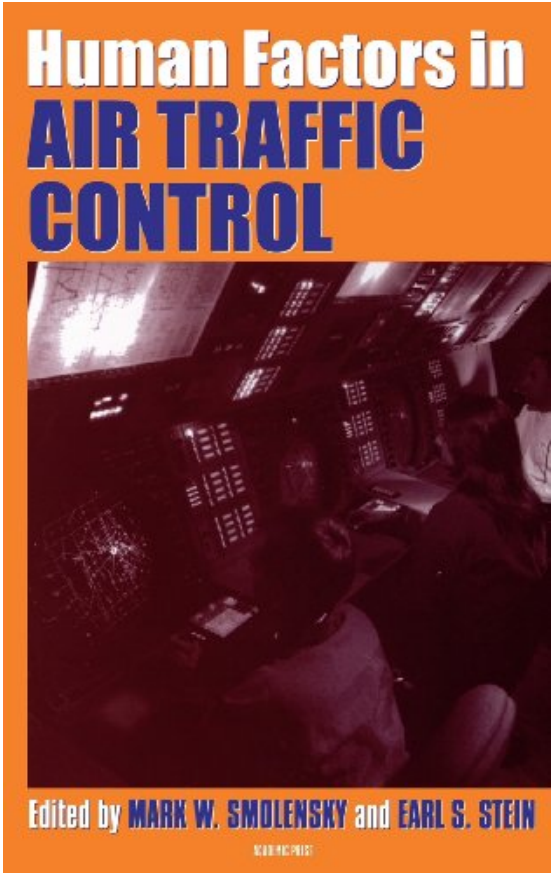

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Human Factors In Air Traffic Control-V. D. Hopkin 2017-11-22 This text discusses the skills and abilities that air-traffic controllers need. Its approach is international as air-traffic control practices throughout the world have to be mutually compatible and agreed.

Human Factors in Air Traffic Control-Mark W. Smolensky 1998-04 The study of human factors has progressed greatly in the past 10 years, particularly with regard to the literature available in applied areas. The authors of this text focus on the most important aspects of this literature--the increasing concern over the deregulation of airlines and the increase in aviation accidents. The book covers general system safety, human perception, information processing, and cognitive load capacity during air traffic control performance, as well as team coordination, selection and training of personnel, work station and software design, and communication issues.

Human Factors Impacts in Air Traffic Management-Barry Kirwan 2005 This book provides case studies including training methods, human error, team resource management, situation assessment, terminal automation replacement systems, collaborative decision-making to improve the effectiveness of traffic-flow management and the role of human factors in ATM. It outlines how human factors study evolved, what it entailed, how it was resourced and how results have contributed to operational performance.

Air Traffic Control: Human Performance Factors-Anne R. Isaac 2017-03-02 From the Foreword by Captain Daniel Maurino, ICAO: '...Air Traffic Control...will remain a technology-intensive system. People (controllers) must harmoniously interact with technology to contribute to achieve the aviation system’s goals of safe and efficient transportation of passengers and cargo...This book...considers human error and human factors from a contemporary and operational perspective and discusses the parts as well as the whole...I hope you enjoy reading it as much as I did.' The motivation for writing this book comes from the author’s long standing belief that the needs of Air Traffic Service personnel are inadequately represented in the

aviation literature. There are few references to air traffic control in many of the books written for pilots and about pilots and this is also observed at the main international conferences. In line with the ICAO syllabus for human factors training for air traffic controllers, the book covers the main issues in air traffic control, with regard to human performance: physiology including stress, fatigue and shift work problems; psychology with emphasis on human error and its management, social psychology including issues of communication and working in teams, the environment including ergonomic principles and working with new technologies and hardware and software issues including the development of documentation and procedures and a study of the changes brought about by advanced technologies. Throughout the text there are actual examples taken from the air traffic control environment to illustrate the issues discussed. A full bibliography is included for those who want to read beyond these issues. It has been written for all in air traffic services, from ab initio to the boardroom; it is important that the men and women in senior management positions have some knowledge and awareness of the fundamental problems that limit and enhance human performance.

Flight to the Future-National Research Council 1997-02-28 Despite the strong safety record of the national airspace system, serious disruptions occasionally occur, often as a result of outdated or failed equipment. Under these circumstances, safety relies on the skills of the controllers and pilots and on reducing the number of aircraft in the air. The current and growing pressures to increase the capacity to handle a greater number of flights has led to a call for faster and more powerful equipment and for equipment that can take over some of the tasks now being performed by humans. Increasing the role of automation in air traffic control may provide a more efficient system, but will human controllers be able to effectively take over when problems occur? This comprehensive volume provides a baseline of knowledge about the capabilities and limitations

of humans relative to the variety of functions performed in air traffic control. It focuses on balancing safety with the expeditious flow of air traffic, identifying lessons from past air accidents. The book discusses The function of the national airspace system and the procedures for hiring, training, and evaluating controllers. Decisionmaking, memory, alertness, vigilance, sleep patterns during shift work, communication, and other factors in controllers' performance. Research on automation and human factors in air traffic control and incorporation of findings into the system. The Federal Aviation Administration's management of the air traffic control system and its dual mandate to promote safety and the development of air commerce. This book also offers recommendations for evaluation the human role in automated air traffic control systems and for managing the introduction of automation into current facilities and operations. It will be of interest to anyone concerned about air safety--policymakers, regulators, air traffic managers and controllers, airline officials, and passenger advocates.

Human Factors in Air Transport-Erik Seedhouse 2019-08-28 This textbook provides students and the broader aviation community with a complete, accessible guide to the subject of human factors in aviation. It covers the history of the field before breaking down the physical and psychological factors, organizational levels, technology, training, and other pivotal components of a pilot and crew's routine work in the field. The information is organized into easy-to-digest chapters with summaries and exercises based on key concepts covered, and it is supported by more than 100 full-color illustrations and photographs. All knowledge of human factors required in aviation university studies is conveyed in a concise and casual manner, through the use of helpful margin notes and anecdotes that appear throughout the text.

Human Factors in Aviation-Earl L. Wiener 1988 Human Factors in Aviation, written for the

widespread aviation community--engineers, scientist, pilots, managers, government personnel, and others--is also be of interest to those in nonaviation fields. The authors/contributors were chosen not only as experts in their fields, but because they could write for a wider audience than they customarily address. The organization of the book takes the reader from the general to the specific, first covering broad issues, then the more specific topics of pilot performance, human factors in aircraft design, and vehicles and systems. The physiological and medical aspects are well documented also.

Human Factors in Aviation-Eduardo Salas 2010-01-30 This edited textbook is a fully updated and expanded version of the highly successful first edition of Human Factors in Aviation. Written for the widespread aviation community - students, engineers, scientists, pilots, managers, government personnel, etc., HFA offers a comprehensive overview of the topic, taking readers from the general to the specific, first covering broad issues, then the more specific topics of pilot performance, human factors in aircraft design, and vehicles and systems. The new editors offer essential breath of experience on aviation human factors from multiple perspectives (i.e. scientific research, regulation, funding agencies, technology, and implementation) as well as knowledge about the science. The contributors are experts in their fields. Topics carried over from the first edition are fully updated, several by new authors who are now at the fore of the field. New material - which represents 50% of the volume - focuses on the challenges facing aviation specialists today. One of the most significant developments in this decade has been NextGen, the Federal Aviation Administration's plan to modernize national airspace and to address the impact of air traffic growth by increasing airspace capacity and efficiency while simultaneously improving safety, environmental impacts and user access. NextGen issues are covered in full. Other new topics include: High Reliability Organizational

Perspective, Situation Awareness & Workload in Aviation, Human Error Analysis, Human-System Risk Management, LOSA, NOSS and Unmanned Aircraft System. Comprehensive text with up-to-date synthesis of primary source material that does not need to be supplemented New edition thoroughly updated with 50% new material and full coverage of NexGen and other modern issues Instructor website with test bank and image collection makes this the only text offering ancillary support Liberal use of case examples exposes readers to real-world examples of dangers and solutions

Handbook of Aviation Human Factors-John A. Wise 2016-04-19 A complete examination of issues and concepts relating to human factors in simulation, this book covers theory and application in space, ships, submarines, naval aviation, and commercial aviation. The authors examine issues of simulation and their effect on the validity and functionality of simulators as a training device. The chapters contain in d

The Future of Air Traffic Control-National Research Council 1998-01-26 Automation in air traffic control may increase efficiency, but it also raises questions about adequate human control over automated systems. Following on the panel's first volume on air traffic control automation, Flight to the Future (NRC, 1997), this book focuses on the interaction of pilots and air traffic controllers, with a growing network of automated functions in the airspace system. The panel offers recommendations for development of human-centered automation, addressing key areas such as providing levels of automation that are appropriate to levels of risk, examining procedures for recovery from emergencies, free flight versus ground-based authority, and more. The book explores ways in which technology can build on human strengths and compensate for human vulnerabilities, minimizing both mistrust of automation and complacency about its abilities. The panel presents an overview of emerging technologies and trends toward

automation within the national airspace system--in areas such as global positioning and other aspects of surveillance, flight information provided to pilots an controllers, collision avoidance, strategic long-term planning, and systems for training and maintenance. The book examines how to achieve better integration of research and development, including the importance of user involvement in air traffic control. It also discusses how to harmonize the wide range of functions in the national airspace system, with a detailed review of the free flight initiative.

Cognitive Engineering and Safety Organization in Air Traffic Management-Tom Kontogiannis 2017-10-17 This book covers the Air Traffic Management (ATM) environment and the controller-crew interactions. The International Civil Aviation Organization (ICAO) regulations and organizational procedures are also presented in a succinct manner so that novel and experienced aviation practitioners appreciate how safety organization affects their cognitive performance. The book distills theoretical knowledge about human cognition and presents real examples and case studies to help readers understand how air traffic controllers make sense of difficult situations, make decisions under time pressure, detect and correct their errors, and adapt their performance to complex situations.

Handbook of Human Factors in Air Transportation Systems-Steven James Landry 2017-11-22 One of the primary applications of human factors engineering is in the aviation domain, and the importance of human factors has never been greater as U.S. and European authorities seek to modernize the air transportation system through the introduction of advanced automation. This handbook provides regulators, practitioners, researchers, and educators a comprehensive resource for understanding and applying human factors to air transportation.

Human Factors in Multi-Crew Flight Operations-HarryW. Orlady 2017-07-05 With the pace of ongoing technological and teamwork evolution across air transport, there has never been a greater need to master the application and effective implementation of leading edge human factors knowledge. Human Factors in Multi-Crew Flight Operations does just that. Written from the perspective of the well-informed pilot it provides a vivid, practical context for the appreciation of Human Factors, pitched at a level for those studying or engaged in current air transport operations. Features Include: - A unique seamless text, intensively reviewed by subject specialists. - Contemporary regulatory requirements from ICAO and references to FAA and JAA. - Comprehensive detail on the evolutionary development of air transport Human Factors. - Key statistics and analysis on the size and scope of the industry. - In-depth demonstration of the essential contribution of human factors in solving current aviation problems, air transport safety and certification. - Future developments in human factors as a 'core technology'. - Extensive appendices, glossary and indexes for ease of reference. The only book available to map the evolution, growth and future expansion of human factors in aviation, it will be the text for pilots and flight attendants and an essential resource for engineers, scientists, managers, air traffic controllers, regulators, educators, researchers and serious students.

Human Factors in Transportation-Giuseppe Di Bucchianico 2016-09-19 More and more the most traditional and typical applied ergonomics issues of the activities related to sea shipping, vehicle driving, and flying are required to deal with some emerging topics related to the growing automatism and manning reduction, the ICT’s advances and pervasiveness, and the new demographic and social phenomena, such as aging or multiculturalism. With contributions from expert researchers, professionals, and doctoral students from a wide number of

countries such as Australia, Austria, Canada, Italy, Germany, the Netherlands, Norway, Sweden, UK and USA, this multi-contributed book will explore traditional and emerging topics of Human Factors centered around the maritime, road, rail, and aviation transportation domains.

Human Factors in the Training of Pilots-Jefferson M. Koonce 2002-05-23 In this educational yet entertaining text, Jeff Koonce draws on his 44 years of pilot experience and 31 years as a professor of psychology and human factors engineering in addressing the questions of how to apply sound human factors principles to the training of pilots and to one's personal flying. The author discusses principles of human factors, and how they can be utilized in pilot training and evaluation. With a conversational tone, he also relates anecdotes, jokes, and truisms collected during his time as a flight instructor. He takes a positive approach to the subject, focusing on safety and good practice rather than on accidents. While problem areas are acknowledged, and the book points out how certain problems may result in mishaps, the author avoids focusing on individual accidents. Human Factors in the Training of Pilots is a must for pilots wanting to make a systematic study of the human factors issues behind safe flying, and for instructors or serious students needing an authoritative text.

Contemporary Issues in Human Factors and Aviation Safety-Helen C. Muir 2017-03-02 Every issue of Ashgate's Human Factors and Aerospace Safety: An International Journal publishes an invited, critical review of a key area from a widely-respected researcher. To celebrate a successful first three years of the journal and to make these papers available to a wider audience, they have been collated here into a single volume. The book is divided into three sections, with articles addressing safety issues in flight deck design, aviation operations and training, and air traffic management. These articles describe the state of current research within a

practical context and present a potential future research agenda. Contemporary Issues in Human Factors and Aviation Safety will appeal to both professionals and researchers in aviation and associated industries who are interested in learning more about current issues in flight safety.

Human Factors Digest No. 8: Human Factors Air Traffic Control-International Civil Aviation Organization 1993

Aviation Automation-Charles E. Billings 2018-01-29 The advent of very compact, very powerful digital computers has made it possible to automate a great many processes that formerly required large, complex machinery. Digital computers have made possible revolutionary changes in industry, commerce, and transportation. This book, an expansion and revision of the author's earlier technical papers on this subject, describes the development of automation in aircraft and in the aviation system, its likely evolution in the future, and the effects that these technologies have had -- and will have -- on the human operators and managers of the system. It suggests concepts that may be able to enhance human-machine relationships in future systems. The author focuses on the ability of human operators to work cooperatively with the constellation of machines they command and control, because it is the interactions among these system elements that result in the system's success or failure, whether in aviation or elsewhere. Aviation automation has provided great social and technological benefits, but these benefits have not come without cost. In recent years, new problems in aircraft have emerged due to failures in the human-machine relationship. These incidents and accidents have motivated this inquiry into aviation automation. Similar problems in the air traffic management system are predicted as it becomes more fully automated. In particular, incidents and accidents have occurred which suggest that the principle problems with today's aviation automation are

associated with its complexity, coupling, autonomy, and opacity. These problems are not unique to aviation; they exist in other highly dynamic domains as well. The author suggests that a different approach to automation -- called "human-centered automation" -- offers potential benefits for system performance by enabling a more cooperative human-machine relationship in the control and management of aircraft and air traffic.

Improving the Continued Airworthiness of Civil Aircraft-National Research Council 1998-09-11 As part of the national effort to improve aviation safety, the Federal Aviation Administration (FAA) chartered the National Research Council to examine and recommend improvements in the aircraft certification process currently used by the FAA, manufacturers, and operators.

Advances in Human Aspects of Aviation-Steven J. Landry 2012-07-11 Since the very earliest years of aviation, it was clear that human factors were critical to the success and safety of the system. As aviation has matured, the system has become extremely complex. Bringing together the most recent human factors work in the aviation domain, Advances in Human Aspects of Aviation covers the design of aircrafts for the comfort and well being of the passenger. The book discusses strategies and guidelines for maximizing comfort, the design of aircrafts including cockpit design, and the training and work schedules for flight attendants and pilots. It is becoming increasingly important to view problems not as isolated issues that can be extracted from the system environment, but as embedded issues that can only be understood as a part of an overall system. In keeping with a system that is vast in its scope and reach, the chapters in this book cover a wide range of topics, including: Interface and operations issues from the perspectives of pilots and air traffic controllers, respectively. Specific human performance issues, studied from within the

context of the air transportation system Issues related to automation and the delineation of function between automation and human within the current and future system The U.S. air traffic modernization effort, called NextGen Diverse modeling perspectives and methods Safety and ethics as driving factors for change Cognition and work overload Empirical research and evaluation of the air transportation domain As air traffic modernization efforts begin to vastly increase the capacity of the system, the issues facing engineers, scientists, and other practitioners of human factors are becoming more challenging and more critical. Reflecting road themes and trends in this field, the book documents the latest research in this area.

A Human Error Approach to Aviation Accident Analysis-Douglas A. Wiegmann 2017-12-22 Human error is implicated in nearly all aviation accidents, yet most investigation and prevention programs are not designed around any theoretical framework of human error. Appropriate for all levels of expertise, the book provides the knowledge and tools required to conduct a human error analysis of accidents, regardless of operational setting (i.e. military, commercial, or general aviation). The book contains a complete description of the Human Factors Analysis and Classification System (HFACS), which incorporates James Reason's model of latent and active failures as a foundation. Widely disseminated among military and civilian organizations, HFACS encompasses all aspects of human error, including the conditions of operators and elements of supervisory and organizational failure. It attracts a very broad readership. Specifically, the book serves as the main textbook for a course in aviation accident investigation taught by one of the authors at the University of Illinois. This book will also be used in courses designed for military safety officers and flight surgeons in the U.S. Navy, Army and the Canadian Defense Force, who currently utilize the HFACS system during aviation accident investigations. Additionally, the book has been incorporated into the popular

workshop on accident analysis and prevention provided by the authors at several professional conferences world-wide. The book is also targeted for students attending Embry-Riddle Aeronautical University which has satellite campuses throughout the world and offers a course in human factors accident investigation for many of its majors. In addition, the book will be incorporated into courses offered by Transportation Safety International and the Southern California Safety Institute. Finally, this book serves as an excellent reference guide for many safety professionals and investigators already in the field.

Applied Human Factors in Aviation Maintenance-Manoj S. Patankar 2017-07-05 Considering the global awareness of human performance issues affecting maintenance personnel, there is enough evidence in the US ASRS reports to establish that systemic problems such as impractical maintenance procedures, inadequate training, and the safety versus profit challenge continue to contribute toward latent failures. Manoj S. Patankar and James C. Taylor strongly believe in incorporating the human factors principles in aviation maintenance. In this, their second of two volumes, they place particular emphasis on applying human factors principles in a book intended to serve as a practical guide, as well as an academic text. Features include: - A real 'how to' approach that serves as a companion to the previous volume: 'Risk Management and Error Reduction in Aviation Maintenance'. - Self-reports of maintenance errors used throughout to illustrate the systemic susceptibility for errors as well as to discuss corresponding solutions. - Two tools - a pre-task scorecard and a post-task scorecard - introduced as means to measure individual as well as organizational safety performance. - Interpersonal trust and professionalism explored in detail. - Ethical and procedural issues associated with collection and analysis of both qualitative as well as quantitative safety data discussed. The intended readership includes aviation maintenance personnel, e.g. FAA-type

aircraft mechanics, CAA-type aircraft maintenance engineers, maintenance managers, regulators, and aviation students.

Misunderstandings in ATC Communication-Immanuel Barshi 2016-04-22 Effective radio communication between ATC and pilots has long been recognized as an important element of aviation safety. In recognition of the role miscommunications play in aviation incidents and accidents, the International Civil Aviation Organization (ICAO) recently introduced language proficiency requirements for all flight personnel in all ICAO member states. Using an effective and economical experimental paradigm, the research described here teases apart the complex combination of factors (e.g. speech rate, controller message length, English language proficiency, cognitive workload) believed to contribute to miscommunications between controllers and pilots. Misunderstandings in ATC Communication offers an in-depth report of a seminal study in aviation communication, which until now has only been available in the form of an unpublished dissertation. In addition, it offers a recent extension of that work, the authors' reflections on the research process, and a thorough review of the aviation communication literature. Graduate students and researchers who wish to address real-world problems will appreciate the simple elegance of the experimental paradigm that has been used to address a wide range of theoretical and applied interdisciplinary research questions. The book will appeal to scholars in the fields of human factors, linguistics, cognitive psychology, applied linguistics and second-language education and assessment. It is also of direct relevance to government and industry decision-makers and operators as they strive to implement the ICAO requirements, and to improve aviation safety.

Human Factors and Aerospace Safety-Helen Muir 2018-10-26 This title was first published in 2003. An international journal targeted specifically at the study of the human element in

the aerospace system, and its role in either avoiding or contributing to accidents and incidents, and in promoting safe operations. The journal contains both formal research and practitioner papers, describing new research in the area of human factors and aerospace safety, and activities such as successful safety and regulatory initiatives or accident case studies. In every issue there is also an invited position paper by an internationally respected author, providing a critical overview of a particular area of human factors and aerospace safety, with the aim of developing theory and setting a research agenda for the future. Other features of the journal include: a critical incidents section describing recent aviation incidents with human factors root causes, a calendar of events, listing forthcoming international conferences, seminars and workshops of interest to the reader, and occasional book reviews.

Aviation Safety, Human Factors - System Engineering - Flight Operations - Economics - Strategies - Management-Hans M. Soekkha 2020-03-26 Questions concerning safety in aviation attract a great deal of attention, due to the growth in this industry and the number of fatal accidents in recent years. The aerospace industry has always been deeply concerned with the permanent prevention of accidents and the conscientious safeguarding of all imaginable critical factors surrounding the organization of processes in aeronautical technology. However, the developments in aircraft technology and control systems require further improvements to meet future safety demands. This book embodies the proceedings of the 1997 International Aviation Safety Conference, and contains 60 talks by internationally recognized experts on various aspects of aviation safety. Subjects covered include: Human interfaces and man-machine interactions; Flight safety engineering and operational control systems; Aircraft development and integrated safety designs; Safety strategies relating to risk insurance and economics; Corporate aspects and safety management factors --- including airlines

services and airport security environment.

Human Factors and Ergonomics in Practice-Steven Shorrock 2016-11-18 This edited book concerns the real practice of human factors and ergonomics (HF/E), conveying the perspectives and experiences of practitioners and other stakeholders in a variety of industrial sectors, organisational settings and working contexts. The book blends literature on the nature of practice with diverse and eclectic reflections from experience in a range of contexts, from healthcare to agriculture. It explores what helps and what hinders the achievement of the core goals of HF/E: improved system performance and human wellbeing.?The book should be of interest to current HF/E practitioners, future HF/E practitioners, allied practitioners, HF/E advocates and ambassadors, researchers, policy makers and regulators, and clients of HF/E services and products.

Aviation Psychology in Practice-Neil Johnston 2017-09-29 This book seeks to extend the boundaries of aviation psychology in two interrelated ways: by broadening the focus of aviation psychology beyond the flight deck to the whole aviation system; and by discussing new theoretical developments which are shaping this applied discipline. A key feature of these theoretical advances is that they are grounded in a more developed, ecologically valid, understanding of practice. Among the issues addressed in this new integration of theory and practice are the following: what goes on in the flight deck is dependent on the wider organisational context; human factors issues in aircraft maintenance and grounding are critical to aviation safety; our capacity to learn from aviation accidents and incidents needs to be supported by more systematic human factors investigation and research; we must also develop our understanding of the human factors of accident survival as well as accident prevention; theories of crew coordination and decision making must be supported by an analysis of how

decisions are actually made in the real world with all its stresses and constraints; training should be grounded in a thoroughgoing analysis of the complexity of the job and a full understanding of the training process itself. The text will be of interest to human factors researchers and practitioners in aviation and related areas. It will be of particular relevance to those who have a role in training, management or regulation throughout the aviation system.

Mechanisms in the Chain of Safety-Alexander J. de Voogt 2012 Contemporary approaches to aviation safety show a dynamic endeavour to identify a variety of components that minimize the emergence of adverse situations. In this process there has always been a strong interrelation between these components and it allows us to talk about a chain of safety. This volume presents the most recent efforts in this chain of safety streaming from both the industry and academia, as well as the future challenges for operational settings.

Aerospace Clinical Psychology-Raymond E. King 2017-03-02 Flight training and flying are hazardous activities that demand the most of human operators, whether they be pilots or other factors (maintainers, air traffic controllers, managers, regulators) involved in the complex aviation system. 'Aerospace Clinical Psychology' serves as a handbook for dealing with aviators and other operators, those seen as patients as well as those functioning 'normally', who none-the-less wish to improve their performance. This book has much to offer the audiences who intersect the Human Factors and clinical areas of aviation and operators in extreme environments. It deftly defines specific touchstone areas such as selection, training, accident investigation, measurement and testing, and practical interventions. The little-margin-for-error realm of aviation exposes operators to stress and risk on a daily basis. 'Aerospace Clinical Psychology' provides a blueprint for combining the talents of clinical psychologists with flight surgeons and

Human Factors practitioners to enhance safety and efficiency.

Beyond Aviation Human Factors-Daniel E. Maurino 2017-03-02 The authors believe that a systematic organizational approach to aviation safety must replace the piecemeal approaches largely favoured in the past, but this change needs to be preceded by information to explain why a new approach is necessary. Accident records show a flattening of the safety curve since the early Seventies: instead of new kinds of accident, similar safety deficiencies have become recurrent features in accident reports. This suggests the need to review traditional accident prevention strategies, focused almost exclusively on the action or inaction's of front-line operational personnel. The organizational model proposed by the authors is one alternative means to pursue safety and prevention strategies in contemporary aviation; it is also applicable to other production systems. The model argues for a broadened approach, which considers the influence of all organizations (the blunt end) involved in aviation operations, in addition to individual human performance (the sharp end). If the concepts of systems safety and organizational accidents are to be advanced, aviation management at all levels must be aware of them. This book is intended to provide a bridge from the academic knowledge gained from research, to the needs of practitioners in aviation. It comprises six chapters: the fundamentals, background and justification for an organizational accident causation model to the flight deck, maintenance and air traffic control environments. The last chapter suggest different ways to apply the model as a prevention tool which furthermore enhances organizational effectiveness. The value of the organizational framework pioneered by Professor Reason in analyzing safety in high-technology production systems is felt by his co-authors to have an enduring role to play, both now and in coming decades. Applied now in this book, it has been adopted by ICAO, IFATCA, IMO, the US National Transportation Safety Board, the Transportation

Safety B

Flight Stress-Alan F. Stokes 2017-03-02 While stress and fatigue are often dealt with in other books on aviation performance and human factors, these realities of human vulnerability are now increasingly seen as central to the effective conduct of flight operations. Flight Stress provides a comprehensive treatment and a better understanding of stress and fatigue as they relate to aviation. It clarifies and distinguishes the concepts of stress and fatigue as they apply to flight, and expounds sufficient theory to provide a principled basis for the consideration and amelioration of stress effects in aviation. The authors examine what is known of the effects of stress from both laboratory and operational studies and detail the aspects of this knowledge to which aviation professionals should pay most attention. They go on to discuss the implications of stress and fatigue for performance in a range of aviation contexts, from air traffic control to aerial combat. Physiological, cognitive and medical sequel are explored. The book locates aviation related work, in its broader research context, critically reviewing and illustrating the work, with examples from accident and incident reports. It is substantive but accessible, since it both sets out the research base and provides plenty of 'real world' examples to leaven and illustrate the narrative. It thus provides an authoritative handbook for aviation professionals and a comprehensive source book and reference work for researchers. The readership includes aviation professionals and researchers, including medical personnel and registered Aviation Medical Examiners; psychologists and Human Factors specialists; training captains, senior pilots and engineers; air traffic controllers, dispatchers and operations staff.

Human Factors on the Flight Deck-Hans-Joachim Ebermann 2012-12-15 What is for a professional pilot required to fly as safe as possible? Written by pilots the book gives a detailed introduction into the basics of accident

prevention in air traffic. Explicit background knowledge as well as detailed listings of safety relevant features in human behaviour are included.

Developing the Future Aviation System-Rod Baldwin 2017-03-02 The major changes taking place in technology have some of the greatest effect in the world of aviation. Yet, in an industry which started with the concept of 'open skies', each sector has traditionally developed on its own and adjusted to developments in other areas as and when required. The need for integration is particularly important as the skies become increasingly crowded. More intense commercialization dramatically increases the interlocking between technological developments and the size of the financial investments required. For maximum efficiency the aviation system thus has to develop as an integrated whole with a greater awareness of events in other sectors. This book is intended to meet this requirement by addressing the breadth and depth of the aviation system and looking at some areas where significant advances are happening. While following the processes of development, the reader will see where the results might lead in the new century. Its three parts concentrate on areas of great significance - in integration as well as in technological progress - especially for their impact on human and social aspects. The editor and the invited contributors are amongst the foremost experts, researchers and industry leaders in their fields in the global aviation community, many with hands-on experience of massive change. The intended readership includes those who are moving into management functions in air traffic management, airplane manufacturing and airline operations; in training centres, colleges and institutions.

Aviation Psychology: Practice and Research-Klaus-Martin Goeters 2017-03-02 In the well-established aviation system, the importance of sound human factors practice, based on good aviation psychology research, is obvious from

those incidents and accidents resulting from its neglect. This carefully structured book presents an up-to-date review of the main areas in the field of Aviation Psychology. It contains current thinking mainly from Europe, but with input from Australia and North America, from specialists involved in research, training and operational practice. Spanning six parts, the book covers: Human Engineering, Occupational Demands, Selection of Aviation Personnel, Human Factors Training, Clinical Psychology, Accident Investigation and Prevention. Looking at the six parts - in human engineering, the reader learns about human-centered automation as well as human factors issues in aircraft certification. Results derived by job analysis methods are presented in the next part and serve as basic information in the design of selection and training programs. In selection, computerized testing or behaviour-oriented assessments are challenging approaches for personnel recruitment. Cost-benefit analyses in selection reveal convincing results, enabling organizations to save huge amounts of inappropriate training investment by the application of proper selection tests. The NOTECHS method is described which helps to assess CRM capabilities in training and can also be used to measure training effects in systematic validation studies. Although operational personnel in aviation are usually able to cope with stress more efficiently than other occupational groups, individual problems might develop as reactions to traumatic influences. Either a psychological evaluation or a proper treatment or both is then required as described in the 'Clinical Psychology' part of the book. The readership includes: aviation psychologists and flight surgeons, training, selection and recruitment specialists, instructor pilots, CRM facilitators, personnel managers, accident investigators, safety pilots, air traffic controllers, aircraft engineers and those dealing with human-machine interfaces.

Human Error in Aviation-R.Key Dismukes 2017-07-05 Most aviation accidents are attributed to human error, pilot error especially.

Human error also greatly effects productivity and profitability. In his overview of this collection of papers, the editor points out that these facts are often misinterpreted as evidence of deficiency on the part of operators involved in accidents. Human factors research reveals a more accurate and useful perspective: The errors made by skilled human operators - such as pilots, controllers, and mechanics - are not root causes but symptoms of the way industry operates. The papers selected for this volume have strongly influenced modern thinking about why skilled experts make errors and how to make aviation error resilient.

Human-automation teamwork-Åsa Svensson 2020-04-07 This dissertation explores the topic of human-automation teamwork in Air Traffic Control (ATC). ATC is a high stakes environment where complex automation is being introduced while the human operator has the legal responsibility. With increasing demands on productivity in various industries (as also in ATC), automation is introduced for efficiency, maintaining safety, and to keep the workload of the human operator within acceptable limits. However, previous research has shown that automation may cause negative effects on the human operator and performance, such as forcing the operator out of the control loop, which might lead to problems or confusion. Previous research suggests a need for strengthening human-automation collaboration where automation is seen as a team member to keep the operator in the loop. In order to achieve such teamwork, the design of the automation needs to be human-centred, i.e. that the automation is designed for the underlying need of the operator. The aim of this dissertation is to explore teamwork in ATC from several angles to understand how the air traffic controllers are working in current ATC environments and how automation could be designed to support human-automation teamwork. The included studies rely on interviews, simulations, and questionnaires, all with operational air traffic controllers as participants. The results indicate that for both

human-human teamwork and human-automation teamwork, teamwork factors such as adaptability and mutual performance monitoring (knowing what the other team members are doing) are important for the work performance in current ATC environments, where mutual performance monitoring is especially important during stressful situations. When designing automation, lessons learned from human-human teamwork should be considered. The work within the scope of this dissertation identifies and concerns two human-automation teamwork aspects: boundary awareness and implicit communication. These are proposed to support the operator's knowledge about the automation and the communication flow between the operator and the automation. Boundary awareness is the operator's knowledge of the automation's abilities, its boundaries (what it can or cannot manage), and about consequences if it would go outside of these boundaries. Implicit communication is the unspoken or implied small cues that the operator and the automation can use to communicate with each other. It is proposed that implicit communication can be based on the work patterns of the operator. The knowledge gained through the work in this dissertation can be used as a foundation for further research and design of automation regarding operator knowledge about the automation boundaries and the communication within the team. Denna avhandling utforskar teamwork mellan människa och automation inom flygtrafikledning. Flygtrafikledning är en högriskmiljö där komplex automation introduceras samtidigt som den mänskliga operatören har det juridiska ansvaret. Med ökade krav på produktivitet inom olika industrier (och även inom flygtrafikledning) så introduceras automation för effektiviteten, för att bibehålla säkerheten och för att hålla arbetsbelastningen för den mänskliga operatören inom acceptabla gränser. Tidigare forskning har däremot visat att automationen kan orsaka negativa effekter på den mänskliga operatören och på prestationen, som till exempel att tvinga ut operatören utanför kontrolloopen vilket leder till problem och förvirring. Tidigare forskning föreslår ett

starkare samarbete mellan människa och automation där automationen är sedd som en teammedlem för att behålla operatören i loopen. För att uppnå ett sådant samarbete behöver automation vara människo-centrerad, att automation med andra ord är designad för operatörens underliggande behov. Syftet med denna avhandling är att utforska teamwork från olika vinklar inom flygtrafikledning för att förstå hur flygledare jobbar i nuvarande flygtrafikledningsmiljöer och för att förstå hur automation skulle kunna designas för att stödja teamwork mellan människa och automation. Studierna som denna avhandling bygger på har använt sig av intervjuer, simuleringar och enkäter, alla med operativa flygtrafikledare som deltagare. Resultatet tyder på att för både människa-människa teamwork och människa-automations teamwork så är teamwork faktorer så som flexibilitet och ömsesidig övervakning av teammedlemmarnas prestationer viktiga där övervakning av teammedlemmarnas prestationer är speciellt viktigt under stressiga situationer. När man designar automation bör man ta lärdom från teamwork mellan människor. Vidare så identifierar och behandlar arbetet inom denna avhandling två aspekter gällande teamwork mellan människa och automation: gränsmedvetenhet och implicit kommunikation. Dessa aspekter är föreslagna vi att stötta operatörens kunskap om automationen och kommunikationsflödet mellan operatören och automationen. Gränsmedvetenhet är operatörens kunskap om automationens förmågor, dess gränser och dess konsekvenser när automation går utanför dessa gränser. Implicit kommunikation är de outtalade eller implicita ledtrådar som operatören och automationen kan använda för att kommunicera med varandra. Det är föreslaget att implicit kommunikation kan baseras på arbetsmönster från operatören eller från prediktioner från automationen. Kunskapen från denna avhandling kan användas som ett underlagför vidare forskning och design av automation gällande operatörers kunskap om automationens gränser och kommunikationen inom teamet.

Human Factors in Certification-John A. Wise 2000-08-01 Much has happened to certification and to human factors during the past few years. In this volume, the editors and other specialists discuss the topic of human factors applied to certification. They focus on core topics in the certification process that have emerged in the study of product certification in high-tech industries. The editors' purpose is to document advances in the study of certification processes defined largely by the 1993 international conference on the application of human factors principles to the study of product certification in man-machine systems. Although the book focuses mostly on certification in large, man-machine systems, such as aeronautics, its principles also apply to other high tech industries, such as medicine and computers. An introductory paper and a group of papers presenting propositions and philosophies about human factors contribute to a framework for human factors certification. The papers in this volume: * adopt a more direct approach to certification activities, * deal with aspects of human-machine integration, * address topics that should feature in any established human factors certification of advanced aviation systems, * use ideas that already exist in aviation as a basis for discussing certification issues, * consider issues that arise in the certification of complex future systems, and * describe some current characteristics of human factors as a discipline that would influence its application to certification.

Risks in Technological Systems-Göran Grimvall 2009-10-24 "Risks in Technological Systems" is an interdisciplinary university textbook and a book for the educated reader on the risks of today’s society. In order to understand and analyze risks associated with the engineering systems on which modern society relies, other concerns have to be addressed, besides technical aspects. In contrast to many academic textbooks dealing with technological risks, this book has a unique interdisciplinary character that presents technological risks in

their own context. Twenty-four scientists have come together to present their views on risks in technological systems. Their scientific disciplines cover not only engineering, economics and medicine, but also history, psychology, literature and philosophy. Taken together these contributions provide a broad, but accurate, interdisciplinary introduction to a field of increasing global interest, as well as rich opportunities to achieve in-depth knowledge of the subject.

Automation and Systems Issues in Air Traffic Control-John A. Wise 2012-12-06 In recent years, increases in the amount and changes in the distribution of air traffic have been very dramatic and are continuing. The need for changes in the current air traffic systems is equally clear. While automation is generally accepted as a method of improving system safety and performance, high levels of automation in complex human-machine systems can have a negative effect on total system performance and have been identified as contributing factors in many accidents and failures. Those responsible for designing the advanced air traffic control systems to be implemented throughout the alliance during the next decade need to be aware of recent progress concerning the most effective application of automation and artificial intelligence in human-computer systems. This volume gives the proceedings of the NATO Advanced Study Institute held in Maratea, Italy, June 18-29, 1990, at which these issues were discussed.

Aviation Information Management-Barbara G. Kanki 2017-03-02 Operational information management is at a crossroads as it sheds the remaining vestiges of its paper-based processes and moves through the uncharted domain of electronic data processes. The final outcome is not yet in full focus, but real progress has been made in the transition to electronic documents providing the aviation industry with a clear direction. This book looks at a combination of

industry initiatives and airline successes that point to the next steps that operators can take as they transition to fully integrated information management systems. Although the route has not been fully identified, it is evident that a key to successful long-term efficient information management is industry-wide cooperation. The chapters are authored by a range of experts in operational information management, and collectively, they outline ways that operators can improve efficiency across flight, ground and maintenance operations. Considerations and recommendations are identified and presented addressing the following priorities: Safety-critical information and procedures Human factors Information security Operational information standardization. The readership includes: Airline flight operations managers and standards personnel, Airline operating documents and publication specialists, Airline information managers, Commercial pilots, Airline maintenance managers and personnel, Manufacturers and vendors of aviation products, Aviation regulators and policy makers, Aviation researchers and developers of information technologies, and Military technical publications specialists.