

1. Record Nr.	UNINA9911006624803321
Autore	Musgrave Gary
Titolo	Safety design for space systems / / Gary Musgrave, Axel Larsen, Tommaso Sgobba
Pubbl/distr/stampa	Oxford, : Butterworth-Heinemann, 2009
ISBN	9786612737176 9781282737174 1282737171 9780080559223 0080559220
Edizione	[1st edition]
Descrizione fisica	1 online resource (988 p.)
Altri autori (Persone)	LarsenAxel SgobbaTommaso
Disciplina	629.40289
Soggetti	Astronautics - Safety measures Space vehicles - Design and construction
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Front Cover; Safety Design for Space Systems; Copyright Page; Contents; Preface; Introduction; About the Editors; About the Contributors; Chapter 1: Introduction to Space Safety; 1.1 Nasa and Safety; 1.4 The Book; Chapter 2: The Space Environment: Natural and Induced; 2.3 Microgravity; 2.4 Acoustics; 2.4.1 Acoustics Safety Issues; 2.5 Radiation; 2.5.1 Ionizing Radiation; 2.6 Natural and Induced Thermal Environments; 2.6.1 Introduction to the Thermal Environment; 2.6.4 The Induced Thermal Environment; 2.6.5 Other Lunar and Planetary Environment Considerations; 2.7.3 Combined Effects ReferencesChapter 3: Overview of Bioastronautics; 3.1.4 Neurovestibular System; 3.2.4 Neurovestibular System; 3.2.5 Radiation; 3.3.3 In-Flight Medical Monitoring; 3.4 Crew Survival; 3.5 Conclusion; References; Chapter 4: Basic Principles of Space Safety; 4.2.3 Fail-Safe Design; 4.2.5 Monitoring, Recovery, and Escape; 4.3 The Safety Review Process; 4.3.2 The Safety Panels; References; Chapter 5: Human Rating Concepts; Chapter 6: Life Support Systems Safety; 6.2 Trace Contaminant Control; References; Chapter 7: Emergency Systems; 7.1.1

## Legal and Diplomatic Basis

Chapter 8: Collision Avoidance Systems  
8.1 Docking Systems and Operations; 8.1.1 Docking Systems as a Means for Spacecraft Orbital Mating; 8.1.3 Design Features Ensuring the Safety and Reliability of Russian Docking Systems; 8.1.4 Analyses and Tests Performed for Verification of Safety and Reliability of Russian Docking Systems; Acknowledgment; 8.2 Descent and Landing Systems; 8.2.2 Known Parachute Anomalies and Lessons Learned; Chapter 9: Robotic Systems Safety; 9.3.1 Electrical and Electromechanical Malfunctions; 9.4.6 Built in Test; References; Chapter 10: Meteoroid and Debris Protection  
10.2.2 Leak Location System and Operational Design Considerations  
10.2.4 Kit Design and Certification Considerations (1 is too many; 100 are not enough); Chapter 11: Noise Control Design; 11.2.1 Noise Control Strategy; 11.2.2 Acoustic Analysis; 11.3.2 Path Noise Control; Chapter 12: Materials Safety; 12.1.1 Materials Offgassing Controls; 12.1.2 Materials Testing; 12.1.3 Spacecraft Module Testing; 12.2.1 What Is Stress-Corrosion Cracking?; 12.2.6 Stress-Corrosion Cracking in Propulsion Systems; Chapter 13: Oxygen Systems Safety; 13.2 Oxygen Generators  
13.2.1 Electrochemical Systems for Oxygen Production  
Chapter 14: Avionics Safety; 14.1 Introduction to Avionics Safety; 14.2.8 Electrical Ground and Bond Connections for Shields; 14.3.2 Total Computer Control: Fail Safe; 14.5.1 Fundamentals; 14.6 Arc Tracking; 14.6.1 A New Failure Mode; 14.6.3 Likelihood of an Arc Tracking Event; 14.7 Corona Control in High Voltage Systems; 14.8 Extravehicular Activity Considerations; 14.8.1 Displays and Indicators Used in Space; 14.8.5 Computer or Operational Control of Inhibits  
14.9 Spacecraft electromagnetic interference and electromagnetic compatibility control

---

## Sommario/riassunto

Progress in space safety lies in the acceptance of safety design and engineering as an integral part of the design and implementation process for new space systems. Safety must be seen as the principle design driver of utmost importance from the outset of the design process, which is only achieved through a culture change that moves all stakeholders toward front-end loaded safety concepts. This approach entails a common understanding and mastering of basic principles of safety design for space systems at all levels of the program organisation. Fully supported by the International As

---