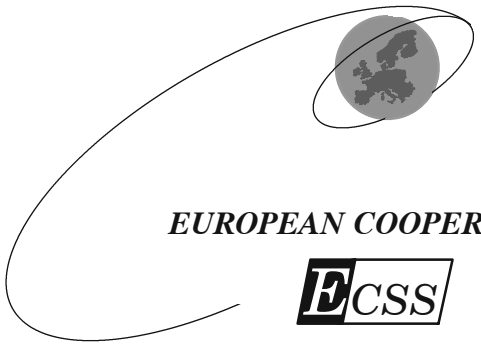
ECSS-Q-40-12A
14 October 1997



Space Product Assurance

Fault tree analysis - Adoption notice ECSS / IEC 61025

ECSS Secretariat
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Foreword

This adoption notice incorporates the IEC 61025 standard into the ECSS system.

This standard is one of the series of ECSS Standards intended to be applied together for the management, engineering and product assurance in space projects and applications. ECSS is a cooperative effort of the European Space Agency, National Space Agencies and European industry associations for the purpose of developing and maintaining common standards.

It is ECSS policy that ECSS Standards shall not duplicate the standards established by international standards organizations. When, as in this case, an existing international standard is considered adequate for the purpose of ECSS, it may be adopted as an ECSS Standard.

This adoption notice has been prepared by the ECSS Working Group Q-40-12, reviewed by the ECSS Technical Panel and approved by the ECSS Steering Board on 14 October 1997.

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Adoption notice
ECSS / IEC 61025

With effect from the date of approval, this notice announces the adoption of the external document on **a restricted basis** for use in the European Cooperation for Space Standardization (ECSS) system.

1. Document identification

IEC 61025 (1990-10)

2. Original title of document

Fault tree analysis (FTA)

3. Original scope

The document defines basic principles, provides the steps necessary to perform an analysis, identifies appropriate assumptions, events and failure modes, and provides identification rules and symbols.

4. Origination standardization organization

IEC
International Electrotechnical Commission
3, rue de Varembé
PO Box 131
1211 Geneva 20
Switzerland

5. ECSS usage restriction

5.1. Scope

This standard defines requirements for the performance of Fault Tree Analysis (FTA) on space projects.

5.2. Applicability

FTA shall be used as defined in ECSS-Q-30 and ECSS-Q-40, and according to the requirements and the statement of work imposed by a project. FTA must take into

account overall mission requirements (e.g. availability) including ground segment characteristics.

To limit the amount of effort in performing the analysis, FTA shall only be performed for **selected** undesirable events which could have catastrophic or major consequences (re. ECSS-Q-00), or in support of failure or accident investigations, in each case as agreed between the customer and the supplier. The FTA shall normally be provided for customer review, unless otherwise stipulated in the contract.

Where FTA is used in failure or accident investigations, it shall be used in a manner defined by and taken to a depth as required by the relevant Review Board.

5.3. Normative references

This ECSS Standard incorporates, by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these apply to this ECSS Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

ECSS-P-001	Glossary of Terms
ECSS-Q-00	Space Product Assurance: Policy and Principles
ECSS-Q-30	Space Product Assurance: Dependability
ECSS-Q-40	Space Product Assurance: Safety
IEC 61025 (1990-10)	Fault tree analysis (FTA)

5.4. Informative references

NUREG 0492 (1991)	Fault Tree Handbook - Reliability and Risk Analysis, Norman J McCormick, Academic Press

5.5. Terms and abbreviations

Within this document, the following terms and abbreviations are used:

ECSS	European Cooperation for Space Standardization
IEC	International Electrotechnical Commission
FTA	Fault Tree Analysis
NUREG	U.S. Nuclear Regulatory Commission, Washington, DC

5.6. Procedure

FTA shall be performed in accordance with the methodology and symbols described in IEC 61025. IEC 61025 uses general terms to describe the FTA process, including preparations for the FTA, the procedure itself and the output report. Users should ensure that they have a clear understanding and interpretation of these general terms when taken in the context of the space system under analysis.

5.7. Guidelines on the use of this standard

The informative reference, NUREG 0492 (1991) “Fault Tree Handbook”, is recommend as a comprehensive reference work to complement this ECSS standard.

5.8. Software implementation

The use of IEC 61025 does not require specific software programs or tools. If the user elects to use a computer program, whether procured from a proprietary source or developed by the user, he is responsible for ensuring that the computer program is suitable for its intended purpose, and compatible with project requirements for electronic data transfer and the interchange of data between interacting programs or tools.

Although there are several proprietary software programs available for various platforms designed to assist the FT analyst, this ECSS standard does not endorse any particular product.

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ECSS Document Improvement Proposal

1. Document I.D.	2. Document Date	3. Document Title
ECSS-Q-40-12A	14 October 1997	Fault tree analysis - Adoption notice ECSS / IEC 61025

4. Recommended Improvement (identify clauses, subclauses and include modified text and/or graphic, attach pages as necessary)

5. Reason for Recommendation

6. Originator of recommendation

Name:	Organization:	
Address:	Phone: Fax: E-Mail:	**7. Date of Submission:**

8. Send to ECSS Secretariat

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ESA-TOS/QR	2200AG Noordwijk	E-Mail: wkriedte@estec.esa.nl
	Netherlands	

Note: The originator of the submission should complete items 4, 5, 6 and 7.

This form is available as a Word and Wordperfect-Template on internet under
http://www.estec.esa.nl/ecss/improve/

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