Boeing 737 Flight Management Computer Manual

Conference on Control Applications23rd DASCNASA SP.Preliminary Test Results of a Flight Management Algorithm for Fuel Conservative Descents in a Time Based Metered Traffic EnvironmentProceedings of the IEEE 1988 National Aerospace and Electronics Conference, NAECON 1988Airborne Four-dimensional Flight Management in a Time-based Air Traffic Control EnvironmentAeronautical EngineeringRadio-electronicsDevice Simulation ModelsThe Boeing 737 Technical GuideHEARINGS BEFORE THE COMMITTEE ON COMMERCE,SCIENCE,AND TRANSPORTATION UNITED STATES SENATE NINETY-FIFTH CONGRESSAIR CRASH INVESTIGATIONS, CAPTAIN LOST CONTROL The Crash of Kenya Airways Flight 507Cockpit Automation, Flight Systems Complexity, and Aircraft CertificationAircraft Engineering and Aerospace TechnologyAircraftFlight InternationalAstronautics & AeronauticsProceedingsICAO BulletinTest and Evaluation of a Multifunction Keyboard and a Dedicated Keyboard for Control of a Flight Management ComputerAviation Week & Space TechnologyResearch and Technology 19941980 Aircraft Safety and Operating ProblemsArmed Forces Journal InternationalInternational Aerospace AbstractsPakistan Hotel and Travel ReviewThe 1980 Aircraft Safety and Operating Problems, Part 1Boeing 737-100 and 200InteraviaSTAR, an Abstract JournalDevelopment and Test Results of a Flight Management Algorithm for Fuel-conservation Descents in a Time-based Metered Traffic EnvironmentA Collection of Technical Papers: AIAA 867-9770 - AIAA 86-9828 (with omissions in numbering)ProceedingsFault Tolerant Flight ControlNASA B737 Flight Test Results of the Total Energy Control SystemKnowledge-based Processing for Aircraft Flight ControlResearch and Experimentation Tax CreditDevelopment and Test Results of a Flight Management Algorithm for Fuel Conservative Descents in a Time-based Metered Traffic EnvironmentAvionics14th DASC Digital Avionics Systems Conference AIAA/IEEE

Conference on Control Applications

23rd DASC

The increasing complexity and automation of flight control systems pose a challenge to federal policy regarding aircraft certification and pilot training. Despite significant commercial aviation safety improvements over the past two decades, flight control automation and aircraft complexity have been cited as contributing factors in a number of major airline accidents, including two high-profile crashes overseas involving the recently introduced Boeing 737 Max variant in 2018 and 2019. These crashes have directed attention to Federal Aviation Administration (FAA) oversight of aircraft type certification and pilot training practices for transport category aircraft, particularly as they pertain to complex automated

flight control systems. As aircraft systems have evolved over the past three decades to incorporate new technologies, Congress has mandated FAA to streamline certification processes, with the primary motivation being to facilitate the development of new safety-enhancing technologies. Modern commercial aircraft rely on "fly-by-wire" flight control technologies, under which pilots' flight control inputs are sent to computers rather than through direct mechanical linkages to flight control systems. The fly-by-wire software contains flight control laws and logic that, in addition to optimizing performance efficiency, protect the aircraft from commanded actions that could put the airplane in an unsafe state. Automated flight control systems have largely been viewed as having a positive effect on safety, and accident rates have improved considerably over the past two decades. However, the increasing complexity of automated flight systems has sometimes caused confusion and uncertainty, contributing to improper pilot actions during critical phases of flight and in some cases leading pilots to unintentionally place an aircraft in an unsafe condition. Besides designing these systems in a manner that minimizes pilot errors and the consequences of those errors, aircraft designers and operators face challenges regarding maintaining piloting skills for flight crews to be able to take over and manually fly the aircraft safely if critical systems fail. They also face challenges regarding documentation and pilot training effectiveness in building accurate mental models of how these complex systems operate. The primary goals of ongoing efforts to address these challenges are to enhance pilot situation awareness when using automation and reduce the likelihood of mode errors and confusion, while at the same time not overburdening pilots with intricate systems knowledge beyond what is necessary. In the ongoing investigations of two Boeing 737 Max crashes, Lion Air flight 610 and Ethiopian Airlines flight 302, concerns have been raised about the design of an automated feature called the Maneuvering Characteristics Augmentation System (MCAS) and its reliance on a single angle-of-attack sensor even though the aircraft is equipped with two such sensors. These concerns led to the worldwide grounding of all Boeing 737 Max aircraft until the MCAS safety concerns can be resolved, significantly impacting both U.S. and foreign airlines that operate the aircraft. These recent aviation accidents have prompted reviews of the manner in which modern transport category aircraft are certified by FAA and its foreign counterparts, and in particular, the roles of regulators and manufacturers in the certification process. The challenges of certifying increasingly complex aircraft are largely being met by delegating more of FAA's certification functions to aircraft designers and manufacturers. This raises potential conflicts between safety and quality assurance on the one hand and competitive pressures to market and deliver aircraft on the other. Under Organization Designation Authorization (ODA), FAA can designate companies to carry out delegated certification functions on its behalf.

NASA SP.

A selection of annotated references to unclassified reports and journal articles that were introduced into the NASA scientific and technical information system and announced in Scientific and technical aerospace reports (STAR) and International aerospace abstracts (IAA).

Preliminary Test Results of a Flight Management Algorithm for Fuel Conservative Descents in a Time Based Metered Traffic Environment

Proceedings of the IEEE 1988 National Aerospace and Electronics Conference, NAECON 1988

Airborne Four-dimensional Flight Management in a Time-based Air Traffic Control Environment

During the night of 04th May 2007, the B737-800, registration 5Y-KYA, operated by Kenya Airways as flight KQA 507 from Abidjan international airport (C te d'Ivoire), to the Jomo Kenyatta airport Nairobi (Kenya), made a scheduled stop-over at the Douala international airport (Cameroon). The weather was stormy. A number of departing planes decided to wait for the weather to improve. Kenya Airways, however, decided to depart. Shortly after take-off at about 1000 ft, the aircraft entered into a slow right roll that increased continuously and eventually ended up in a spiral dive. On the 5th May 2007 at approximately 0008 hrs, the airplane crashed in a mangrove swamp South-South/East of Douala. All 114 people on board were killed and the airplane was completely destroyed. The airplane crashed after loss of control by the crew as a result of spatial disorientation, after a long slow roll, during which no instrument scanning was done, and in the absence of external visual references in a dark night.

Aeronautical Engineering

Radio-electronics

Device Simulation Models

Renamed to reflect the increased role of digital electronics in modern flight control systems, Cary Spitzer's industry-standard Digital Avionics Handbook, Second Edition is available in two comprehensive volumes designed to provide focused coverage for specialists working in different areas of avionics development. The second installment, Avionics: Development and Implementation explores the practical side of avionics. The book examines such topics as modeling and simulation,

electronic hardware reliability, certification, fault tolerance, and several examples of real-world applications. New chapters discuss RTCA DO-297/EUROCAE ED-124 integrated modular avionics development and the Genesis platform.

The Boeing 737 Technical Guide

HEARINGS BEFORE THE COMMITTEE ON COMMERCE,SCIENCE,AND TRANSPORTATION UNITED STATES SENATE NINETY-FIFTH CONGRESS

AIR CRASH INVESTIGATIONS, CAPTAIN LOST CONTROL The Crash of Kenya Airways Flight 507

Cockpit Automation, Flight Systems Complexity, and Aircraft Certification

Aircraft Engineering and Aerospace Technology

Aircraft

Flight International

Astronautics & Aeronautics

Proceedings

ICAO Bulletin

Written by leading experts in the field, this book provides the state-of-the-art in terms of fault tolerant control applicable to civil aircraft. The book consists of five parts and includes online material.

Test and Evaluation of a Multifunction Keyboard and a Dedicated Keyboard for Control of a Flight Management Computer

Aviation Week & Space Technology

Research and Technology 1994

1980 Aircraft Safety and Operating Problems

Color history examines the industry climate that led to the development of the 737-100 and the larger capacity -200 variant. Depicts a variety of global carriers from the 1960s to present.

Armed Forces Journal International

International Aerospace Abstracts

Pakistan Hotel and Travel Review

The 1980 Aircraft Safety and Operating Problems, Part 1

Boeing 737-100 and 200

Interavia

STAR, an Abstract Journal

Development and Test Results of a Flight Management Algorithm for Fuel-conservation Descents in a Time-based Metered Traffic Environment

A Collection of Technical Papers: AIAA 867-9770 - AIAA 86-9828 (with omissions in numbering)

Proceedings

This is an illustrated technical guide to the Boeing 737 aircraft. Containing extensive explanatory notes, facts, tips and points of interest on all aspects of this hugely successful airliner and showing its technical evolution from its early design in the 1960s through to the latest advances in the MAX. The book provides detailed descriptions of systems, internal and external components, their locations and functions, together with pilots notes and technical specifications. It is illustrated with over 500 photographs, diagrams and schematics.Chris Brady has written this book after many years developing the highly successful and informative Boeing 737 Technical Site, known throughout the world by pilots, trainers and engineers as the most authoritative open source of information freely available about the 737.

Fault Tolerant Flight Control

NASA B737 Flight Test Results of the Total Energy Control System

Knowledge-based Processing for Aircraft Flight Control

Research and Experimentation Tax Credit

Development and Test Results of a Flight Management Algorithm for Fuel Conservative Descents in a Time-based Metered Traffic Environment

Avionics

14th DASC Digital Avionics Systems Conference AIAA/IEEE