

# ISO 27875:2026-07 (E)

## Space systems - Re-entry risk management for uncrewed spacecraft and launch vehicle orbital stages

---

| Contents                                                                                       | Page |
|------------------------------------------------------------------------------------------------|------|
| Foreword .....                                                                                 | v    |
| Introduction .....                                                                             | vii  |
| 1 Scope .....                                                                                  | 1    |
| 2 Normative references .....                                                                   | 1    |
| 3 Terms and definitions .....                                                                  | 1    |
| 4 Symbols and abbreviated terms .....                                                          | 3    |
| 4.1 Symbols .....                                                                              | 3    |
| 4.2 Abbreviated terms .....                                                                    | 3    |
| 5 Re-entry risk management .....                                                               | 4    |
| 5.1 General .....                                                                              | 4    |
| 5.2 Re-entry safety programme .....                                                            | 4    |
| 5.3 Re-entry safety oversight and management .....                                             | 4    |
| 5.4 Re-entry risk assessment and mitigation plan (RRAMP) .....                                 | 4    |
| 5.4.1 Preparation of the plan .....                                                            | 4    |
| 5.4.2 Authorization of the plan .....                                                          | 4    |
| 5.5 Re-entry risk management concept .....                                                     | 4    |
| 6 Risk assessment in the case of uncontrolled re-entry .....                                   | 5    |
| 6.1 General .....                                                                              | 5    |
| 6.2 Identification of safety requirements .....                                                | 5    |
| 6.2.1 Identification of requirements .....                                                     | 5    |
| 6.2.2 Risk assessment plan .....                                                               | 5    |
| 6.3 Identification of a standardized process and resources for analysis .....                  | 6    |
| 6.3.1 Standardized process and resources for analysis .....                                    | 6    |
| 6.3.2 Typical methods, analysis tools, analytic conditions, etc .....                          | 6    |
| 6.4 Identification of system and mission dependent parameters .....                            | 8    |
| 6.5 Estimation of the expected number of casualties in the case of uncontrolled re-entry ..... | 9    |
| 6.5.1 Estimation of the expected number of casualties .....                                    | 9    |
| 6.5.2 Estimation and assessment of the expected number of casualties .....                     | 10   |
| 6.6 Estimation of risk other than casualty .....                                               | 10   |
| 6.6.1 General .....                                                                            | 10   |
| 6.6.2 Radioactive substances .....                                                             | 10   |
| 6.6.3 Floating objects .....                                                                   | 10   |
| 6.6.4 Pressurized or explosive fragments .....                                                 | 10   |
| 6.6.5 Hazardous chemical substances .....                                                      | 11   |
| 6.7 Risk decision and actions .....                                                            | 11   |
| 6.7.1 Acceptance of risk or suggestion for risk reduction .....                                | 11   |
| 7 Risk-reduction measures .....                                                                | 11   |
| 7.1 General .....                                                                              | 11   |
| 7.2 Design measures to reduce casualties .....                                                 | 12   |
| 7.3 Controlled re-entry .....                                                                  | 12   |
| 7.4 Design measures to reduce other risks .....                                                | 12   |
| 7.4.1 Radioactive substances .....                                                             | 12   |
| 7.4.2 Floating fragments .....                                                                 | 13   |

|       |                                                                                                 |    |
|-------|-------------------------------------------------------------------------------------------------|----|
| 7.4.3 | Pressurized or explosive fragments .....                                                        | 13 |
| 7.4.4 | Hazardous chemical substances .....                                                             | 13 |
| 8     | Planning, design and operation of controlled re-entry .....                                     | 13 |
| 8.1   | General .....                                                                                   | 13 |
| 8.2   | Identification of requirements .....                                                            | 14 |
| 8.3   | Planning of the controlled re-entry .....                                                       | 14 |
| 8.3.1 | Landing location and area .....                                                                 | 14 |
| 8.3.2 | Design features for controlled re-entry .....                                                   | 14 |
| 8.4   | Risk assessment for controlled re-entry .....                                                   | 15 |
| 8.4.1 | Risk assessment method .....                                                                    | 15 |
| 8.4.2 | Risk assessment conductance .....                                                               | 15 |
| 8.4.3 | In case of nonconformity .....                                                                  | 15 |
| 8.5   | Notification .....                                                                              | 16 |
| 8.5.1 | Normal plan .....                                                                               | 16 |
| 8.5.2 | Contingency plan .....                                                                          | 16 |
| 8.6   | Post re-entry activities .....                                                                  | 16 |
|       | Annex A (informative) of the re-entry risk assessment and mitigation plan .....                 | 17 |
|       | Annex B (informative) Risk management process .....                                             | 20 |
|       | Annex C (informative) Calculation of expected number of casualties .....                        | 24 |
|       | Annex D (informative) Design for demise during re-entry .....                                   | 30 |
|       | Annex E (informative) Example of report of the re-entry risk assessment for design review ..... | 31 |
|       | Bibliography .....                                                                              | 38 |