

## 737 Maintenance Planning Document

On March 10, 2019, at 05:38 UTC, Ethiopian Airlines flight 302, Boeing 737-8 (MAX), ET-AVJ, took off as a scheduled international flight, from Addis Ababa Bole International Airport bound to Nairobi, Kenya. It departed Addis Ababa with 157 persons on board: 2 flight crew (a Captain and a First Officer), 5 cabin crew and one IFSO, 149 regular passengers. The take-off roll and lift-off was normal, including normal values of left and right angle-of-attack (AOA). Shortly after liftoff, the left Angle of Attack sensor recorded value became erroneous and the left stick shaker activated and remained active until near the end of the recording. In addition, the airspeed and altitude values from the left air data system began deviating from the corresponding right side values. The left and right recorded AOA values began deviating. At 5:40:22, the second automatic nose-down trim activated. Following nose-down trim activation GPWS DON'T SINK sounded for 3 seconds and "PULL UP" also displayed on PFD for 3 seconds. The Captain was unable to maintain the flight path and requested to return back to the departure airport. At 05:43:21, an automatic nose-down trim activated for about 5 s. The stabilizer moved from 2.3 to 1 unit. The rate of climb decreased followed by a descent in 3 s after the automatic trim activation. The descent rate and the airspeed continued increasing. Computed airspeed values reached 500kt, pitch and descent rate values were greater than 33,000 ft/min. Finally; both recorders stopped recording at around 05: 44 the Aircraft impacted terrain 28 NM South East of Addis Ababa near Ejere. All 157 persons on board: 2 flight crew, 5 cabin crew and one IFSO, and 149 regular passengers were fatally injured. The crash of Ethiopian Airlines Flight 302 was, after the crash of Lion Air Flight 610 on October 29, 2018, the second crash of a Boeing 737 MAX 8 within a period of 4 months.

Many of the aircraft that form the backbone of the U.S. Air Force operational fleet are 25 years old or older. A few of these will be replaced with new aircraft, but many are expected to remain in service an additional 25 years or more. This book provides a strategy to address the technical needs and priorities associated with the Air Force's aging airframe structures. It includes a detailed summary of the structural status of the aging force, identification of key technical issues, recommendations for near-term engineering and management actions, and prioritized near-term and long-term research recommendations.

Microsoft Exchange Server 2010 Unleashed is the ultimate guide to designing, deploying, managing, troubleshooting, and supporting any Exchange Server 2010 environment, no matter how large or complex. Drawing on their extensive experience with hundreds of enterprise Exchange Server environments--including Exchange Server 2010 early adopters--the authors thoroughly cover every stage of the Exchange Server 2010 lifecycle. They present detailed recommendations, proven tips and tricks, and step-by-step techniques for implementation and migration planning, architecture, installation, administration, security, monitoring, integration, availability, optimization, and much more. Rand Morimoto and his expert colleagues also offer indispensable practical guidance for making the most of Microsoft Exchange Server 2010's many enhancements--from its improved web access to its enhanced support for Unified Communications and Mobility. Use proven best practices to plan your Exchange Server 2010 implementation Architect higher-performance, lower-cost enterprise Exchange Server environments Maximize the security of your Exchange Server infrastructure, transport, and messages Migrate smoothly from Exchange Server 2003/2007 and Active Directory 2000/2003 to Exchange Server 2010 and Active Directory 2008 Utilize Microsoft Operations Manager to monitor Exchange Server 2010 Use Windows PowerShell to streamline Exchange Server management Integrate other Microsoft technologies, including SharePoint 2007 and Office Communication Server 2007 Leverage the full capabilities of the Outlook Web App (OWA) client Provide robust messaging to non-Windows and non-Outlook systems Implement Exchange Server's powerful new Database Availability Group replication feature Back up Exchange Server 2010 environments and recover quickly from a disaster Systematically optimize Exchange Server 2010 environments, including storage

THE COMPLETE, UP-TO-DATE GUIDE TO MANAGING AIRCRAFT MAINTENANCE PROGRAMS Thoroughly revised for the latest aviation industry changes and FAA regulations, this comprehensive reference explains how to establish and run an efficient, reliable, and cost-effective aircraft maintenance program. Co-written by Embry-Riddle Aeronautical University instructors, Aviation Maintenance Management, Second Edition offers broad, integrated coverage of airline management, aircraft maintenance fundamentals, aviation safety, and the systematic planning and development of successful maintenance programs. LEARN HOW TO: Minimize service interruptions while lowering maintenance and repair costs Adhere to aviation industry certification requirements and FAA regulations Define and document maintenance activities Work with engineering and production, planning, and control departments Understand the training requirements for mechanics, technicians, quality control inspectors, and quality assurance auditors Identify and monitor maintenance program problems and trends Manage line and hangar maintenance Provide materiel support for maintenance and engineering Stay on top of quality assurance, quality control, reliability standards, and safety issues

. . . Eat not up your property among yourselves unjustly except it be a trade amongst you, by mutual consent . . . and help you one another in righteousness and piety. . . (Al-Hadid 4:29; Al-Ma'idah 5:2) There cannot be any doubt that the current financial crisis, which began in the US, has gone global. This realization has fuelled the fire of debate over globalization. Today's globalization is no longer the globalization that Theodore Levitt, a former professor at the Harvard Business School, described in 1983 in his world famous article "The Globalization of Markets." Although, in old days, Levitt and his successors had not seen globalization as an utopian state free of problems, nowadays globalization has been reshaped completely. Therefore, in the perception of the editors it is justified to use the phrase "Globalisation 2.0" for the range of effects interpenetrating global economic arrangements. Globalisation 1.0 will never be restored again. Since the subprime crisis made its way to the global arena in the year 2008,

companies and managers are confronted with the breathtaking speed of global, regional, and local changes. It is more than a provocation to divide developments into cause and effects. Forecasts in strategic management are no longer valid even for the moment they are published. Uncertainty occupies the driving seats in global, regional, and local oriented companies.

This book reports on cutting-edge theories and methods for analyzing complex systems, such as transportation and communication networks and discusses multi-disciplinary approaches to dependability problems encountered when dealing with complex systems in practice. The book presents the most noteworthy methods and results discussed at the International Conference on Reliability and Statistics in Transportation and Communication (RelStat), which took place in Riga, Latvia on October 16 – 19, 2019. It spans a broad spectrum of topics, from mathematical models and design methodologies, to software engineering, data security and financial issues, as well as practical problems in technical systems, such as transportation and telecommunications, and in engineering education.

New Materials for Next-Generation Commercial Transports National Academies Press

Amid a plethora of challenges, technological advances in science and engineering are inadvertently affecting an increased spectrum of today's modern life. Yet for all supplied products and services provided, robustness of processes, methods, and techniques is regarded as a major player in promoting safety. This book on systems reliability, which equally includes maintenance-related policies, presents fundamental reliability concepts that are applied in a number of industrial cases. Furthermore, to alleviate potential cost and time-specific bottlenecks, software engineering and systems engineering incorporate approximation models, also referred to as meta-processes, or surrogate models to reproduce a predefined set of problems aimed at enhancing safety, while minimizing detrimental outcomes to society and the environment.

Non-destructive evaluation (NDE) methods have dominated most of the fields of applied research and technology over the last twenty years. These techniques provide information on the functional efficiency of materials and structures without causing any structural impact on the structure itself. Their use enables the monitoring of the structural inte

Engineering Asset Management discusses state-of-the-art trends and developments in the emerging field of engineering asset management as presented at the Fourth World Congress on Engineering Asset Management (WCEAM). It is an excellent reference for practitioners, researchers and students in the multidisciplinary field of asset management, covering such topics as asset condition monitoring and intelligent maintenance; asset data warehousing, data mining and fusion; asset performance and level-of-service models; design and life-cycle integrity of physical assets; deterioration and preservation models for assets; education and training in asset management; engineering standards in asset management; fault diagnosis and prognostics; financial analysis methods for physical assets; human dimensions in integrated asset management; information quality management; information systems and knowledge management; intelligent sensors and devices; maintenance strategies in asset management; optimisation decisions in asset management; risk management in asset management; strategic asset management; and sustainability in asset management.

February issue includes Appendix entitled Directory of United States Government periodicals and subscription publications; September issue includes List of depository libraries; June and December issues include semiannual index

In this book the authors provide a fresh look at basic reliability and maintainability engineering techniques and management tools for application to the system maintenance planning and implementation process. The essential life-cycle reliability centered maintenance (ReM) activities are focused on maintenance planning and the prevention of failure. The premise is that more efficient, and therefore effective, life-cycle maintenance programs can be established using a well disciplined decision logic analysis process that addresses individual part failure modes, their consequences, and the actual preventive maintenance tasks. This premise and the techniques and tools described emphasize preventive, not corrective, maintenance. The authors also describe the techniques and tools fundamental to maintenance engineering. They provide an understanding of the inter relationships of the elements of a complete ReM program (which are applicable to any complex system or component and are not limited only to the aircraft industry). They describe special methodologies for improving the maintenance process. These include an on-condition maintenance (OeM) methodology to identify defects and potential deterioration which can determine what is needed as a maintenance action in order to prevent failure during use.

On July 17, 1996, about 2031 eastern daylight time, Trans World Airlines, Inc. (TWA) flight 800, a Boeing 747, crashed in the Atlantic Ocean near East Moriches, New York. TWA flight 800 was a scheduled international passenger flight from John F. Kennedy International Airport (JFK), New York, New York, to Charles DeGaulle International Airport, Paris, France. All 230 people on board were killed, and the airplane was destroyed. The weather was good. The National Transportation Safety Board determines that the probable cause of the accident was an explosion of the center wing fuel tank, resulting from ignition of the flammable fuel/air mixture in the tank. Contributing factors to the accident were the design and certification concept that fuel tank explosions could be prevented solely by precluding all ignition sources and the design and certification of the Boeing 747. The safety issues in this report focus on fuel tank flammability.

On 14 August 2005, a Boeing 737-300 aircraft departed from Larnaca, Cyprus, for Prague. As the aircraft climbed through 16,000 ft, the Captain contacted the company Operations Centre and reported a Take-off Configuration Warning and an Equipment Cooling System problem. Thereafter, there was no response to radio calls to the aircraft. At 07:21 h, the aircraft was intercepted by two F-16 aircraft of the Hellenic Air Force. They observed the aircraft and reported no external damage. The aircraft continued descending and crashed approximately 33 km northwest of the Athens International Airport. All 121 people on board were killed.

The major objective of this book was to identify issues related to the introduction of new materials and the effects that advanced materials will have on the durability and technical risk of future civil aircraft throughout their service life. The committee investigated the new materials and structural concepts that are likely to be incorporated into next generation commercial aircraft and the factors influencing application decisions. Based on these predictions, the committee attempted to identify the design, characterization, monitoring, and maintenance issues that are critical for the introduction of advanced materials and structural concepts into future aircraft.

This unique resource covers aircraft maintenance program development and operations from a managerial as well as technical perspective. Readers will learn how to save money by minimizing aircraft downtime and slashing maintenance and repair costs. \* Plan and control maintenance \* Coordinate activities of the various work centers \* Establish an initial maintenance program \* Develop a systems concept of maintenance \* Identify and monitor maintenance problems and trends

The Boeing 737 has a history of rudder system-related anomalies, including numerous instances of jamming. A number of accidents and incidents were the result of the airplanes' unexpected movement of their rudders. During the course of the four and a half year investigation of the crash of USAir Flight 427 near Aliquippa, Pennsylvania, killing 132 people, the NTSB discovered that the PCU's dual servo valve could jam as well as deflect the rudder in the opposite direction of the pilots' input, due to thermal shock, caused when cold PCUs are injected with hot hydraulic fluid. This finally solved the mystery of sudden jamming of the rudders of this aircraft.

The Code of Federal Regulations is the codification of the general and permanent rules published in the Federal Register by the executive departments and agencies of the Federal Government.

Special edition of the Federal register, containing a codification of documents of general applicability and future effect as of Jan. ... with ancillaries.

Reliability Based Aircraft Maintenance Optimization and Applications presents flexible and cost-effective maintenance schedules for aircraft structures, particular in composite airframes. By applying an intelligent rating system, and the back-propagation network (BPN) method and FTA technique, a new approach was created to assist users in determining inspection intervals for new aircraft structures, especially in composite structures. This book also discusses the influence of Structure Health Monitoring (SHM) on scheduled maintenance. An integrated logic diagram establishes how to incorporate SHM into the current MSG-3 structural analysis that is based on four maintenance scenarios with gradual increasing maturity levels of SHM. The inspection intervals and the repair thresholds are adjusted according to different combinations of SHM tasks and scheduled maintenance. This book provides a practical means for aircraft manufacturers and operators to consider the feasibility of SHM by examining labor work reduction, structural reliability variation, and maintenance cost savings. Presents the first resource available on airframe maintenance optimization Includes the most advanced methods and technologies of maintenance engineering analysis, including first application of composite structure maintenance engineering analysis integrated with SHM Provides the latest research results of composite structure maintenance and health monitoring systems

Accelerated SQL Server 2008 is a fast introduction to SQL Server 2008 for experienced database professionals. The book will appeal to readers who are smart, who learn fast, and who do not want to wade through a large amount of introductory material. The goal is to impart the essentials of using SQL Server 2008 as quickly as possible.

En gennemgang af vedligeholdelsen af luftfartøjer og kravene hertil. Egnede som lærebog.

Aircraft Financing and Leasing: Tools for Success in Aircraft Acquisition and Management provides researchers, industry professionals and students with a thorough overview of the skills necessary for navigating this dynamic field. The book details the industry's foundational concepts, including aviation law and regulation, airline credit analysis, maintenance reserves, insurance, transaction cost modeling, risk management tools, such as fuel hedging, and the art of lease negotiations. Different types of aircraft are explored, highlighting their purposes, as well as when and why airline operators choose specific models over others. In addition, the book also covers important factors, such as maintenance reserve development, modeling financial returns for leased aircraft, and appraising aircraft values. Most chapters feature detailed case studies, applying concepts to actual industry circumstances. Users will find this an ideal resource for practitioners or as an outstanding reference for senior undergraduate and graduate students. Presents the foundations of aircraft leasing and financing, including aviation law and regulation, airline credit analysis, maintenance reserves, insurance, transaction cost modeling, and more Provides an overview of the different types of aircraft, their purposes, and when and why operators choose specific models over others Offers a blend of academic and professional views, making it suitable for both student and practitioner Serves as an aircraft finance and leasing reference for those starting their careers, as well as for legal, investment, and other professionals

Harness the power of SQL Server, Microsoft's high-performance database and data analysis software package, by accessing everything you need to know in Microsoft SQL Server 2008 Bible. Learn the best practices, tips, and tricks from this comprehensive tutorial and reference, which includes specific examples and sample code, with nearly every task demonstrated in both a graphical and SQL code method. Understand how to develop SQL Server databases and data connections, how to administer the SQL Server and keep databases performing optimally, and how to navigate all the new features of the 2008 release.

The 8th International Conference on Fracture (ICF8), held in Kyiv, Ukraine, attracted 550 delegates from 30 countries with over 700 papers presented. This volume contains a representative selection of 72 articles of the highest standard from internationally renowned experts in the field. Principal topics covered include: mechanics and criteria of fracture, stress-strain analysis in solids with cracks, physics and mechanics of fracture, dynamic fracture, environmental effects, temperature influence on fracture, advanced and special-purpose materials engineering applications of fracture mechanics, fracture mechanics and strength of welded joints and structures, testing techniques and failure diagnostics. For anyone working in fracture mechanics and the performance of materials, this volume provides a valuable snapshot of the major recent developments in the field.

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