhaust mixing processes, suppressing noise via turbafen exhaust speed reduction.

Advanced technology applications to present and future transport aircraft.

Hyperbolic aircraft noise transport applications, examining economic and noise and air pollution aspects.

NASA Quiet Engine Program R and D on conventional takeoff and landing subsonic cruise aircraft engine noise

Noise control technology for jet-powered STOL vehicles.

Jet noise generation theory / Light \ Still-Pressure Williams type verification by model tests, discussed means of reducing or eliminating shock cell noise.

Vibration measurements of an airplane fuselage structure. I - Turbulent boundary layer excitation. II - Jet noise excitation.

German monograph - Studies of the ground effect on the noise levels and their frequency distribution in the near field of an engine jet directed vertically against the ground.

NASA's quiet engine program.

Community noise levels of the L-1011 Tristar Jet Transport.

Annotated bibliography on aircraft noise pollution - Vol. 1

Sound generation in very low and very high turbulent jet flows from exhaust nozzle

Sound generation and scale model experiments to suppress noise in turbulent jet flow eeddles of supersonic transport aircraft

Noise generation by rotating blades of axial flow fan in infinite annulus

Structure of turbulence in noise-producing region of round subsonic jet

Quiet aircraft engine design and preliminary fan and engine test results

Jet noise suppression by splitting supersonic nozzle flow into separate jets by overexpansion

Influence of reflections on acoustic pressure spectra of turbines

Fundamentals of jet noise generation and suppression

Theory of aerodynamic sound generation and numerical analysis of inhomogeneous wave equations to include effects of boundaries - conference

Characteristics of free turbulence as source of aerodynamic noise and application to analysis of noise created by jet engines

Theoretical acoustics applied to jet engine noise generation, propagation, and reduction studies

Method for computing noise generated by standing and flying jet aircraft

Jet aircraft noise measurements during level flights, using 727, KC-135, 707-320B, and DC-9

Static and flight acoustic and aerodynamic tests to determine flight velocity effect on jet noise of conical ejector, annular plug, and segmented suppressor nozzles

Design of anechoic chamber for studying supersonic and subsonic jet noise generation

Analysis of sonic boom signatures produced by SB-71 aircraft at various altitudes and airspeeds

Procedures for estimating near field sound pressure levels caused by jet engine noise

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Influence of test time and contact stresses on analytical measurements of exhaust emissions from trace amounts of fuel-soluble metal compounds.

Evaluation of safety performance of emulsified and effect of sulfur in JP-5 fuel on hot corrosion of jet engine fuel specifications for military and civil jet fuels hydrocarbon composition effect on viscosity and additive effects on jet engine fuel.

Surface active agent detection by device using ultrasonic vibrating mechanism to emulsify water components influence on aromatic hydrocarbons and lubricity evaluation of jet fuels.

Jet engine lubricity evaluation and antiwear properties improvement.

Jet engine fuel fire hazard evaluation by controlled laboratory tests, analyzing ignition characteristics under simulated survivable aircraft crash accidents.

Jet engine fuel modification to decrease fire hazard in survivable aircraft fuels.

Jet fuel hydrocarbon group chemical composition effect on antiwear characteristics in sliding friction and rolling simulation experiments.

Continous NDT of coalescers/jet fuel filters/ by liquid crystals, detecting split seams, cap leaks, cracks, material imperfections and epoxy filled voids.

Properties of pyrolytic oil hydrogenated aromatic fraction, noting suitability for jet fuels applications.

Review of jet engine emissions.

Effect of fuel on gas corrosion in jet engine combustion chambers.

Static electricity in fueling of superjets.

Supersonic jet fuel engines production by gasoline vapor pyrolysis, discussing physico-chemical characteristics and combustion properties.

Jet fuel specifications for military and civil aircraft.

European jet fuel lubricity evaluation.

Flammability properties of jet fuels and techniques for fire and explosion suppression under simulated hostile operating environment conditions.

Effect of sulfur in JP-5 fuel on hot corrosion of turbine blade materials operating in marine environment.

Evaluation of safety performance of emulsified and rolled aviation fuels in simulated full scale aircraft exhaust environments.

Service testing of aviation turbine fuels.

Trace amounts of fuel-soluble metal compounds affecting thermal stability of JP-7 fuel.

Effects of additives on hydrocarbon jet fuel stability.

Analytical measurements of exhaust emissions from aircraft turbine engines using Jet A fuel.

Influence of test time and contact stress on antiwear properties of jet fuels under rolling friction.

Hydrocarbon fuel systems for ramjet-powered vehicles.

Kerosene-hydrating aircraft jet engine fuel fires.

Development and application of instrument for measuring coketube deposits based on beta ray backscatter.

Jet engine component overhaul procedures for fatigue cracks in disassembled metal removal, replacement and welding techniques.

Automated jet engine development facility, discussing assembly and test area and computer controlled operation.

Jet engine test facilities for JT9D experimental and production models.

High intensity combustion chamber design for gas turbine of jet engine, considering primary, secondary and dilution zones.

Papers on critical and exploratory flight testing covering rotary wings, lifting bodies and jet engine airframes.

Airstart flight testing for single engine fighter/attack aircraft, including flight conditions, windmilling, fuel flows, gas temperature, ignition and acceleration.

Statistical evaluation for forged jet engine parts sensitive tests cost reduction, using regression analysis.

Friction coefficient, standard wear and surface layer temperature of seal for dry friction pairs in jet engines, investigating crystal lattice parameters.

Deterministic model for new product innovation adoption rate in commercial aircraft jet engine market.

Twin spool jet engine system, predicting shaft speed effects on whirl frequencies due to gyroscopic action with computer model.

Pod-mounted jet engine follower force instability, analyzing two degrees of freedom system dynamics.

Two spool geared fan jet engine design and development for general aviation, discussing performance, reliability and ecological aspects.

Jet engine front fans with and without snubbers, estimating flow field by streamline curvature technique.

Jet engine fire control of high loading spray type combustor for lift jet engine, using primary zone.

Mixing parameter design of high loading spray type combustor for lift jet engine, using primary zone.

Propulsion system/airframe matching in hybrid V/STOL airplanes, stressing thrust vector control and engine bypass ratio and power plant packaging design.

Open-air jet engine test stand for flame stabilization, jet and compressor noise studies, noting provisions for rapid installation changes.

Surface integrity machining practices application to jet engines production, noting cost reduction and process selection and quality control.
Effect on supersonic jet noise of nozzle plenum pressure fluctuations.

Optimization of controlled plants sequence with stochastic process described by partial differential equations, noting hydrodynamic system of liquid fuel jet engine.

Reliability analysis of a jet engine fuel system with the aid of an analog computer using operational data.

Optimal synthesis of a two-parameter continuous controller for a jet engine with an afterburner.

Planning and management requirements for aircraft jet engine control system research and development.

Dynamic and static characteristics of jet engine simulators.

Use of fluidic elements for jet engine controllers.

A digital model of jet engine hydraulic fuel controller.

Jet engine simulation with low speed wind tunnel models for interference drag measurement.

Influence of jet interference on aerodynamic coefficients of rectangular and swept wings mounted above the engine.

European airbus wind tunnel model aerodynamic force and downwash measurements noting jet interference reduction.

Jet engine calibration tests conducted in altitude chamber to determine gross thrust values for future engine and nozzle evaluations.

Construction materials and engineering techniques for improved jet engines.

Development of nickel base superalloys for powder metallurgy application as compressor and turbine disc for jet engines.

Numerical and experimental calculations of jet engine transfer functions.

Holographic interferometry and laser Doppler velocimeter techniques for flow visualization and flow distribution measurement in aircraft turbine engines.

Engine operating parameters that affect low-cycle fatigue and creep damage of critical components of naval aircraft engines during fleet operations.

Jet engine model for simulating inlet and exhaust flow fields in supersonic aircraft wind tunnel model.

Analysis of pollutant emissions from jet aircraft and combustion research for reducing emissions through combustor design and fuel atomization.

Proceedings of International Aviation Maintenance Symposium discussion on jet engine maintenance planning and experience.

Environmental tests to determine behavior of titanium alloys under hot salt, stress corrosion conditions existing in jet engines.

Effects of radial and circumference inlet velocity profile distortions on performance of short-length double-annular ram-induction combustor.

Methods and sequences for producing precision forged structural and jet engine components from metal powder preforms of titanium alloys.

Design and development of turbojet lift fan for use with turbojet gas generator installed on V/STOL transport research aircraft.

Analysis of sources, constituents, and influence of operating conditions on emission characteristics of jet engine exhaust.

Magnetic force welding to form T joints between jet engine parts of dissimilar thickness.

Performance of jet stretcher diffuser system.

Factors affecting altitude relight performance of ram-induction combustor designed for HDS3 cruise operation.

Concent for jet noise suppression for afterburning turbojet engine.

Results of experimentation to provide data for designing turbine machine rotor burst fragment containment rings.

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Kalman-Schmidt filters applied to optimal control of subsonic inertial navigation systems.

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Propagation of ballistic noise from aircraft in nonperturbed atmosphere-aircraft in horizontal flight tests to determine methods for reducing airport community noise based on operationally optimum approach profiles.
Building soundproofing codes for airport zoning ordinances, emphasizing wider latitude in land use options

Supersonic jet noise and sonic boom sources, propagation and reduction, considering airport community distances, aircraft cabin noise and fatigue problems

Bibliography on noise control covering surface transportation, machinery and aircraft noise, industrial criteria, biodynamics, legislation and measurement

Low noise aircraft-engine configuration feasibility, discussing turbofan engine noise reduction

RB 211 three-shaft turbofan engine for T-101 airliner, describing design for noise reduction

Private and governmental regulatory aspects of environmental noise abatement and control, discussing legal effects and trends at local, state and federal levels

STOL aircraft for civil transport applications, considering optimum design concepts, noise reduction and terminal facility arrangements

STOL aircraft noise problem, Piston engine to forward flight effects on mixer nozzle design and N454 B and D for STOL short haul transportation

Jet noise reduction by screen placed across jet

Flight evaluation of three-dimensional area

Sonic jet noise pressure source model for radiated noise

Design requirements for a quiet helicopter

Rejection of noise and acoustic-frequency vibrations in aircraft transmissions

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Jet noise propagation and source model for radiated sound power and jet pressure frequency spectra ratio derivation with application to noise suppression

NASA B and D programs for quiet STOL aircraft and engines development

Internal noise reduction in hovercraft

Forward flight effects on mixer nozzle design and noise considerations for STOL externally blown flap system

Flight evaluation of three-dimensional area

Aircraft noise problem in piston engine to turboprop jumbo jet transports, discussing noise for noise reduction research
Jet flap type exhaust flows acoustic and fluid dynamic characteristics, measuring sound power output and noise spectra for various configurations.

AIAA PAPER 72-130

p0113 A72-16920

Aerodynamic noise measurement, discussing physical units, spectral analysis, conversion and correction formulas.

AIAA PAPER 72-17195

Hybrid computer method of nonstationary spectra, analysis of aircraft noise, applying to flyover and jet aircraft noise abatement under operational conditions.

p0178 A72-18778

Spectral measurements of jet turbulence noise in core and annular mixing regions, using subsonic test experiments.

AIAA PAPER 72-158

p0160 A72-18957

Turbojet and turbosfan engines noise signatures and sonic boom effects, discussing frequency spectra, atmospheric attenuation and noise suppression systems.

p0186 A72-20163

Measurement of spatially coherent and incoherent structure of axial compressor-generated noise propagating in duct.

AIAA PAPER 72-28049

p0311 A72-28049

Digital data processing techniques for aircraft engine noise data reduction, analyzing fan noise spectra.

p0356 A72-29860

Te-104 turboprop aircraft flight noise measurements and spectral changes at different distances from landing strip, evaluating public nuisance and resident reactions.

p0360 A72-30466

The estimation of nonstationary spectra from moving acoustic source distribution.

AIAA PAPER 72-667

p0452 A72-35486

Description and use of a method for characterizing noise sources in jets.

p0555 A72-41160

Statistical analysis of the sound level distribution of aircraft noise as a function of time.

p0603 A72-44337

Basic directivity and spectra of jet noise with improved correction for refraction.

p0607 A72-46678

Coherent structure of discrete frequencies of compressor noise spectra.

AIAA PAPER 72-14071

p0161 A72-14700

Experimental estimation methods for noise spectra and intensity from round jet.

AD-730780

p0277 A72-19338

Method for computing noise generated by standing and flying jet aircraft.

AIAA PAPER 72-167

p0437 A72-25636

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Development of methodology for determining auditory levels at which helicopters can be detected by human subjects.

AD-730780

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NOISE TOLERANCE

Rating scale judgments of aircraft noise based on surveys around airport.

p0053 A72-12956

Acoustical environment pollution control, considering noise annoyance effects due to industry and construction, surface and air traffic, alarm devices, radio and TV, etc.

p0354 A72-29554

Incremental value of noise pollution level as basis for aircraft noise rating.

p0030 A72-10030

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Turbofan multiple pure tone noise analysis, discussing rotor geometry, relative Mach number and incidence angle effect on sound emission.

AIAA PAPER 72-127

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NOISE SPECTRA

Turbofan multiple pure tone noise analysis, discussing rotor geometry, relative Mach number and incidence angle effect on sound emission.

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NONDESTRUCTIVE TESTS

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NONDESTRUCTIVE TESTS

Nondestructive radioactive gas penetrant tests for porosity and fatigue damage in jet engine castings.

Portable self contained ultrasonic field inspection equipment for nondestructive crack detection in Ti-6Al-4V titanium compressor disks.

Integrity control procedures for maintaining the drilling and grinding of steel and Ti alloy aircraft parts, discussing nondestructive inspection method.

Autostatic ultrasonic testing equipment for EPT tests of helicopter rotor blades.

DC-10 nondestructive testing manual, detailing section/subject format, methods, planned area accessibility and aircraft maintenance.

Metal fatigue damage nondestructive detection, discussing material and methods, advantages, limitations and test results.

Nondestructive testing for materials inspection and monitored aircraft maintenance programs.

X-ray, ultrasonic and eddy current nondestructive testing of aircraft structure for maintenance and special problems.

NDT of diffusion formed coatings on refractory alloys and superalloys, stressing eddy current technique.

NDT application to aircraft design and reliability, discussing fatigue life analysis and in-service monitoring for structural elements, components and airframes.

Continuous NDT of coalescers /jet fuel filters/ by liquid crystals, detecting split seams, cap leaks, cracks, material imperfections and epoxy filled voids.

The importance of service inspection in aircraft fatigue.

NDT techniques selection, economics and organization for aircraft industry, considering ultrasonic holographic and adhesion tests.

Application of nondestructive testing procedures to maintenance of large commercial aircraft.

Stresses and wall thickness of turbine disks determined with laser holographic interferometry.

Development of nondestructive test methods for detection of early fatigue and fracture damage in metals and alloys.

Survey and analysis of application of nondestructive inspection methods to aircraft structures.

Nondestructive tests and their application for inspection of adhesive bonds, equipments, welded joints, and riveted or bolted joints.

Aircraft industry survey for analysis of nondestructive inspection methods application to commercial aircraft for 1968 to 1970.

Nondestructive test for failure inspection and quality control of composite structures and materials - conference.

Nondestructive tests applied to quality control of airframes made of boron composites.

Ultrasonic inspection of wing spar joints on V/STOL aircraft.

Nondestructive eddy current method for crack detection in turbine blades.
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Flow model for jet pipe sound transmission through nozzle flow. [P003 A72-10252]

Sound generation in very low and very high turbulent jet flows from exhaust nozzle flow fields in supersonic aircraft wind tunnel. [AD-731238]

Analysis of peak axial-velocity decay in moving axisymmetric nozzle and effect on noise generated by short takeoff aircraft with externally blown flats. [NASA-TM-X-60102]

Analysis of oscillating relaxation time in combustion products of hydrocarbon fuel under supersonic nozzle flow conditions. [AD-760193]

Time dependent method to calculate supersonic flow over nozzle airfoil. [ONERA-WT-189]

Effect of flap set back and gas temperature on Coanda attachment to curved plates with application to air flow patterns on flap of scale propulsive wing model. [AD-761583]

Gas turbine nozzles aerodynamic throat area flow measurement, describing accuracy, standards, reference nozzles and mounting flanges. [SAE AR 1195]

Convergent conical nozzle shape effect on propulsive performance and compressible flow field internal characteristics. [ASME-PAPER 71-WA-71-03]

Large scale high aspect ratio multi-element, suppressor nozzle array testing for augmentor wings and internally blown flats. [AIAME-PAPER 74-F47]

Axisymmetric jet impact on ground board for different nozzle configurations and heights in STOL aircraft aerodynamic studies. [P0410 A72-3324]

Supersonic jet noise mechanisms and scaling laws, studying acoustic fields for rectangular and axisymmetric nozzle configurations. [AIAME-PAPER 72-641]

Servo buzz nozzle area controls for gas turbines. [P0456 A72-36348]

Optimal arrangement of conical nozzles in a segment of a partial supersonic nozzle stage. [P0509 A72-39913]

Inlet design and thermodynamic cycle of turbojet engine at supersonic speeds with normal shock. [P0213 A72-16717]

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Aircraft engines high pressure turbine guide vanes air cooling by internal insert, analyzing thermal stresses. [AIAME-PAPER 72-77]

Design, fabrication, and ground tests of perforated stainless steel exhaust nozzle inserts for Boeing 707 aircraft. [NASA-CP-1851]

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Pilots in aircraft systems management involving
machine and air traffic environment
p0055 A72-13419

Collision avoidance systems and pilot warning
instruments, minimizing cost by pilot detection,
evaluation and avoidance execution

Feedback gains for STOL aircraft display pilot
interactive flight director design, using
computerized approach-land simulation and
optimal control theory

Pilot perception trends on estimating flight path
inclination, ground image and touchdown time
under poor visibility

General aviation type light airplanes pilot
workload during steep landing approach,
comparing flight tested control response
parameters with handling qualities criteria

Pilot evaluation of Boeing 747 handling,
directional stability, stall, rudder feel,
forces, landing, inertial navigation and
reliability

Airline pilot performance in automated ATC system
involving use of surveillance data and
instantaneous discrete communication

Pilot role in automated ATC system using onboard
situational display with navigation and collision
avoidance devices

Airbus pilot performance during instrument
approach in low visibility conditions

Pilot warning systems for visual mid-air collision
avoidance, noting reaction to imminent threats,
scanning patterns and display sector size effects

Flight tests of stability augmentation system for
light airplane improving pilot control during
IFR encounter

Project pilot criteria for preparation and
execution of flight test specifications

Pilot evaluation of C-5 automatic landing system
in Category III weather environment

Airplane attitude display motion relationship to
external world as factor in pilot error due to
visual frame of reference shift

Pilot-fighter aircraft system mathematical model
relating pilot performance to air-combat
weapon delivery accuracy

Human factors engineering techniques in
pilot-aircraft-environment adaptation to ease
workload and in performance efficiency improvement

Mid-air collision causes and prevention,
considering pilot responsibilities,
anticollision devices and procedures

Instruments installation effect on Soviet
passenger aircraft pilot performance, discussing
Tupolev aircraft control systems

Application of the head-up display /HUD/ to a
commercial jet transport.

Improved qualitative flight data rating scales.

Analysis of aircraft lateral-directional
handling display using pilot models.

Agricultural aircraft flight loads - Typical
spectra and some observations on airworthiness.

Evaluation of simulated pilot/system performance
in manually controlled IFR formation flight task
for UH-1 helicopter under various environmental
and operational conditions

Flight simulator exercise for investigation of
pilot performance in low visibility conditions
during IFR approach and landing

Development of model to determine effects of pilot
performance and aircraft dynamics on accuracy of
tactical weapon delivery

[AD-720320] p0091 N72-12037
Technological forecasting of future pilot-aircraft
interface requirements

[AD-703902] p0104 N72-13010
Procedures for predicting pilot-vehicle-flight
control system performance

[AD-720607] p0153 N72-14007
Analytical prediction compared with experimental
results of motion effects on pilot performance
in IFR hovering task

Application of Markov game approach to planar air
combat problems

Psychological autopsy for analyzing immediate
psychodynamic processes leading to suicidal
aircraft accidents

[FAA-AH-72-2] p0268 R72-19020
Simulation of wind, system data rate, and
contingency event variables during steep descent
of vertical lift aircraft under instrument
conditions to determine pilot performance

[AD-731270] p0272 N7-19051
Analysis of aircraft accidents resulting from
pilot disorientation and vertigo during flights
on military aircraft and helicopters

[AD-791508] p0272 N7-19053
Prediction and measurement of multichannel pilot
performance, and system design implications for
pilot capability and limitations

[NASA-TP-14351] p0374 N7-22262
Rate-of-closure as performance monitoring
parameter during approach and landing

[NASA-TP-14353] p0375 N7-22264
Effect of head-up display on pilot ability to see
runway lights in fog

[AD-730501] p0437 N72-26360
Six degree of freedom simulator tests to determine
effects of motion cues on short takeoff and
landing aircraft approach

[NASA-CR-114458] p0580 N7-27032
Analysis of pilot performance in establishing
specific glide path by reference to oblong
diamond marks on runway

[FAA-CH-1141158] p0785 N72-27702
Analysis of problems encountered by pilots of jet
aircraft and application of engineering
psychology to eliminate difficulties

[NASA-TP-14351] p0514 N7-28006
Development of method for identifying visibility
conditions on runway during takeoff and landing
and comparison with visual perception of pilot

[NASA-TT-F-14351] p0525 N7-28661
Development of broadcast system of flight traffic
control for increased flight safety based on
increased pilot participation of control
procedures

[NASA-CE-17452] p0522 N7-28662
Analysis of pilot duties during low visibility
approaches for landing and man machine
relationship with automatic pilot operation

[AD-780502] p0529 N7-29014
Performance tests of manual control displays and
formats to evaluate effectiveness in performing
precision tracking tasks

[AD-742177] p0532 N7-29031
Efficient pilot management of cockpit
control/display devices

[AD-741985] p0537 N7-30016
Development of schematic representation of pilot
workload and functions for various portions of
aircraft flight and reaction to various stimuli

[AD-735119] p0527 N7-32035
Fixed base simulator evaluation of effect of
pictorial display realism on frequency of control
errors due to roll disturbances

PILOT TRAINING

Pilot training by simulators, determining
learning effectiveness by mathematical model
based on renewal theory

[AD-725209] p0128 N7-16927
Flight Carrier Landing Trainer flight and carrier
environment simulator for A-7 aircraft pilot
training, discussing performance predictions
from computer data analysis

Interactive computer graphics with three
dimensional real time CRT display of air combat
PILOTED CERTIFIGUES

PILOTLESS AIRCRAFT
MT DRONE AIRCRAFT
MT JINDIVIK TARGET AIRCRAFT
MT TARGET DRONE AIRCRAFT

PILOT (INCLINATION)

PITOT ANGLES

PIVOTED RIG AIBCBAFT

PILOTED CENTBIFOGES

PILOTED CENTBIFOGES

PLABBTABY ENTBI

PILOTLESS AIBCBAFT

PILLOWED TRAINEES (PERSONNEL)
MT AIRCRAFT PILOTS
MT TEST PILOTS

PILOT英國 ENGINEER


Comparison of Wankel engine characteristics with small reciprocating and jet engines used as power plants in light aircraft [REP'T-990] .

Analysis of emissions from aircraft piston and gas turbine engines - tables [PB-207107] .

History of Curtiss P-12 aircraft engine to show design, development, manufacture, and application [p0590 N72-31781] .

PILOT THEORY

Flying machine using reaction forces on body moving in compressible fluids within piston device equivalent to air pressure pump [p0197 A72-21798] .

FITCH

Multiple pure tone noise generation from turboshaft blade to blade nonuniformities in rotor geometry, using two dimensional inviscid flow model [p0072 A72-15568] .

Tone noise from rotor/stator interactions in high speed fans [p0610 A72-49197] .

FITCH (INCLINATION)

Airfcraft pitching and yawing cross couplings compensation at high speed [p0008 A72-10506] .


Integration method to derive angle of pitch, flight-path angle, and angle of attack from measurements in nonsteady flight [VHF-156] .

Wind tunnel tests to determine effectiveness of cyclic pitch control on V/STOL aircraft for longitudinal control during hover and transition [AD-736237] .

PITCH ANGLES
U PITCH (INCLINATION)

PITCH ATTITUDE CONTROL
U LONGITUDINAL CONTROL

PITCHING ROBERTS

Wind tunnel stability tests of aerodynamic pitch damping of aircraft model oscillating in two degrees of freedom [p0057 A72-13539] .

Pitching moments effect on phugoid and height mode stability of aircraft in supersonic flight [p0236 A72-23622] .

Multipropeller slipstream and wing interference, noting lift, drag, pitching moment, normal force distribution, and wakes [p0293 N72-10015] .


PITOT STATIC TUBES
U PITOT TUBES
U SPEED INDICATORS
U ATMOSPHERIC ENTRY

PITOT TUBES

Flight test procedures for subsonic transport aircraft pilot static pressure system, recommending trailing cone calibration method [SHE ARP 921] .

Low-speed wind tunnel calibration of SC-1 aircraft pitot and static pressure sensors and wind vanes for flight test recording of airspeed and flight altitude [ARC-CP-1162] .


PITOTED WING AIRCRAFT
U TILT WING AIRCRAFT

PLANARITY ENTRY
U ATMOSPHERIC ENTRY

PILOTED CERTIFIGUES

maneuvers for fighter pilot training
Pilot trainer transfer function identification for man-machine and on-line adaptive control system using analog/hybrid computer .

Aircraft and other vehicle simulators for training crews, discussing evolution of needs, digital techniques, and visual and physiological experiences .

Low cost flight simulator for general aviation pilot training, containing IFB instrumentation and turbulence injection device .

Simulated blind approach trainer for general aviation aircraft pilot training, discussing design concept and instrumentation chart emphasis on components simplicity and economy .

Future aspects of business aviation, discussing pilot training and aircraft reliability and maintenance in context of flight safety .


Interface and options definition for advanced simulation in undergraduate/pilot training using visual simulator, including: electrical properties and edge smoothing .

PILOTED CENTBIFOGES
U HUMAN CENTBIFOGES
U PILOTLESS AIRCRAFT
MT DRONE AIRCRAFT
MT JINDIVIK TARGET AIRCRAFT
MT TARGET DRONE AIRCRAFT

Remote manned vehicles /RNW/ application in aerial warfare, considering anti-aircraft defenses lethality increase, equipment costs and role of man during combat mission [p0344 A72-28451] .

PILOTS (PERSONNEL)
MT AIRCRAFT PILOTS
MT TEST PILOTS

Crew compartment vibration environment in B-52 aircraft during low altitude, high speed flight [AD-727063] .


Importance of advanced information given to pilots considered as element in automatic control system [REP'T-64] .

Analysis of pilot duties during low visibility approaches for handling and man machine relationship with automatic pilot operation [AD-740502] .

Equipment for automatic recording and re-broadcast of pilot reports on weather conditions [FAA-WA-72-62] .

PIPET FLOW

Pitot stem blockage corrections in uniform and nonuniform pipe flow determined by wind tunnel measurements [ARC-CP-1175] .

PPIPPIR AIRCRAFT

Design and development program for air conditioning system of twin engine unpressurized Piper Navajo, noting flight test results [SAF PAPER 720328] .

PPIEPS (TUBES)

Pipe joint flexible metal seal development and testing for Concorde Olympus 593 under thermal and pressure cycling [p0199 A72-21938] .

Metric swaged pipe coupling design and development for aircraft hydraulic systems, presenting fatigue test results [p0199 A72-21940] .

A-334
Aircraft skins susceptible to exfoliation corrosion
[AD-728039]
Surface properties and soil retention of aircraft painted with polyurethane paint, and requirements for aircraft cleaner
[AD-735971]
Chemical and structural properties of urethane elastomers and resistance to rain erosion
[AD-737624]

PLASTIC FILMS
U POLYMERIC FILMS
PLASTIC PROPERTIES
PLASTICS

MT ACRYLIC RESINS
MT EPOXY RESINS
MT NYLON (TRADEMARK)
MT POLYETHERS
MT POLYETHYLENES
MT REINFORCED PLASTICS
MT THERMOPOLASTIC RESINS

PLASTIC AIRCRAFT STORES
PLASMA DYNAMICS
PLASMA WELDING

PLASTIC AIRCRAFT STORES
PLASMA DYNAMICS
PLASMA WELDING

Application of fluidic pneumonic elements and pneumatic systems of flight vehicles
[ABC-B/M-3682] .

A-335
Incopressible potential flow model of porous parachute canopy flow field, using Stokes stream function for axisymmetric vortex sheet in uniform steady stream p0313 A72-28123

Elliptic-hyperbolic relaxation algorithm for solution to three dimensional nonlinear transonic small disturbance potential equation for flow about swept wings [AIAA Paper 72-6777] p0414 A72-30663

Surface vorticity theory for axisymmetric potential flow past annular aerofoils and bodies of revolution with application to ducted propellers and cowl p0503 A72-38554

Potential flow calculations to support two-dimensional wind tunnel tests on high-lift devices [ICAS Paper 72-13] p0553 A72-41138

Calculation of potential flow about aerofoils using approximation by splines p0566 A72-42849

An improved solution of the two-dimensional jet-flapped airfoil problem p0594 A72-43329

Coaptation of the potential-theoretical flow around wing-fuselage combinations and a comparison with measurements p0602 A72-44298

The determination of a general relation between the aerodynamic properties of a single airfoil and those of the same airfoil arranged in an arbitrary cascade p0614 A72-45363

Lifting potential flow in terms of doublet distribution over body surface and trailing vortex sheet [NAC-76-502] p0258 N72-18281

Transonic potential flow around quasi-elliptic wing profile having shockless compressions [Rept-10/1971] p0317 N72-19996

Coaptation of potential flow around axisymmetric bodies, cowl, and engine inlets using singularity method [AVA-P7-7131] p0324 N72-20331

Numerical analysis of potential flow problems of two-dimensional airfoil with distributed suction p0424 N72-24359

POTENTIAL PROBLEMS

U POTENTIAL THEORY

POTENTIAL THEORY

Lifting surface linearized potential theory for unsteady aerodynamic forces on wing and horizontal tail surfaces, using computer program [NAC-76-502] p0357 A72-13541

Circular arc blades two dimensional cascade performance test data for various cambers comparison with potential theory data p0212 A72-16405

Harmonically oscillating rectangular wing in unsteady transonic flow, obtaining two part boundary value problem for linear potential equation p0310 A72-27585

POWER (PARTICLES)

Procedure for measuring performance of aircraft fire extinguishing powders p0069 N72-11691

POWER REACTOLOGY

Forced Inconel alloy 718 metal powder preforms for dense aircraft engine compressor rotor blades p0014 A72-11441

Metal forming techniques for gas turbine engines, considering isothermal, radial and powr metallurgy preform forcings, contoured cross and foco rolling, and squeeze casting p0296 A72-25649

Methods and sequences for producing precision forced structural and jet engine components from powder metal preforms of titanium alloys [AIAA Paper 72-6777] p0317 A72-25649

POWER

Helicopter lift margin system to aid in determining power requirements for takeoff and landing [AD-725207] p0372 A72-22511

POWER CONVERSION

U ELECTRIC GENERATORS

POWER EFFICIENCY

Hydrothermodynamic foundations of hydrofoil engines employing gas-water mixtures and gas turbine generators, analyzing thrust coefficient and power efficiency p0247 A72-25128

Axial flow compressor and turbine loss coefficients, correlating blade rows geometric and aerodynamic variables effects [ASME Paper 72-GT-18] p0294 A72-25617

Military jet engines centrifugal fuel pumps power requirements for throttled operation, noting pressure stability improvement at low flow rates p0456 A72-30641

POWER GAIN

Four uhf antennas buried beneath refractory concrete, discussing design, fabrication and power gain and azimuthal pattern variation p0130 A72-17345

Diagram and gain measurements regarding antennas conducted with a helicopter for the range from 0.5 to 800 MHz p0509 A72-40545

Helicopter payload gains utilizing water injection for hot day power augmentation [NASA-TM-X-62195] p0639 N72-33027

POWER GENERATORS

U ELECTRIC GENERATORS

POWER PLANTS

Russian book - Optimization of thermal circuits of complex gas-turbine power plants p0490 A72-37850

POWER SPECTRA

Nonlinear longitudinal aerodynamic characteristics effect on rigid aircraft response to normal acceleration due to atmospheric turbulence, using power spectral technique p0236 A72-25361

Sonic jet noise pressure source model for radiated sound power and jet pressure frequency spectra ratio derivation with application to noise suppression p0457 A72-35614

Aircraft structural design loads definition by mission analysis criteria, taking into account gust loads via power spectral density methods p0566 A72-42028

Atmospheric turbulence power spectra for predicting rigid aircraft center of gravity response [ARC-SF-365] p0082 A72-11965

POWER SUPPLIES

Aircraft hybrid electrical power systems, describing variable frequency generation and high voltage dc distribution p0111 A72-11068

Concorde aircraft electrical power systems design, noting dc and emergency supplies and installation data p0053 A72-12910

Airborne equipment electric power supply standards to provide characteristics limits for compatibility with ground support systems [SAB AS 12121] p0458 A72-36535

Airport power power supply system to meet increased load terminal demands, describing main and emergency standby network layout and equipment p0612 A72-85272

Analysis of wiring weight, conductor weight, and conductor losses as function of system voltage in aircraft electrical power systems [AD-732001] p0207 N72-16164

Development of methods for conducting climatic tests with emphasis on design, construction, and operation of climatic hangar [AD-733299] p0257 A72-82628

Development and evaluation of built-in test equipment for aircraft systems [AD-73855] p0321 A72-20028


Analysis of secondary power system for use with advanced rotary wing aircraft for reliable production of electric power [AD-73940] p0482 A72-27069

POWER SUPPLY CIRCUITS

Low pass filter requirements and performance in variable speed constant frequency system for...
French monograph on flow near rotor blade tips, discussing three dimensional circulation and boundary layer effects, energy losses, inlet distortion and pressure distributions, etc

Pressure distribution over delta wing with blunt edges at small angles of attack in hypersonic wind tunnel tests

Contracting or diverging stream flow mean velocity change effects on airfoil pressure distribution, circulation and lift, deriving vortex distribution expression

Transonic airfoil section design to given surface pressure distribution, applying finite difference procedures to transonic small disturbance kernels

Engine inlet total pressure distortion effects on multistage axial flow compressor and turborotjet/turbofan engine performance and stability, considering inlet-engine compatibility

Fluctuation analysis and unsteady pressure fields induced by pitching motions of wall mounted sweptback configurings experimentally lifting surface theory in high subsonic range

Computation of the potential-theoretic flow around wing-fuselage combinations and a comparison with measurements

Viscous interaction over concave and convex surfaces at hypersonic speeds

Trailing vortex effects on wing pressure distribution from low speed wind tunnel tests, discussing effect of wing-vortex interactions

An experimental investigation of a jet issuing from a wing in crossflow

Calculation of pressure distribution on cylindrical fuselage with perpendicular lifting jet using singularity method

In-flight investigation of installation effects and aerodynamic characteristics of local flow field on auxiliary inlet ejector nozzle on underwater engine nacelle

Reynolds number effect on flow past body of revolution at transonic speed

Pressure plotting tests on swept wings for analyzing scale effect at high subsonic speeds

Maximum lift coefficient airfoils developed through optimization of pressure distribution

Nonlinear lift evaluated from pressure distribution on fuselage and two body-wing configurations in transonic flow

Hypersonic wind tunnel tests to determine surface pressure and flow distribution on orbiter space shuttle

Pressure distribution on swept wing-body junction at supersonic speeds

Theoretical wing pressure distributions: part 1, aerodynamic forces on delta wings of supersonic flow

Pressure distribution on 5 deg swept half wing, including effectiveness of upper surface spoiler as roll control

Unsteady pressure distribution on barocally oscillating slender wing fuselage configurations

Aerodynamic forces, pitching moments, and pressure distributions measurements on delta wing-body combinations at supersonic speed in compressible flow

Numerical analysis of flow distribution in a wing-body combination at supersonic speeds using optimum differencing methods

Method for using lifting-surface theory to obtain pressure distribution on wing with trailing-edge flap or control surface

Free streamline theory for determining pressure distribution on airfoil with flow separation

Linearized lifting surface theory for determining pressure distribution on subsonic delta wing

Wind tunnel tests to determine aerodynamic interference and jet-wake interference produced by components of high wing, logistics transport type aircraft

Hypersonic wind tunnel tests on delta wing models at high incidence for pressure distribution determination

Computer program for airfoil pressure distribution for subcritical viscous attached flow

Boundary layer pressure distribution measured on space shuttle wind tunnel test vehicle at Mach numbers from 1.5 to 2.2 and high Reynolds numbers

Analytical method to predict coolant pressure and airflow distribution in strut-supported transpiration cooled wing for gas turbine engine

Measurements of stage pressure and efficiency maps of multistage compressor

Simulation of stage pressure and efficiency maps of multistage compressor

Measurement of wind tunnel background pressure fluctuations for application to wind tunnel testing of aerospace vehicles

Pressure distribution on sweptback wing at supersonic speeds noting boundary layer transition

Development of procedures for calculating pressure distribution on airfoil in sonic stream

Wind tunnel tests to determine path of vortex moving from each rotor blade tip of helicopter rotor to establish effect on aerodynamic forces and pressure distribution

Subsonic wind tunnel tests to determine aerodynamic forces and pressure distribution on parachute canopy of ring-slot parachute model

Wind tunnel wall corrections for two-dimensional flow applied to pressure distribution measurements in transonic wind tunnel

FLEXURAL DRAG

NT INTERFERENCE DRAG

SUPERSONIC DRAG

NT WAVE DRAG

Base pressure drag reduction on rectangular wings with blunt trailing edges from low speed wind tunnel measurements

Subsonic powered nacelle wind tunnel model for investigation of geometric variables effect on engine drag

Shocked flow and pressure loss computations for axial flow compressor cascades, using time dependent finite difference technique
PhBSSOBB EFFECTS

PBESSOBE GAUGES •

PBESSDBE FIELDS ,

PBESSDBE GAGES

DYNAMIC PRESSURE, DOWNWASH AND PRESSURE GRADIENT

MEASUREMENT OF WIND TUNNEL BACKGROUND PRESSURE

LOW TURBULENCE WIND TUNNEL WITH CLOSED CIRCUIT

CHARACTERISTICS OF SONIC BOOMS AND DAMAGE CAUSED

ACOUSTIC POWER RADIOATED BY JET AIRCRAFT FUSELAGE

SKIN FRICTION MEASUREMENT IN NONISOBARIC SUBSONIC

ENGINE INLET TOTAL PRESSURE DISTORTION EFFECTS ON

GAS TURBINE ENGINE COMPRESSOR BLADES AND MATERIALS

DYNAMIC DEFLECTION OF ELASTIC RECTANGULAR PLATE

VIBRATING WITH RIGID BASE MOVING UNDER SINUSOIDAL

ACCELERATION TO CRUISE PRESSURE SIGNATURES

DESIGN CONSIDERATIONS IN SELECTING GEOMETRIES FOR

HIGH PRESSURE RATIO SINGLE STAGE CENTRIFUGAL

COMPRESSORS

DYNAMIC DEFORMATION OF HYDRAULICALLY LOADED FLEXIBLE

SEAL JOINT [NTID-300.12] P0633 N72-32913

SUBSONIC WIND TUNNEL INVESTIGATION OF AIRCRAFT

WING-BODY COMBINATIONS AT SUPersonic SPEEDS FOR

WINGBODY COMBINATION DEVELOPMENT [ARC-CP-1167]

PITOT-STEM BLOCKAGE CORRECTIONS IN UNIFORM AND

TURBULENT BOUNDARY LAYER [ARC-CP-1131] P0050 N72-11906

TWO DIMENSIONAL AIRFOIL PRESSURE DISTRIBUTION

MEASUREMENTS AT HIGH SUBSONIC SPEEDS, COMPARING

NORMAL FORCE COEFFICIENTS CORRECTED FOR WIND TUNNEL

INTERFERENCE EFFECTS WITH THEORETICAL CALCULATIONS

[DFVLR-SONDOR-168] P0058 A72-13609

SUBSONIC WIND TUNNEL INVESTIGATION OF AIRCRAFT

WAKE FAR FIELD STRUCTURE, MEASURING TRAILING VORTEX

PRESSURE BY MEANT OF PRESSURE PROBE [AIAA PAPER 72-40]

PRESSURE SENSITIVITY OF PRESSURE TRANSDUCERS IN

FLOW THROUGH AIRCRAFT INTAKE S-SHAPED DUCTS, EVALUATING

DAMPING CHARACTERISTICS WITH ALLOWANCE FOR SHOCK

SPECIAL EFFECTS [AIAA PAPER 71-1290]

AERODYNAMIC FORCES ON ROTOR BLADES RELATED TO

COMPRESSOR NOISE GENERATION [ASA PAPER H 6]

AIRBORNE GRAVIMETRY EXPERIMENT YIELDING HIGH

RESOLUTION PRESSURE AND ALTITUDE MEASUREMENTS,

DESCRIPTING EQUIPMENT [AIAA PAPER 72-28244]

HYPERSONIC GUN TAIL BALANCE AND PRESSURE

MEASUREMENTS ON SHARP LEADING EDGE DELTA WINGS,

COMPARING EXPERIMENTAL COEFFICIENTS AND SHOCK ANGLES WITH PREDICTED VALUES

NEAR GROUND PRESSURE DIFFERENTIALS CAUSED BY LARGE

TRANSPORT AIRCRAFT INDUCED WAKE VORTICES,

COMPARING MEASURED DATA WITH BERNOLLI FORMULA

THEORETICAL VALUES [AIAA PAPER 72-28122]

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AERODYNAMIC FORCES ON ROTOR BLADES RELATED TO

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AERODYNAMIC FORCES ON ROTOR BLADES RELATED TO

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THEORETICAL VALUES [AIAA PAPER 72-28122]

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AERODYNAMIC FORCES ON ROTOR BLADES RELATED TO

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Flutter analysis of aircraft, taking into account servomechanism effects (DLR-FB-71-371) p0151 N72-13995

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Effect of high temperature hydraulic fluid on operation of control surface servoswings installed on T-38 aircraft (AD-734259) p0271 N72-19942

Design, development, and characteristics of variable delivery, positive displacement fuel pump for use with J-85 turbine engine fuel system (AD-735259) p0338 A72-21946

Tests of pneumatic servomechanism for use in aircraft control systems (AD-738368) p0425 N72-24544

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SHAPES (MACHIN ELEMENTS)

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Deterioration of shaft bearings of electromotor driving aircraft centrifugal fuel pump, determining lateral force acting on propeller (A72-43663)

Ballistic impact tests to determine vulnerability of boron/epoxy double-wall drive shafts for helicopter rotors (AD-737205) p0388 A72-23509

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Problems encountered in reproducing cantilev flight environment by means of shakers and shock test machines, emphasizing partial and complete weapon structures p0173 N72-15838

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U INFORMATION THEORY

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Emergency systems for helicopter crew and passenger survivability improvement, discussing use of ejection seats, extraction systems, parachute bail-out and shaped explosive charges p0195 A72-21561

SHARP LEADING EDGES

Superersonic flow patterns near yawed obstacles around flat plate sharp leading edge with high pressure regions in reversed separated flow zone p0142 A72-18122

Heat transfer rates of impingement cooling in gas turbine airfoils, noting leading edge sharpness effects for slot and circular jet configurations (ASME PAPER 72-GT-7) p0293 A72-25510

Viscous interaction over concave and convex surfaces at hypersonic speeds. p0602 A72-44308

Surface heat transfer rates on sharp flat plate with bellows at Mach 22.0 to 86.4, and local heat transfer rates in corner flow formed by plates and sharp leading edges with air at Mach 19 (NASA-CR-124695) p0112 A72-13909

SHATTERING

U FRAGMENTATION

SHARD PATTERNS

U SHEAR STRESS

SHEAR FLOW

Complex perturbation potential of constant vortex shear flows around airfoil activated by motion in presence of rectilinear wall p0118 A72-16122

Turbulent shear stress and kinetic energy characteristics of subsonic air flow in straight conical diffuser, using hot-wire anemometry measurements p0238 A72-23862

Aerodynamic forces calculation for constant vortex shear flows around airfoil fired between rectilinear walls, noting resultant perpendicularity to Ox axis p0200 A72-29115

SHEAR LAYERS

U FRAGMENTATION

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SHEAR FLOW

Noise generation from turbulent supersonic shear layers, including low supersonic and transonic ranges for jet noise applications p0072 A72-15566

Aviation hazards due to stably stratified shear and turbulence zones, discussing meteorological analysis of 747 jumbo jet turbulence flight test p0349 A72-28865

Turbulent jet exhaust noise radiation from turbulent shear layer in ability waves, noting acoustic energy flux dependence on streamwise distance p0355 A72-29581

Optimization of acoustic linings in presence of wall shear layers p0548 A72-40334
Shear Properties

Shear Properties

NT SHEAR STRENGTH

Shear Strain

Webbing joints-stitching strain; considering nylon and fiberglass stitching properties and various stitching patterns strengths

Transverse shear loading on tapered spar boxes

Stiffness matrix

[NTL-TR-70052-V]

Shear Stresses

Ti alloys for aircraft structures, emphasizing weldability, tensile fatigue and residual strength, shear-carrying qualities and fuselage shell design

Shear Stress

NT Torsional Stress

Helicopter rotor boundary layer, comparing analytical shear stress and velocity distributions obtained by moment integral techniques with hot wire probe experimental data

Shear and direct stresses on fuselage model cross section due to concentrated radial loads on frame comparing measurement with prediction by matrix force analysis

Rotational, centrifugal and Coriolis forces effects on turbulent boundary layer development, discussing changes in structure and shear stress distribution

Aircraft windscreen reliability, discussing delamination, interface shear stress effects and analogy to metal fatigue

Pressure, shear stress and yaw angle measurements in flow through aircraft intake S-shaped ducts with turbulent boundary layer at entry, noting vortex generation

Beckling due to transient compressive stresses in aircraft panel during deceleration

Shearing Stress

U Shear Stress

Shear Metal

U Metal Sheets

Sheel Stability

Strength of a cylindrical shell of variable thickness located in a temperature field

Sheel Theory

Papers on aerospace structure by W. J. Hoff: covering aircraft framework, stress analysis, structural stability, shell theory, buckling, monocoque and sandwich structures, etc

Sheels (Structural Forms)

NT Anisotropic Shells

NT Circular Shells

NT Cylindrical Shells

NT Orthotropic Shells

NT Sandwiches

NT Thin Walled Shells

Finite element method for current shell analysis capability

Shielding

NT Heat Shielding

Transparent aircraft polycarbonate glazing systems shielding properties for projectile and bird impacts

Ship Propulsion

U Marine Propulsion

Ships

NT Aircraft Carriers

NT Submarines

Helicopter landing on ships, discussing wind, visibility limitations and flight deck motions vs aircraft stability and handling characteristics

A comparison of voice communication techniques for aeronautical and marine applications

Ship Propulsion

Helicopter/ship dynamic interface testing for launch and recovery capabilities under sea environment conditions, discussing visual landing aids, wind, visibility and ship motions

Mathematical analysis of relative motions between ACV landing craft and different amphibious assault ships during cargo transfer

Conundrum of US ground, water, and air transportation statistics

Shock

Conference on effects of shock and vibration on various structural systems

Higher order forces effect on shock absorbing mountings of shock front generated by supersonic and hypersonic aircraft landing gears

Conference on mechanical shock and vibration damping of aerospace structures

Variable tuning vibration absorber for control of rotor induced structural vibrations in CH-47 helicopter

Vibration isolation and shock attenuation properties of polyurethane foam isolator for avionic components

Shock Diffusers

U Diffusers

U Shock Wave Attenuation

Shock Discontinuity

Unsteady supersonic flow disturbance by slender bodies in strong contact discontinuities in shock tube studies

Triangular and conical wings in hypersonic flow with Mach reflection of shock waves from leading edge with optimal L/D ratio

Shock Fronts

Detection of atmospheric gravity waves produced by supersonic aircraft, calculating flight trajectories

Analytical method of characteristics to determine front shock and sonic boos due to flat delta wing with supersonic leading edges

Shock Layers

This shock layer theory of lifting properties of entry craft and flat delta wings and waveriders at high incidence angles and Mach number

Raisdrop breakup in the shock layer of a high-speed vehicle

Shock Loads

NT Blast Loads

Biboon parachutes drop tests at Mach 0.57-1.70, measuring opening shock loads and functioning time sequence

Aircraft structures shock and blast loading characteristics from internal detonation, comparing computer program results with available data

Feasibility of transonic wind tunnel testing of large core swept wing panel model simulating wing shock location at flight Reynolds number

Shock Resistance

NT Impact Resistance

Characteristic overpressure concept for sonic boom effect on structures and dynamic magnification factor engineering formula

Shock Sensitivity

U Shock Resistance

Shock Simulators

Design of aircraft crash simulator for testing dynamic responses of seats and passenger restraint systems
SHOCK TUNNELS
- Performance and operational characteristics of high Reynolds number blowdown and shock tunnel flows for transonic model testing.

SHOCK WAVE ATTENUATION
- Sonic boom generation, propagation, and minimization, discussing atmospheric conditions and ground characteristics influence and means for boom signature reduction.
- Sonic boom generation, propagation, and minimization, discussing atmospheric turbulence and temperature gradients and aircraft configuration effects.

SHOCK WAVE PROFILES
- Three dimensional shock wave configurations in front of cylindrical body with oblique shocks.
- Sonic boom propagation in stratified atmosphere with wind of fluid jet injected into main supersonic flow, examining high pressure gradient regions.

SHOCK WAVE PROPAGATION
- Sonic boom generation, propagation, and minimization, discussing atmospheric conditions and ground characteristics influence and means for boom signature reduction.
- Sonic boom generation, propagation, and minimization, discussing atmospheric turbulence and temperature gradients and aircraft configuration effects.
- Ground focus line location of sonic boom shock wave propagation in stratified atmosphere with wind.

Airfoil configurations to eliminate undesirable shock boundary layer interactions.

Sonic boom generation and propagation, discussing effects on animate and inanimate objects.

Acoustic shock wave diffraction at moving or static plate immersed in ideal gas.

Theoretical and experimental studies of the focus of sonic booms.

Problems of uniform jet flow around an airfoil.

SHOCK WAVES
- Shock waves in supersonic compressors.

Jet noise generation theory, discussing means of reducing or eliminating shock waves.

Second order solution of three dimensional, supersonic flow over smooth body with shock producing boisterousness.

Shock and vibration studies conferences.

Airfoil configurations to eliminate undesirable shock boundary layer interactions.

Calculation of shock wave reflection in supersonic inlets using method of characteristics including Mach disc problems.

Lifting aircraft with supersonic shock-free flow.

Prediction of shock wave impact on aircraft.

Performance tests of fan stages operating with oblique shocks in rotor blade tip region.

Analysis of effects of aircraft maneuvers on characteristics of sonic boom and application of analytic method to various aircraft.
Civil aviation B and D policy study, showing priorities for aircraft noise and congestion, showing coordinate plotting for flight path recovery maneuvers

Short haul aircraft

Future aircraft design trends for transcontinental and short haul operations, requirements for traffic forecasts, current trends in air traffic and potential derivatives and technology

Short haul aircraft system need for future short takeoff and landing aircraft, considering service demands, economics and navigation and landing aids

Short haul operating systems in air transportation environments, discussing terminal vs cruise configurations, costs and noise abatement

WFF-64 short range twin jet passenger transport aircraft, analyzing service performance and economic efficiency requirements of design characteristics

Short and short haul STOL network economics for computer ports in Detroit region, estimating service demand, aircraft number and maintenance costs

Civil aviation B and D policy study, showing priorities for aircraft noise and congestion, showing coordinate plotting for flight path recovery maneuvers

Airbus A-300 B design and characteristics for passenger transport on short and medium haul routes

Single satellite angle system and multiple satellite ranging and range difference systems in short haul air navigation, considering with VOR/TAC

STOL transport passenger market demand model selection based on estimation of traffic patterns between two population centers and service frequency and fare considerations

Mercure short haul transport aircraft, emphasizing lightweight structural design with extensive use of integral machined components for fatigue safety

V/STOL development for short haul air transportation, requirements for quiet pollution-free operation, ATC systems, navigation and landing aids

Turbofan engine trends for short haul conventional and STOL aircraft, considering variable pitch fans, reduction gears, thrust reverser and noise and environmental pollution

Future short haul aircraft transportation systems, discussing aircraft forms, noise reduction technology and runway requirements

V/STOL aircraft potential for short haul civil air traffic, discussing present technology and investment costs in comparison with advanced ground transportation systems

Quiet STOL reduced takeoff and landing/short haul aircraft cost comparison with Trident 3 aircraft up to design range stage length

Short haul airlines on-time operation, discussing ATC, weather, cargo and aircraft ground handling, cabi and flight services and aircraft reliability effects

Ultra short haul common carrier air transportation systems based on VTOL aircraft for submarine to city center trips, comparing with land based transport

Short haul air transportation system economic and political problems, noting community acceptance and passenger service standards

NASA B and D for STOL short haul air transportation systems, discussing propulsive lift, blown flap and augmentor wing concepts, noise reduction, etc

All weather landing for a STOL system

The DEC-7, first generation transport category STOL - Particular design challenges

German monograph - Model-analytical investigation of short haul air traffic with VTOL aircraft in the Federal Republic of Germany

An assessment of repeated loads on general aviation and transport aircraft

Development of commercial transportation facilities using STOL and VTOL aircraft for short-haul operations

Analysis of short haul aircraft transportation systems for San Francisco Bay area, California

National evolutionary plan for developing future national short haul air transportation system

Analysis of airlines operations for several small operators to determine reasons for economic problems and alternatives for profitable services - Part 1

Analysis of short haul airlines operation to show history, operational problems, and economic aspects - Part 2

Aircraft accident involving Beechcraft D18S aircraft air taxi near Honolulu, Hawaii on 22 Feb. 1972

Development of performance criteria and operational margins for landing phase of commercial/short takeoff and landing aircraft

Analysis of existing heliports and heliport requirements to support short haul and commuter requirements

Analysis of sonic boom signatures produced by STOL aircraft at various altitudes and airspeeds

Airplane accident involving Beechcraft D18S aircraft air taxi near Honolulu, Hawaii on 22 Feb. 1972

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Effect of fin-opening shock environment on guided modular dispenser weapons

Analysis of flow distribution near wing body configuration and determination of interference effects on another aircraft by incident shock

Time dependent method to calculate supercritical flow over nozzle airflow

Analysis of sonic boom signatures produced by STOL aircraft at various altitudes and airspeeds

Characteristics of sonic booms and damage caused to buildings due to supersonic overflights
Aerodynamic characteristics of STOL aircraft with externally blown jet augmented flaps, predicting interference between lifting surfaces and turbofan engines:

(IAA PAPER 72-63) p0133 A72-16953

STOL transport passenger market demand model — selection based on estimation of specific patterns between two population centers and service frequency and fare considerations:

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Tail first, canard and tandem wing configurations for natural STOL, discussing low cost aerial work aircraft:

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Crankshaft rotorcraft STOL aircraft for rescue operation, discussing orthodox rigid and special rotary wing designs, air tunnel experiment and flight tests:

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Externally blown flap noise tests at various nozzle exhaust velocities for STOL aircraft noise reduction:

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Jet-STOL augmentor wing consisting of moderately thick airfoil with full span leading edge slat and double surface trailing edge flap:

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Future civil air transport trends, considering passenger and cargo growth, travel frequency per capitis income and STOL market:

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Variable pitch fans for STOL aircraft thrust/shaft engine, noting short field capability and quietness:

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STOL and V/STOL transport aircraft design requirements consideration based on common propulsion and lift engine types use, noting fan lift/solution superiority:

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STOL aircraft system development coordination, considering vehicle design, airport facilities and related ground environment, transportation nodes intercity and airspace management:

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Variable pitch ultrahigh bypass ratio ducted fan engine design for STOL transport aircraft:

(IAA PAPER 72-07-51) p0297 A72-25652

Turbofan engine trends for short haul conventional and STOL aircraft, considering variable pitch fans, reduction gears, thrust reversal and noise and environmental pollution:

(IAA PAPER 72-06-35) p0289 A72-25661

STOL aircraft role in civil aviation, discussing short range operation, ATC, reduced noise and weather capability:

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STOL, VTOL and V/STOL air transportation systems development, characteristics and requirements, presenting economic forecast:

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Acoustic measurements for STOL turbofan transport aircraft propeller configurations under static, taxi and flyover conditions, discussing quiet propeller noise signature:

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Quiet STOL/reduced takeoff and landing/short haul aircraft cost comparison with Trident 3 aircraft up to design range stage length:

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Buoyancy systems and parawing application in short haul passenger transportation, discussing VTOL and STOL operations:

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STOL aircraft for civil transport applications, considering optimum design concepts, noise reduction and terminal facility requirements:

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STOL aircraft minimum noise takeoff trajectories determination, taking into account engine thrust and listeners distance from noise source:

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NAS A and D for STOL short haul transportation systems, discussing propulsive lift, blown flap and augmentor wing concepts, noise reduction, etc:

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STOL airport handling objectives, discussing ground and air traffic control, terminal locations, flight safety and community acceptance:
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The flight mechanics of STOL aircraft. p0041 A72-34239
An experimental investigation of STOL longitudinal flight qualities in the landing approach using the variable stability X-22 aircraft. [AIAA PREPRINT 642] p0042 A72-34241
NASA R and D programs for quiet STOL aircraft and engines development. p0057 A72-36503
Development of the Saab-Scania Viggur. [AIAA PAPER 72-790] p0052 A72-37749
All weather landing for a STOL system. [AIAA PAPER 72-807] p0045 A72-38105
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Noise generated by STOL core-thrust reverser. [AIAA PAPER 72-790] p0046 A72-38108
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STOL-based short haul transportation feasibility for airport congestion alleviation from airline viewpoint, discussing system requirements, economic factors and safety. [AIAA PAPER 72-807] p0047 A72-38120
Use of the flight simulator in the design of a STOL research aircraft. [AIAA PAPER 72-807] p0049 A72-38129
Methodology for estimating STOL aircraft high lift systems characteristics. [AIAA PAPER 72-792] p0050 A72-38130
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4-D guidance system design with application to STOL air traffic control. p0051 A72-38252
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Landing 'in the backyard' with quiet aircraft. [AIAA PAPER 72-792] p0054 A72-40296
Augmentor wing design for Buffalo STOL aircraft, discussing operational principle and wind tunnel test results. p0055 A72-40684
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Turbofans under wings to provide lift and thrust for STOL aircraft. [NASA CASE-LTR-1124-1] p0030 A72-10033
Cost analysis and operational procedures of effective short range, high density computer transport system for metropolitan Detroit. [NASA CR-11430] p0036 A72-10548
Flight simulator used to determine lateral and directional aerodynamic characteristics of STOL transport aircraft. [NASA TN D-6406] p0036 A72-11948
Advanced technology applications for improving STOL transport aircraft aerodynamics, propulsion, structure, and flight dynamics. p0105 N72-13016
Analysis of noise abatement in military and commercial STOL aircraft. [AD-72518] p0108 N72-13040
Development and characteristics of microcircuits, scanning beam instrument landing systems for short takeoff and landing aircraft and airports. [AD-725705] p0111 N72-13595
Jet peak axial-velocity decay data for circular and noncircular single-element and double-element nozzles for STOL aircraft with externally blown flaps. [NASA TM X-67579] p0158 N72-14302
Update of STOL bibliography, including design, operation, guidance, air traffic control, and STOLports. [UTIAS-176] p0165 N72-15002
Variable deflection rocket engines for short takeoff aircraft flight control system. [AD-730571] p0168 N72-15019
Design and characteristics of lift fan engine systems for application to V/STOL aircraft. [NASA CR-120388] p0172 N72-15176
Human comfort measured from vibration ride environments of STOL aircraft and supersonic speed train. [NASA TM X-67586] p0174 N72-15841
Measurement of externally blown flap noise for determining noise criteria of STOL aircraft. [NASA TM X-67891] p0203 N72-15959
Containment systems for aircraft landing on elevated STOLports. [NASA CR-125546] p0203 N72-15960
Augmentor flap, wing ducting and augmentor nozzle, and noise reduction for jet-STOL aircraft. [NASA CR-125546] p0210 N72-16699
Noise suppression capability of mixer nozzle used with externally blown flap augmentation system on STOL aircraft. [NASA TM X-68021] p0252 N72-18014
Computer simulation to determine capacity of air terminal for short takeoff and landing intra-urban air rapid transit system. [AD-733185] p0262 N72-18660
Evaluation of takeoff and landing performance of commercial STOL airplanes. [NASA TM P-14166] p0269 N72-19023
Noise data obtained with small scale model of externally blown flap of type being considered for STOL aircraft. [NASA TM D-6630] p0269 N72-19025
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Development of simulation models of two representative STOL aircraft using nonlinear equations to show gross changes in aircraft attitude, flight path, and power setting. [DOT-TSC-FAA-72-9] p0269 N72-20218
Steep approach control system for STOL aircraft based on rudder and thrust control. p0321 N72-20207
Survey of potential operational requirements for short takeoff aircraft in terminal area. [DOT-TSC-FAA-72-71] p0262 N72-22055
Path changing methods for large-scale commercial STOL aircraft to fly complex flight paths to maintain a time of arrival envelope. [DOT-TSC-FAA-72-75] p0325 N72-20579
Numerical analysis of aircraft noise created by externally blown flaps on STOL aircraft and methods for noise reduction.
SHEOODS

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""Besearch including aircraft, engine, and*
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Silicon Carbides

Decrystallized silicon carbide and reaction bonded silicon nitride as construction materials for gas turbine engine components, describing thermal and mechanical properties [NASA-PAPER 72-GT-20].

Silicon carbide rotating rectifier alternator with solid lubricated bearings for high altitude environments, noting applicability to supersonic aircraft fabrication and microstructure of high temperature silicon carbides for turbine blades [NASA-CP-120966].

Silicon Nitride

Becrystallized silicon carbide and reaction bonded fabrication and microstructure of high temperature silicon nitride as construction materials for turbine engine components, describing thermal and mechanical properties [NASA-CR-1120966].

Silicon Rubber

Silicone based elastomers acoustic excitation damping properties at 213-423 K, discussing testing technique and results at 200-1000 Hz Epoxy and silicone rubber molding of low structures and ice-coated airplane wings.

Similarity Theorem

Mixing length flow model for two- and three-dimensional turbulent boundary layers in compressible and incompressible flows using similarity equations.

Similitude Law

Two and three-dimensional turbulent boundary layers integral calculation method, presenting similarity solutions based on extended mixing length model.

Simulation

Wrought silicon nitride as construction materials for aircraft during wind approach simulation at Ontario, California airport on 31 Mar. 1971 [WTS-AAR-72-16].

Simulators

U-Training Simulators

U-Control Simulators

U-Environment Simulators

U-Flight Simulators

U-Shock Simulators

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U-Vibration Simulators

DC 9 aircraft integrated data system simulator to facilitate interacting systems checking, input circuit integrity, performance degradation and calibration.

Twist-turboprop transport aircraft, helicopter and all-terrain ground vehicle simulators, discussing control load, visual attachment, cabin motion and sound subsystems.

Simulator for physical forces experienced by carrier aircraft during catapult launches and arrested landings, considering external stores safety suspension.

Dynamic and static characteristics of jet engine simulators.

Construction of sonic boom simulator using detachable gas mixture in slender, shaped mylar balloons.

Design of duct turbine as drive system for 20 in. turbofan engine simulators.

Simulation of vibrational and acoustical properties of sonic boom.

Development and characteristics of core turbine for driving single and two stage fans in turbofan engine simulator.

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Single Sidelband Transmission

Single Sidelband Receivers

Single Sidelband Modulation

Single Sidelband Transmission

Very high frequency and ultrahigh frequency single sidereal transmission from ground station for aircraft reception.

Singular Integral Equations

Airfoil theory singular integrodifferential equation reduction to integral equations with quasi-regular and regular kernels, applying to jet flapped wing problem.

The lift coefficient of a supercavitating jet-flapped foil in a free jet.

Singularity (Mathematics)

Calculation of pressure distribution on cylindrical fuselage with perpendicular lifting jet using singularity method.

Computation of potential flow around axisymmetric bodies, cowls, and engine inlets using singularity method.

Skin (Structural Member)

Thermelastic effect on flutter and vibration of built-up delta wings with solid, stiffened and honeycomb/corrugated sandwich skins.

Skin (Structural Member)

Thermelastic effect on flutter and vibration of built-up delta wings with solid, stiffened and honeycomb/corrugated sandwich skins.

Skin (Structural Member)

Thermelastic effect on flutter and vibration of built-up delta wings with solid, stiffened and honeycomb/corrugated sandwich skins.
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Wind tunnel tests to determine drag characteristics of airfoil-covered composite coating of polyvinyl chloride membrane over polyester damping layer.

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[ONERA-TP NO. 987] p0506 A72-42227
Correlation of total sound power and peak sideline overall sound pressure level for subsonic and supersonic jets of aircraft engine exhaust

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Theoretical design of maximum thrust nozzles with nonequilibrium, chemically reacting, supersonic gas flows

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U PRESSURE DISTRIBUTION

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Estimated peak regional concentration of SST exhaust in stratosphere from expected flight operation levels
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Optimum low noise engine selection for transport and combat aircraft relative to random or payload performance, considering CTOL, VTOL, SST and fighter aircraft
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Problems and solutions related to the design of a control augmentation system for a longitudinally unstable supersonic transport. [AIAA PAPER 72-871]

- Economic and social aspects of commercial aviation at supersonic speeds. [ICAS PAPER 72-51]
- Wing flutter prevention in SST structural design, using finite element model and lifting surface aerodynamic theory. [NASA-TT-F-139521]
- Sound generation and scale model experiments to suppress noise in turbulent jet flow emissions of supersonic transport aircraft. [ARC-37273]
- Supersonic transport aircraft and NAC 221 aircraft piloted flight simulation near zero rate climb velocity for determining aircraft maneuver controllability at low speed. [ARC-CP-1165]
- Possible catalytic reduction of stratospheric chlorine by nitrogen oxides emitted from SST aircraft. [NASA-CASE-GSC-100087-3]
- System and method for position locating for air traffic control involving supersonic transports. [NASA-R-12080]
- Aerodynamics of long bodies and configuration application to supersonic transport aircraft. [NASA-R-12080]
- Technology advances for second generation supersonic transports. [NASA-R-12080]
- Stratospheric turbulence and temperature gradient measurements for supersonic transport flights. [ARC-12218]
- Performance criteria, including engine air flow matching requirements, of axisymmetric mixed compression intake for supersonic transport. [NASA-R-12080]
- Galatic and solar cosmic radiation system for flying personnel and passengers onboard SST. [NASA-R-12080]
- High altitude radiation instrumentation system for dose and linear energy transfer spectral measurements for supersonic transport program. [NASA-R-12080]
- Flight safety standards and air traffic control problems of supersonic aircraft passenger service. [NASA-R-12080]
- Computer program for calculating sonic boom propagation during supersonic transport flight maneuvers. [ARC-12218]
- Nitric oxide production in stratosphere from natural sources and SST operation. [NASA-R-12080]
- Fatigue tests of supersonic transport structures with emphasis on thermal cycle. [NASA-R-12080]
- Method for checking fatigue resistance of structural design detail for SST. [NASA-R-12080]

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- Laminar/turbulent boundary layer transition on parabolic wing profile in supersonic wind tunnel, noting critical Reynolds number increase with leading edge thickness. [NASA-TT-F-139521]
- Superconducting magnetic suspension and balance facility of supersonic wind tunnel for dynamic stability studies. [NASA-TT-F-139521]
- Superconducting coil design for magnetic suspension of supersonic wind tunnel balance. [NASA-TT-F-139521]
- Data acquisition and reduction for model aerodynamics in supersonic wind tunnel. [NASA-TT-F-139521]
- Supercon five wing flow influence on sonic boom, discussing supersonic wind tunnel tests for noise reduction. [NASA-TT-F-139521]
- Flow quality improvements in a blown down wind tunnel using a multiple shock entrance diffuser. [AIAA PAPER 72-1002]
- Evaluation of transonic and supersonic wind-tunnel combustor exhaust plume effects on supersonic wind tunnel measurements. [NASA-TT-F-139521]
- Single screw variable nozzle for varying Mach number in supersonic wind tunnels. [NASA-TT-F-139521]
- Supersonic wind tunnel extension for transonic wind tunnel measurements. [NASA-TT-F-139521]

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- Mt GROUND OPERATIONAL SUPPORT SYSTEM
- Mt GROUND SUPPORT SYSTEMS
- Mt PYLONS

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Zero rate transient suppressors with electronic thermal switch for ground vehicle and aircraft applications. [NASA-172-16653]
- Large scale high aspect ratio multielement suppressor nozzle arrays testing for augmentor wings and internally blown flaps. [AIAA PAPER 72-123]
- Design for future military aircraft crash sensors, ignition source suppression system, and automatic activation circuitry. [NASA-TT-F-139521]
- Test methods for infrared suppressors to determine their effectiveness in masking aircraft infrared emissions. [NASA-TT-F-139521]
- Dual antenna method for suppressing reflections from underside of moving aircraft. [NASA-TT-F-139521]

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I SURFACE REACTIONS

- The surface flaw in aircraft structures and related fracture mechanics analysis. [NASA-172-16653]

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- Conformal mapping procedures for numerical generation of airfoils with local curvature singularities, presenting test problem results for zero trailing edge angle. [NASA-172-16653]

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- Surface erosion

SUPERSulfuric Finishing

- Sealant for composite materials in aerospace applications. [NASA-172-16653]
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Steady and oscillatory subsonic aerodynamic loads prediction. Fundamentals of new method and method of images, determining chord and spanwise loading on lifting surfaces [15 PAPE H 72-26].
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Numerical analysis of transonic flow about thin lifting wings and analytic expressions for far field conditions. [NASA-TW-D-65301]
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Analysis of three commercial aircraft accidents to determine factors affecting survival of passengers under emergency conditions [NASA-AM-70-161]. p0150 ATJ-13089

Analysis of conditions and circumstances involving survival of passengers and crew following ditching of DC-9 aircraft [NASA-AM-70-161]. p0150 ATJ-13089

Analysis of survival following crashes of military aircraft and identification of areas for improvement in structural design [AD-73970]. p0061 ATJ-27004

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Survival and flight equipment - Conference, Las Vegas, September 1971 p0193 ATJ-21560

Emergency systems for helicopter crew and passenger survivability improvement, discussing use of ejection seats, extraction systems parachute bail-out and shaped explosive charges p0195 ATJ-21581

Emergency Life Saving Instant Exit system in aircraft fuselage for use after crash landing, discussing design and ground testing p0195 ATJ-21583

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MT MAGNETIC SUSPENDER

Stability and control dynamics of helicopter hovering with heavy slung load, analyzing maneuvers for minimal excitation of pendulous motion [AMS PREPRINT 630]. p0045 ATJ-34480

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Deterministic optimization of aircraft undercarriage suspension characteristics for taxing induced vibration minimization, discussing damping and stiffness functions and hybrid computer solution p0235 ATJ-23858

Air cushion and secondary suspension for support and guidance of linear induction motor on tracked research vehicle [FD-20-84440]. p0219 ATJ-17010

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MT LEADING EDGE SWEEP

Velocities induced by distributions of infinite linked sources and vortex lines representing wings with sweep and dihedral in incompressible flow [ARC-85/B-3667]. p0277 ATJ-19332

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Laminar three dimensional boundary layer nonequilibrium effects at hypersonic wing swept leading edge with intensively cooled surface, considering sweep induced crossflow effect [VPI-E-71-23]. p0020 ATJ-12422

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MT LEADING EDGE SWEET

SWEET WINGS

MT ARROW WINGS

MT DELTA WINGS

MT SWEETBACK WINGS
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Increasing lift and Reynolds number effects on
Subsonic linearized theory for symmetrical cranked
Pressure measurements on harmonically oscillating
Design programs for swept wings in subcritical,
Influence of jet interference on aerodynamic
Incompressible boundary layer velocity profile on
Scale effect in reattached, separated, and thin
Rind tunnel tests of large scale swept augmentor
Feasibility of transonic wind tunnel testing of
Aerodynamic test facility data on swept wings,
Elliptic-hyperbolic relaxation algorithm for
Specifications for high Reynolds number wind
Scale effects in flows past swept wings at
wing-tail configurations in incompressible speed range

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SYNCHRONOUS SATELLITES

Synchronous satellite surveillance system for transoceanic ATC, using suboptimal/modified Kalman/ filter for aircraft position and velocity computation

Aerostat program for ATC and communications via four geostationary satellites over Atlantic and Pacific Oceans, discussing technical and financial international provisions

Aircraft and water vehicles mobile communications via stationary satellite, discussing optimum multiple access and repeater configuration

Geostationary satellite system for air navigation via voice and data communication, discussing ground facilities and avionics

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U ELECTROMAGNETIC NOISE

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Thunderstorm-associated aircraft mishaps relation to surrounding synoptic scale meteorological conditions, discussing prototype and condition contribution to flight stability upset

Synoptic meteorological parameters encountered in stratosphere by XB-70 airplane, presenting frequency distributions and probability tables

Persistent intense CAT in upper level frontal zone, discussing synoptic features, vertical wind shears, radar echoes and turbulence intensity

Russian book—Aviation meteorology

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Synthesis and properties of aliphatic ester for turbine lubrication in jet aircraft

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Linear Ny radar antenna array aperture synthesis for ionospherically propagated signal reception in airplane for achievement of ideal directivity without ionospheric compensation

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NT GLASS FIBERS

NT NYLON (TRADEMARK)

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NT EPOXY RESINS

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NT THERMOSETTING RESINS

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NT ELASTOMERS

Evaluation of experimental membranes, nonskid compounds, adhesives, and earth anchors used in constructing assault type runways for military aircraft

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Self-organizing adaptive aircraft control system with C criterion pitch axis performance and failure compensation

Reliability program for SAAB 37 Viggen airborne computer, discussing project components, operating tests and failure rates

Aircraft industry product support role in time delays minimization for aircraft operators, discussing malfunction report, minimum equipment decision and fault diagnosis

Avionics effects on airline operations, timekeeping, considering gains due to all-weather capability and engine monitoring vs possible losses due to equipment failure

Breakdown of automatic pilots or auxiliary stabilization systems on helicopters

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Fault isolation capabilities for general purpose digital computer used in guidance and control applications

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Conventional open and closed loop servo analysis methods applied to naval aircraft approach power compensator systems, using pilot model concepts

Collision avoidance system operations evaluation, noting protected airspace volume requirements

Two-variable second order system for multivariable systems predictive control, deriving algorithm for near time optimal control

Airfield surface system fast-time computer simulation model for airport planning systems analysis

Ground based ATC information processing systems analysis, considering controllers work load parameters, suggesting applicability to ATC

Synthesis and analysis of a fly-by-wire flight control system for an F-14 aircraft

System analysis and synthesis for B-52 Control Configured Vehicle program, discussing flatter mode and maneuver load control and augmented stability configurations

System analysis for an airline operational environment through a computerized network simulation model

A systems analysis of subsonic versus supersonic jet travel

The heavy lift helicopter: An operations research/technology/performance blend

Evaluation of airway operations systems in Indonesia, Laos, Malaysia, and Thailand with proposed courses of action, equipment requirements, and economic factors in aeronautical telecommunications

Procedures for predicting pilot-vehicle-flight control system performance

Evaluation of thrust magnitude control for bomber defense missiles

Applying systems analysis techniques to aircraft maintenance to achieve aviation safety

Main methods of fuel flow measurement and factors for consideration in deciding on type of meter to use for various requirements

Basic turbine concepts including flow/heat transfer, and performance characteristics

Systems analysis of analog and digital voice coding techniques for use with satellite based air traffic control system
Design and development of electric power supplies for use with transport aircraft in 1980 to 1985 time period.

Design analysis of nutating plate drive for 2500 horse power helicopter rotor gearbox.

General problem of layout and operation of equipment in aircraft power system.

Feasibility analysis of whole aircraft as an aperture antenna.

Reduction of noise produced by helicopter geared power train by application of vibration and acoustics technology.

Analysis of factors affecting accuracy of inertial air navigation systems.

Design and tests of gas lubricated bearings for use in gas turbine environment.

Test facilities for aeropropulsion-systems.

Analysis of factors affecting accuracy of inertial navigation systems.

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Analysis of factors affecting accuracy of inertial navigation systems.

Design and tests of gas lubricated bearings for use in gas turbine environment.

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Area navigation and its effect on aircraft operation and systems design.

Designing aircraft structure for resistance and tolerance to battle damage.

Optimal control synthesis for linear passive stationary plants with symmetrical coefficients of minimized functional.

Problems and solutions related to design of control augmentation system for a longitudinally unstable supersonic transport.

System analysis and synthesis for F-52 control.

Defence system development based on balance between theoretical studies and hardware prototyping for uncertainty reduction in performance and cost.

Future trends in air traffic control and landing.

Design and development of the United Aircraft Research Laboratories acoustic research tunnel.

Aircraft hydraulic control systems modular design for maintainability, emphasizing component removal with minimal hydraulic fluid losses and air entrapment.

A near-real time data acquisition/reduction facility for the blowing wind tunnels.

Computerized weight data storage, recording and information system to aid in aerospace vehicle design.

Equipment assembly design optimization by operational versions determination and criteria evaluation for optimal conditions, noting rotary wing design.

System approach to airport passenger terminal planning.

SECANT midair collision avoidance system based on noncooperative microwave pulse transmission and receiving via randomly selected frequency, describing modular components and operating principles.

Analytical methods for early-stage detection of soil deterioration in aircraft runways.

Feasible feel augmentation system to utilize increased performance of modern helicopters.

Theory and operation of proposed helicopter IFR flight path control system.

Analysis of operational requirements and feasibility of system for precision IFR helicopter hovering.

Development and evaluation of C-130 aircraft training program based on systems approach.

Summaries of lectures presented at annual national aviation systems planning review conference.

Development and flight test of survivable aircraft control system using fly-by-wire and integrated actuator package techniques.

Designs for future military aircraft/crank engine systems, ignition source suppression system, and automatic activation circuitry.

Design and development of control augmentation system for R-53 helicopter.

Six-component strain gage sting balance for small wind tunnel models.

Analysis of wiring weight, conductor weight, and conductor loss for data voltage in aircraft electrical power systems.

Water-glycol convective cooling system for Mach 6 hypersonic transport airplane.

Effectiveness evaluation of automatic spin prevention system for fighter aircraft.

Feasibility analysis of variable speed constant frequency inverter system using dc link approach for aircraft use.

Management planning and operation of test facilities for effective application to development of systems and equipment for aerospace vehicles.

Application of fluidic pneumatic elements and systems for control of aircraft, missiles, and aerospace.

Evaluation program for frequency separated display principle in aircraft instrument panels.

Tests to determine design feasibility of unsurfaced soil facilities for operations of C-5A cargo systems.

Design of optical feedback controller for multivariable linear systems having subsystem sensitivity constraints.

Design of duct turbine as drive system for 20 in. turbofan engine simulators.

Development of thrust control system for application to control of aircraft and spacecraft.

System design and flight test evaluation of range of multiple aircraft, navigation system.

Design, development, and evaluation of three-axis hydrofluidic stability augmentation system for Uh-1 helicopter.

Performance tests of annual control concepts formats to evaluate effectiveness in precision tracking tasks.

Design and evaluation of automatic pilot to reduce excursions in altitude of jet transport during atmospheric turbulence.

Design of single stage fan with tip speed of 3,000 ft/sec and hub/tip ratio of 2.285 to 1.

Design of height control test equipment for flying test vehicles.
T-2 AIRCRAFT
Mitsubishi T-2 two-place supersonic trainer describing prototype airplane and propulsion system design and operational features.

T-33 AIRCRAFT
Flight test of direct side force control by rudder deflection and asymmetrical drag on T-33 airplane, noting use in dive bombing.

Effect of high temperature hydraulic fluid on operation of control surface servovalves installed on T-33 aircraft.

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Portable self contained ultrasonic field inspection equipment for nondestructive crack detection in T-53 gas turbine compressor disks.


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Prediction tables of air carrier operations at large and medium hubs.

Pressure measurements on harmonically oscillating wing-tail configurations in incompressible speed range.

Analysis of emissions from aircraft piston and gas turbine engines - tables.

Tables on ranking air carrier passenger emplacements for fiscal year 1971.

TAKEOFF
Tactical ATC display systems for airport surveillance, precision approach and landing and operator/aircraft/machine operations by using terminal area surveillance radar.

VOR, Direct Measuring Equipment and TACAN polar coordinate radio navigation systems history, improvements and future development.

Operational requirements for VOR/TACAN system improvements, including precision VOR, navigation broadcast, DME capacity and CAS signals synchronization.

Integrated inertial-VOR-DME or inertial-TACAN navigation system, presenting overall accuracy and bearing adjustment procedure via least squares method.

Digital computers for navigation and guidance systems and fire control systems in tactical aircraft.

Development of method for determining distance measuring equipment traffic at Tacan sites under saturated and nonsaturated conditions.

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Game theoretical modeling of fighter aircraft turning tactics competition in pursuit combat, using minmax technique.

TACTICAL AIRCRAFT TACAN
TACTICS
Game theoretical modeling of fighter aircraft turning tactics competition in pursuit combat, using minmax technique.

TACAN
Airport on 30 July 1971.

TACTICAL AIRCRAFT TACAN
TACTICS
Game theoretical modeling of fighter aircraft turning tactics competition in pursuit combat, using minmax technique.

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Airport on 30 July 1971.
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Atmospheric temperature and pressure altitude
effects on runway length and aircraft takeoff
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To-754 life and drag augmenting devices for
takeoff and landing characteristics improvement

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High performance aircraft takeoff and landing
accidents, investigating survival rates

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Buccaneer Mk 2 and P-45 Phantom takeoff and
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Turbulent jet's effectiveness in protection of
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Propulsion system flexibility in V/STOL aircraft
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Application of electronic data processing aircraft
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Change in aircraft configuration due to introduction
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Development of thrust augmentor device to assist
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aircraft takeoff distance over barriers between thirty
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Properties of atmospheric turbulence at low
altitudes and effect on aircraft during landing
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Analysis of aircraft noise generation and
optimization of flight paths to minimize effects
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Tail first/canard/ and tandem wing configurations
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Electrical discharge-produced explosions aboard
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NT PROPELLANT TANKS

NT WING TANKS

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U DATA PROCESSING

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calculating target distance during horizontal
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describing navigation, target acquisition,
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ET JUDIVIK TARGET AIRCRAFT

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program and results for basic and advanced
flight modes

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Reconnaissance test of target aircraft fitted with
wing tip pods using multipoint excitation method

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U TERMINAL BALLISTICS

TARGETS

ET JUDIVIK TARGET AIRCRAFT

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time estimation accuracy of converging targets

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Aircraft electronic display for pilot precise
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stability and readability of CRT images

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undercarriage suspension characteristics for
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ICAO standardized taling guidance and airports
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Measurement of three track runway and taxiway
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Possibility analysis of active vibration isolation
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Operational evaluation of device for measuring
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Models applied to predict communication system
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Fighter/attack aircraft turbojet and turbosfan engines testing with/without afterburner

Simulated testing of turbojet engine ingestion of mixture exhaust, determining density effects for aircraft engine inlet: aircraft test data
Aerodynamic damping of turbomachine blade vibrations under varied conditions of stagger angle, pressure ratio and relative velocity, using pure bending mode excitation [ASME PAPER 70-GT-8]

Interaction effects between blade rows in turbomachines.  

Dynamic strength of tangentially wound toothed blade roots  

Unsteady aerodynamic and aerelastic effects in turbomachine blades cascades supersonic flow, discussing trends in fan and compressor technology  

Investigating failure of gas turbine vanes under influence of thermal cycles in simulated modes of engine start-up and shut down

Flutter in turbomachinery blading and prediction of aerodynamic characteristics of partially stalled airfoil [AD-7924581]

Computer program for flow analysis through axial flow turbines and compressors (ARC-27-M-3667)

Three basic types of two dimensional calculations for approximating velocities in turbomachine blade flow [NASA-TF-X-67959]

TurboTech

MT AXIAL FLOW TURBINES  
MT CENTRIFUGAL COMPRESSORS  
MT CENTRIFUGAL PUMPS  
MT GAS TURBINES  
MT SHROUDED TURBINES  
MT SUPERSONIC TURBINES  
MT TURBINE PUMPS  
MT TURBINES  
MT TURBOMACHINERY  
MT TURBOPANS  
MT TURBOGENERATORS  
MT TWO STAGE TURBINES

Aircraft turbo-alternator speed control for constant frequency power supply, presenting theoretical relationships for electrohydraulic or mechatronical control loops  

Navier-Stokes equations solution for unsteady viscous flow around oscillating elliptic airfoil in turbomachinery flutter analysis, obtaining pressure and shear stress distributions  

Centrifugal turboengine diffuser with high enlargement area compared with logarithmic spiral types, discussing boundary layers, secondary flow, shapes and aerodynamic parameters  

Hydraulic task application to internal flow visualization in turbomachinery, describing test equipment and methods used for axial flow model  

Laser Doppler velocimetry system design for optical measurement of intrablade flow velocity in turbomachinery  

The acoustics of axial flow machines  

A method for estimation of axial turbomachinery stage characteristics on the basis of experimentally obtained data with a runner tested in a free blow-out aerodynamical scheme,  

Annual report of Institute of Sound and Vibration Research including aircraft, engine, and turbomachinery noise, silencers, and human responses to noise  

Annual report 1969 of Institute of Sound and Vibration Research including aircraft, engine and turbomachinery noise, audiology, and structural vibration  

Conference on flow characteristics of turbomachinery [AD-735021]

Numerical analysis of oscillatory aerodynamic forces and moments acting on cascade of airfoils in uninstalled conditions [AD-7352051]

TurboTech

MT ELECTRA AIRCRAFT  
MT STOL AIRCRAFT  
MT TURBOCHARGED AIRCRAFT

Each 0.80 quiet intensity STOL transport design comparison for turbosfan, prop-fan and turboprop systems [SAGE PAPER 710759]

Russian book on as-12 turboprop transport aircraft structural and aerodynamic characteristics covering engine operation, piloting, stability, controllability, etc

Acoustic measurements for STOL turboprop transport aircraft propeller configurations under static, taxi and flyover conditions, discussing quiet propeller noise signature

Twin-turboprop transport aircraft, helicopter and all-terrain ground vehicle simulators, discussing control load, visual attachment, cabin motion and sound subsystems

The DEC-7, first generation transport category STOL - Particular design challenges

TurboProp engines dynamic parameters experimental determination by rpm transient response to instantaneous fuel supply changes

Mathematical model for dynamics simulation of aircraft turboprop engines, using digital, analog and hybrid computers

Statistical analysis of turboprop engine exhaust emissions in atmosphere [PB-202961]

Turbopump  

U TURBINES  

TURBOCHARGED AIRCRAFT

763/250 engine program current status, covering turboshaft helicopter engine and fixed wing aircraft powerplant models and applications

Turbine inlet gas temperature limiting systems design and operation in turboprop engines, discussing blocking mechanisms, delaying element and altitude compensation

TurboProp engines dynamic parameters experimental determination by rpm transient response to instantaneous fuel supply changes

Mathematical model for dynamics simulation of aircraft turboprop engines, using digital, analog and hybrid computers

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TURBOPROPS  

TURBOSHAFTS  

763/250 engine program current status, covering turboshaft helicopter engine and fixed wing aircraft powerplant models and applications

Air lubricated bearings for high performance aircraft gas turbines, studying design and performance in turboshaft engines [ASME PAPER 72-GT-38]

Linear mathematical model for twin shaft gas turbine with isolated turbocompressors, calculating dynamic constants as function of operational modes

Lynx helicopter RS 360 turboshaft engine, describing modular design for maintainability
Sonic boom pressure signatures during F-104 overflights at Mach 1.3 and 30,000 ft, explaining variations by atmospheric turbulence.

Turbulent boundary layer effects on aircraft flight, covering accidents and costs, turbulence generation, prediction, measurements and load alleviation devices.

AIAA PAPER 72-219, P0129 A72-16085

Thunderstorm flight testing for evaluation of rain, ice, lightning and turbulence effects on aircraft, engine and systems operating characteristics.

Wind shear, turbulence, precipitation, temperature, visibility and ceiling effects on aircraft performance. Integration into ATC system for pilots information.

P0192 A72-21521

Nonlinear longitudinal aerodynamic characteristics effect on rigid aircraft response to normal acceleration due to atmospheric turbulence, using power spectral technique.

Conical diffuser response to velocity distribution and turbulence intensity at inlet.

Small transport aircraft horizontal tail surfaces flow characteristics determined for stress calculation during flight in turbulent atmosphere.

P0239 A72-30284

Low cost flight simulator for general aviation training, containing IFR instrumentation and turbulence injection device.

P0399 A72-32211

Combustion noise generation by burning fuel-air mixtures induced pressure fluctuations as result of time variable heat release rate due to turbulence.

P0457 A72-36505

Atmospheric turbulence and the ATC system.

P0862 A72-37049

Automatic structural mode control system with aerodynamic vanes for F-1 strategic bomber—turbulence excitation during low altitude terrain following missions.

[AAIA PAPER 72-772]

P0895 A72-38132

Analytical method for combining the interaction of inlet distortion and turbulence.

P0594 A72-43330

Dynamic simulation of an aircraft under the effect of vortex wake turbulence.

P0613 A72-45346

Boundary layer behavior of turbocompressor in free stream turbulence.

[CUDIA-4-FUNRO/TH-26].

P0909 A72-13266

Development of criterion for aircraft flight in turbulent conditions and numerical analysis of probability of survival.

[NERA-C3-12883].

P0164 A72-14997

Flight tests of heavy jet transport aircraft to determine characteristics of vortex systems generated within ground effect and vortex systems descending into ground effect.

P0166 A72-15006

Effects of upper atmosphere turbulence on operation of supersonic transport aircraft and methods for advance detection of atmospheric turbulence.

[NAA-A-2247-5 (5828.49)].

P0477 A72-27009

Landing simulation to determine effects of turbulence on roll of swept fighter aircraft at low speed.

[AFCE-8-3697].

P0582 A72-31001

Measurement of human operator performance in single axis tracking task during simulated turbulent conditions.

P0621 A72-32039

Unsteady flow about two dimensional airfoils, determining pressure surface fluctuations induced by turbulent boundary layers.

P0002 A72-10216

Increasing lift and Bernoulli number effects on displacement and skin friction of three dimensional turbulent boundary layer on infinite swept wing.

P0014 A72-11395

Noise generation from turbulent supersonic shear layers, including low supersonic and transonic ranges for jet noise applications.

P0702 A72-15566

Turbulent boundary layer development for airfoil at high transonic speeds, discussing viscous-inviscid flow interaction.

[AAIA PAPER 72-59].

P0129 A72-16083

Low turbulence wind tunnel with closed circuit design and pressure gradient adjustment capability for turbulent boundary layer studies.

P0139 A72-17713

Flat plate boundary layer transition equations for supersonic wind tunnels, taking into account free stream turbulence.

P0196 A72-21616

Pressure recovery calculation for subsonic adiabatic air flow through diffusers with tail pipes, assuming turbulent inlet boundary layer.

P0237 A72-23855

Turbulent boundary layer growth measurement on annular diffuser containing free vortex swirl.

P0237 A72-23857

Rotational, centrifugal and Coriolis force effects on turbulent boundary layer development, discussing changes in structure and shear stress distribution.

P0238 A72-23870

Two and three dimensional turbulent boundary layers integral calculation method, including similarity solutions based on extended mixing length model.

P0241 A72-26565

Rectangular skin panel vibration modes, aerodynamic damping dependence on Mach number, dynamic pressure, mode shape and turbulent boundary layer thickness.

[AAIA PAPER 72-4022]

P0287 A72-25423

Velocity profiles for three dimensional turbulent boundary layer on end wall of axial flow compressor cascade passage under adverse pressure gradients.

P0405 A72-32901

Pressure, shear stress and yaw angle measurements in flow through aircraft intake S-shaped ducts with turbulent boundary layer at entry, noting vortex generation.

P0410 A72-33403

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P0402 A72-37762

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[AAIA PAPER 72-209].

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Full-scale measurement of flow in turbulent wake of hangers

Wind tunnel tuft grid study of trailing vortex downstream of straight wing

Analysis of hazards created by aircraft wakes and methods for avoiding adverse effects during congested aircraft operation

Development of wake model for predicting rotor free wake positions and resulting rotor blade air loads - Vol. 1

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Supersonic aircraft energy turns.

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U Ultrasonic Inspection

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U Ultrasonic Testing

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Automatic ultrasonic testing equipment for NDT tests of helicopter rotor blades

Ray, ultrasonic and eddy current nondestructive testing of aircraft structure for maintenance and special problems

Aircraft light alloy integral construction for stress concentration and fatigue failure avoidance, describing continuous casting process, stress relieving and ultrasonic flaw testing procedures

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NT RECTANGULAR WINGS

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