

Management for Professionals



Roland Müller · Andreas Wittmer  
Christopher Drax *Editors*

# Aviation Risk and Safety Management

Methods and Applications  
in Aviation Organizations

 Springer

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Editors

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## Preface

This book closes a gap as there is no literature currently in circulation that specifically addresses risk management issues in the aviation industry. The aim of this book is to show the theoretical background and implementation phases of a multifaceted risk management system, to gain a gradation for smaller operators who do not have the complexity of large operators for whom the system was initially developed. This approach illustrates the leeway available to adapt processes and reveals the interfaces between risk management and safety management. The book describes how to approach corporate risk management, with reasonable effort, appropriate to the size and complexity of the specific operator. It provides an idea of what the key considerations are and how to effectively operate such a system with the various interfaces. Furthermore, it provides an indication about the time investment needed in the set-up and the continuous process of corporate risk management from a cost and benefit perspective. Specifically, a safety management system (SMS), fatigue risk management and air traffic control risks are provided as specific practical cases of risk management.

An empirical study shows the level of implementation of corporate risk management in the aviation industry in practice. Based on the comparison of theory and practice, and the knowledge provided by the empirical study, different checklists and samples for the optimization of risk management are provided. Documents illustrating risk policy, the job description of a risk manager, a questionnaire for an SMS gap analysis, emergency director checklist, master risk list, hazard reporting procedure, air safety report, safety manager evaluation sheet, SWANS report, etc. are provided in appendices for the particular chapters. Furthermore, a time/cost table for the implementation and continuous development of corporate risk management is included.

This book addresses all actors in the aviation industry, such as aviation companies, consultants, and educators. It provides the opportunity for all actors to build and optimize their risk management systems/procedures. For the strategic management level, this publication makes clear why risk management has to be established as a culture in a company and must be fully supported by top management.

Finally we would like to thank everyone who supported us during the process of writing this book, especially the authors Ernst Kohler, Stefan Becker and Heinz Wipf who provided additional content. Furthermore, many thanks go to Nicole

Denk who helped with translations and supported us administratively, and to David Roberts who supported us with the final editing. We are grateful for all the support we have received and which helped to finalize this book that fills a void in the current literature.

Sankt Gallen, Switzerland  
Lorsch, Germany  
January 2014

Roland Müller  
Andreas Wittmer  
Christopher Drax



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# Abbreviations

A/C	Aircraft
AEMS	Airplane Emergency Medical Services
ALARP	As low as reasonable practicable
AMC	Acceptable Means of Compliance
AOC	Air Operator Certificate
ArG	Arbeitsgesetz
Art.	Artikel/Article
BAZL	Bundesamt für Zivilluftfahrt
BCMS	Business Continuity Management System
BIA	Business Impact Analysis
BoD	Board of Directors
CAA	Civil Aviation Authority
CEO	Chief Executive Officer
CFIT	Controlled Flight into Terrain
CFO	Chief Financial Officer
COSO	Committee of Sponsoring Organizations of the Tradeway Commission
CRM	Corporate Risk Management
CRM	Crew Resource Management
CRO	Chief Risk Officer
CS	Certification Specification
DME	Distance Measuring Equipment
DOT	Department of Transportation
EASA	European Aviation Safety Agency
EBITDA	Earnings before interest, taxes, depreciation and amortization
EC	European Convention
EEG	Electroencephalogram
ERM	Enterprise Risk Management
EU	European Union
FAA	Federal Aviation Administration
FMEA	Failure Mode Effects Analysis
FOCA	Federal Office of Civil Aviation
FPM	Fellow Program in Management
FRMS	Fatigue Risk Management System

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GM	Guidance Material
HAZID	Hazard Identification
HEMS	Helicopter Emergency Medical Services
HSG	Hochschule St. Gallen
IBAC	International Business Aviation Council
ICAO	International Civil Aviation Authority
ICS	Internal Control System
IFR	Instrumental Flight Rules
ISO	International Organization for Standardization
JAA	Joint Aviation Authorities
KSS	Karolinska Sleepiness Scale
LFG	Luftfahrtgesetz
LFV	Luftfahrtverordnung
LOFT	Line Oriented Flight Training
LVA	Luftverkehrsabkommen
MCTOM	Maximum Certified Take-off Mass
MDA	Minimum Descent Altitude
MSAWS	Minimum Safe Altitude Warning System
NPA	Notice of Proposed Amendment
OM	Operational Manual
OPS	Operations
Pax	Passenger/s
PF	Pilot Flying
PNF	Pilot Not Flying
QMS	Quality Management System
QRA	Quantitative Risk Analysis
RIMS	Risk & Insurance Management Society
RVOG	Regierungs- und Verwaltungsorganisationsgesetz
SAG	Safety Action Group
SARPS	Standards and Recommended Practices
SEC	Securities and Exchange Commission
SMM	Safety Management Manual
SMS	Safety Management System
SPS	Samn Perelli Scale
SRB	Safety Review Board
USD	United States Dollar
VAS-F	Visual Analogue Scale to Evaluate Fatigue Severity
VFR	Visual Flight Rules
VOR	Very High Frequency Omni Directional Radio Range
WOCL	Window of Circadian Low

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