



EDUARDO CALIXTO  
CONSULTING



# FMEA and RCM Analysis for Aerospace Industry

Online Training

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Website: <http://www.eduardocalixto.com>

Email: [ec@eduardocalixto.com](mailto:ec@eduardocalixto.com)

### Why Should attend this training ?

- To understand the failures, risk and criticality concepts.
  - To understand and implement the different application of FMEA and FMECA concepts
  - To understand and implement the Design Failure Mode and Effect analysis (DFEMA).
  - To understand and implement the Process Failure Mode and Effect analysis (PFMEA).
  - To understand and implement the System Failure Mode and Effect analysis (FMEA).
  - To understand the FMEA application to FRACAS.
  - To understand the Maintenance concepts.
  - To understand and apply the Reliability Centered Maintenance (RCM) concepts.
  - To understand the RCM input to RAM analysis, LCC and spare part definition.
- To understand and implement the RCM output to LCC analysis.
- To understand and implement the RCM out put to spare parts modeling.
- To understand and implement the RCM output to RAM analysis.

### Who Should attend this training ?

Reliability Managers, Reliability Engineers, Safety Engineer, Asset Managers, Maintenance Managers, Maintenance Engineers.

### Training Outline:

#### Day 1:

- Module 1: Introduction
- Module 2: FMEA concept and Standards
- Module 3: Risk, RPN and Criticality
- Module 4: SFMEA/DFMEA/ PFMEA/ FMEA concept
- Module 5: FMEA Management
- Module 6: FMEA applied to FRACAS
- Module 7: FMEA Case Studies

#### Day 2:

- Module 1: Maintenance Concepts
- Module 2: RCM concepts and standards
- Module 3: RCM input to RAM analysis
- Module 4: RCM input to LCC
- Module 5: RCM input to Spare parts
- Module 6: RCM Management
- Module 7: RCM input to Asset Management
- Module 8: RCM application cases
- Module 9: FMEA and RCM application software case studies



### Trainer: Dr Eduardo Calixto, CRP, CFSE, AFSP

He's a Reliability and Safety Engineer Expert with 25 years experience in Oil and Gas, Railway, Aerospace and Mining Industries, He has Doctoral Degree in Energy and Environmental, Master in Safety System Management, Bachelor in Industrial Engineering. Author of the best seller Book Gas and Oil Reliability Engineering: Modeling and Analysis (material content of this training).





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# Human Reliability Analysis for Aerospace Industry

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Website: <http://www.eduardocalixto.com>

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### Why Should attend this training ?

- To understand the Human factor concepts.
- To understand the human performance factors influencing in human error.
- To understand the human error probability prediction.
- To predict Human Error Probability and Human error rate
- To understand and implement different Human reliability analysis methods.
- To understand the influence of human error in incident and accident.

To understand the application of human error in qualitative risk analysis (PHA and FMEA).

To understand the application of human error in qualitative risk analysis (FTA and Bow Tie).

- To understand the application of human error influence in operation and maintenance activities.

### Who Should attend this training ?

Reliability Managers, Reliability Engineers, Safety Engineer, Asset Managers, Maintenance Managers, Managers, Supervisors, Maintenance Engineers, Technicians, Operators.

### Training Outline:

#### Day 1:

- Module 1: Introduction.
- Module 2: Human Reliability concept.
- Module 3: Human reliability standards.
- Module 4: Human Performance Factor.
- Module 5: Technique for human Error Prediction (THERP).
- Module 6: Operation Action Three (OAT).
- Module 7: Accident Sequence Evaluation Program (ASEP).
- Module 8: Human Error Reduction Technique (HEART).
- Module 9: Social technical analysis of Human Reliability (STAH-R).

#### Day 2:

- Module 10: Success Likelihood Index (SLIM).
- Module 11: Systematic Human Error Reduction and Prediction approach (SHERPA).
- Module 12: Standardized Human Error Reduction and Prediction Approach (SPAH-R).
- Module 13: Bayesian network.
- Module 14: Human factor influences in Safety (risk analysis).
- Module 15: Human factor influences in operation.
- Module 16: Human factor influences in Maintenance.
- Module 17: Human reliability analysis application case.



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RAM/LCC Professional



by SGR-TUV Saar





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# Lifetime Data Analysis (LDA) for Aerospace Industry: Equipment Reliability and Maintainability prediction

**Online Training**

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### Why Should attend this training ?

- To define the probability density functions such as exponential, log-normal, logistic, loglogistic, Weibull, Normal, Gumbel, Gama, others based on LDA;
- To apply the goodness of fit test such as Plot method, Regression, likelihood, Chi-square, Komogorov Smirnov and Cramer von mises during LDA;
- To implement a FRACAS that enable the LDA;
- To understand the QALT methods fconcepts or equipment under different stress level;
- To understand the RGA Concepts to measure the effect of maintenance and operation on equipment performance;
- To apply PDA methods to predict reliability based on equipment degradation such as corrosion and, crack;
- To apply Warranty Analysis to assess vendors products;
- To learn how to create a reliability database.

### Who Shoud attend this training ?

Reliability Managers, Reliability Engineers, Asset Managers, Maintenance Managers, Maintenance Engineers.

### Training Outline:

#### Day 1:

- Module 1: Introduction
- Module 2: Statistic concept
- Module 3: Reliability Concepts
- Module 4: LDA Methodology
- Module 5: Goodness of Fit test
- Module 6: Probability Density Functions
- Module 7: Probabilistic Degradation Analysis
- Module 8: Preventive Maintenance effect on Reliability
- Module 9: - Reliability Generic Databases.

#### Day 2:

- Module 1: Accelerated test data analysis Model
- Module 2: Reliability Growth Analysis
- Module 3: Warrant Analysis Concepts
- Module 4: FRACAS concept and online application
- Module 5: LDA Case Studies
- Module 6: RGA Case Studies
- Module 7: PDA and WA Case Studies



**Trainer: Dr Eduardo Calixto, CRP, CFSE, AFSP**

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# RAM Analysis for Aerospace Industry: Reliability, Availability and Maintainability Aerospace System prediction.

**Online Training**

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Website: <http://www.eduardocalixto.com>

Email: [ec@eduardocalixto.com](mailto:ec@eduardocalixto.com)

### Why Should attend this training ?

- To understand and apply the Reliability, operational availability and maintainability concept as basic of equipment specification and asset performance Index.
- To understand and apply the RAM methodology applied to different asset lifecycle phases.
- To understand and apply how to organize and assess the historical failure and repair database.
- To understand how to use specialist opinion to predict Reliability and maintainability.
- To understand and apply the methods to define type Probability Density function (PDF) in order to predict PDF parameters, reliability, failure rate, MTTF, MTBF, MTTR.
- To model the equipment in component level applying RBD and FTA.
- To understand and apply the effect of preventive maintenance and inspection in equipment reliability and operational availability.
- To understand and apply the concept of preventive maintenance optimization
- To understand how to integrate FMEA, RCM and RAM analysis to support asset management.
- To understand the RAM System and equipment modeling and system modeling.

### Who Should attend this training ?

Reliability Managers, Reliability Engineers, Asset Managers, Maintenance Managers, Maintenance Engineers.

### Training Outline:

#### Day 1:

- Module 1: Introduction
- Module 2: RAM concept
- Module 3: RAM methodology concept
- Module 4: Lifetime data analysis (LDA)
- Module 5: LDA case studies
- Module 6: RBD and FTA Models
- Module 7: RBD and FTA case studies

#### Day 1:

- Module 8: Preventive Maintenance Modeling
- Module 9: Inspection Modeling
- Module 10: Spare part Modeling
- Module 11: LCC Modeling
- Module 12: RAM Simulation
- Module 13: RAM critical equipment
- Module 14: RAM Sensitivity Analysis
- Module 15: RAM Modelling: Equipment Level
- Module 16: RAM system modelling: System Level



### Trainer: Dr Eduardo Calixto, CRP—CFSE—AFSP

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# Risk Management & Qualitative and Quantitative Risk Analysis Methods for Aerospace Industry

Online Training

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Website: <http://www.eduardocalixto.com>

Email: [ec@eduardocalixto.com](mailto:ec@eduardocalixto.com)

### Why Should attend this training ?

- To understand the Risk concept as basic of Risk assessment and evaluation.
- To understand and implement the individual risk, societal risk and ALARP concepts.
- To understand and Implement the Risk Management concept and its different steps such as hazard identification, risk assessment, risk evaluation and risk mitigation.
- To understand and implement the qualitative Risk Analysis methods such as HAZOP, HAZID, PHA, FMEA, RBI
- To understand and implement the quantitative Risk Analysis methods such as FTA, ETA, SIL, LOPA, Bow Tie, QRA
- To understand and implement the Risk analysis methods applied to environment license.
- To understand and implement the Risk Management concept as basic of safe integrity asset performance achievement.
- To understand and implement the consequence and effect analysis

### Who Should attend this training ?

Reliability Managers, Reliability Engineers, Safety Engineer, Asset Managers, Maintenance Managers, Maintenance Engineers.

### Training Outline:

#### Day 1:

- Module 1: Introduction.
- Module 2: Risk Management concept and Risk criteria.
- Module 3: Occupational Hazards .
- Module 4: Preliminary Hazard Analysis (PHA).
- Module 5: Hazard and Operability Analysis (HAZOP).
- Module 6: Failure Mode and Effect and Criticality Analysis (FMEA).
- Module 7: Risk Based Inspection (RBI)
- Module 8: Statistic Concepts
- Module 9: Reliability Concepts.

#### Day 2:

- Module 10: Fault Tree Analysis (FTA).
- Module 11: Event Tree Analysis (ETA), Layer of Protection Analysis (LOPA) & BTA.
- Module 12: Safety Integrity Level Analysis (SIL).
- Module 13: Consequence and Effect analysis
- Module 14: Emergency Response Plan
- Module 15: Vulnerability Analysis
- Module 16: Human Factor in Process safety
- Module 17: Process Safety Management



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