DIN EN 16602-40-02:2014-12 (E)

Space product assurance - Hazard analysis; English version EN 16602-40-02:2014

Contents

Page

Foreword 4

Introduction 5

1 Scope 6

2 Normative references 7

3 Terms, definitions and abbreviated terms 8

3.1 Terms from other standards 8

3.2 Terms specific to the present standard 8

3.3 Abbreviated terms 10

4 Principles of hazard analysis 11

4.1 Hazard analysis concept 11

4.2 Role of hazard analysis 14

4.3 Hazard analysis process 14

4.3.1 Overview 14

4.3.2 Overview of the hazard analysis process 15

4.4 Hazard analysis implementation 17

4.4.1 Overview 17

4.4.2 General considerations 17

4.4.3 Type of project considerations 17

4.4.4 Documentation of hazard analysis 17

4.5 Hazard analysis documentation 18

4.6 Integration of hazard analysis activities 18

4.7 Objectives of hazard analysis 18

5 Requirements 20

5.1 Hazard analysis requirements 20

5.2 Hazard analysis steps and tasks 20

5.2.1 Step 1: Define hazard analysis implementation requirements 20

5.2.2 Step 2: Identify and assess the hazards 22

5.2.3 Step 3: Decide and act 25

5.2.4 Step 4: Track, communicate and accept the hazards 27

Annex A (informative) Examples of generic hazards 28

Annex B (informative) Hazard and safety risk register (example) and ranked hazard and safety risk log (example) 30

Annex C (informative) Background information 33

C.1 Preliminary hazard analysis (PHA) 33

C.2 Subsystem hazard analysis (SSHA) 33

C.3 System hazard analysis (SHA) 34

C.4 Operating hazard analysis (OHA) 34

Bibliography 35

Figures

Figure 4-1: Hazards and hazard scenarios 12

Figure 4-2: Example of a hazard tree 12

Figure 4-3: Example of a consequence tree 12

Figure 4-4: Reduction of hazards 13

Figure 4-5: Interface to FMECA and CC&M analysis 13

Figure 4-6: The process of hazard analysis 15

Figure 4-7: The steps and cycles in the hazard analysis process 16

Figure 4-8: The nine tasks associated with the four steps of the hazard analysis process 16

Figure B-1 : Example of a hazard and safety risk register (see also ECSS-M-ST-80) 31

Figure B-2 : Example of a ranked hazard and safety risk log 32

Tables

Table 5-1: Example of a safety consequence severity categorization 21

Table 5-2: Example of a hazard matrix 23

Table 5-3: Example of a hazard manifestation list 23

Table 5-4: Example of a hazard scenario list 25