ISO 27875:2019 (E)

Space systems — Re-entry risk management for unmanned spacecraft and launch vehicle orbital stages

Contents

Foreword

Introduction

1 Scope

2 Normative references

3 Terms and definitions

4 Re-entry risk management

4.1 General
4.2 Re-entry safety programme
4.3 Re-entry safety oversight and management
4.4 Re-entry risk assessment and mitigation plan
4.4.1 Preparation of the plan
4.4.2 Authorization of the plan
4.5 Re-entry risk management concept

5 Risk assessment for the case of natural re-entry

5.1 General
5.2 Identification of safety requirements
5.2.1 Identification of requirements
5.2.2 Risk assessment plan
5.3 Identification of standardized process and resources for analysis
5.4 Identification of system/mission dependent parameters
5.5 Estimation of risk in the case of natural re-entry
5.5.1 Estimation of the number of casualties
5.5.1.1 Survivability analysis
5.5.1.2 Casualty area
5.5.1.2.1 Definition of casualty area
5.5.1.2.2 Additional study for practical casualty area
5.5.1.3 Expected number of casualties
5.5.2 Estimation and assessment of casualty risk
5.6 Assessment of environmental risk
5.7 Risk decision and actions
5.7.1 Acceptance of risk or suggestion for risk reduction
5.7.2 Consideration with other risk, if required

6 Risk-reduction measures

6.1 General
6.2 Design measures to reduce re-entry survivability
6.3 Controlled re-entry

7 Planning, design and operation of controlled re-entry

7.1 General
7.2 Identification of requirements
7.3 Planning of the controlled re-entry
7.3.1 Landing location and area
7.3.1.1 Determination of landing location and area
7.3.1.2 Planning of landing area
7.3.1.3 Predicted footprint
7.3.2 Design features for controlled re-entry

7.3.2.1 Space vehicles
7.3.2.2 Ground systems
7.4 Risk assessment for controlled re-entry
7.4.1 Risk assessment method
7.4.2 In case of non-conformance
7.5 Notification
7.5.1 Normal plan
7.5.2 Contingency plan
7.6 Post re-entry activities

Annex A (informative) Contents of the re-entry risk assessment and mitigation plan

A.1 Scope of the RRAMP
A.2 Related documents
A.2.1 Normative references
A.2.2 Applicable regulations and rules
A.2.3 Reference
A.3 Re-entry risk management
A.3.1 Re-entry safety programme
A.3.2 Re-entry safety oversight and management
A.3.3 Re-entry risk assessment and mitigation plan
A.3.4 Schedule
A.4 Risk assessment
A.4.1 Concept for assessment
A.4.2 Mission description
A.4.3 Safety requirements
A.4.4 Process and resources for analyses
A.4.5 Estimation of risk
A.5 Risk-reduction measures
A.5.1 Structural design measures to reduce re-entry survivability
A.5.2 Controlled re-entry
A.5.3 Notification

Annex B (informative) The risk management process

B.1 General
B.2 Example of scoring schemes for severity and likelihood
B.3 Risk index and magnitude scheme
B.4 Risk assessment for natural re-entry
B.5 Risk assessment for controlled re-entry

Annex C (informative) Calculation of expected number of casualties

C.1 General
C.2 Calculation of casualty area[3]
C.3 Potential impact zone in the case of uncontrolled re-entry
C.4 Calculation of Ec
C.5 Population distribution models

Page count: 23