



EDUARDO CALIXTO
— CONSULTANT —

Training Program	: HUMAN RELIABILITY ANALYSIS FOR RAILWAY INDUSTRY
Discipline	: RELIABILITY, MAINTENANCE & SAFETY ENGINEERING
System	: OPERATION AND MAINTENANCE HUMAN ERROR
Subsystem	Railways assets (Pantograph, Bogie, Breaks, Train Control Management System (TCMS), Balise, Computer Based Interlock (CBI), Lineside Electronic Unit (LEU), Radio Block Centre(RBC), Locomotive Diesel Engine, others.)
Training Focus	: Human error Concept, qualitative and quantitative human reliability methods
Lesson Code	: 204
Lesson Title	Human factor performance, Human error probability prediction, Human reliability analysis, Human error influence in operation and maintenance, Human error influence in incident and accident, risk analysis and human error
Training Elements	: Human factor performance, Human error probability prediction, Human reliability analysis, Human error influence in maintenance, Human error influence in incident and accident, Risk analysis and human error

Training Objectives:

- To understand the Human factor concepts.
- To understand the human performance factors influencing in human error.
- To understand the human error probability prediction.
- To understand the Human reliability analysis methods.
- To understand the influence of human error in incident and accident.
- To understand the application of human error in risk analysis.
- To understand the application of human error influence in operation and maintenance activities



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Day 1:

Subject	Activity	Time	Resources
Welcome and Introduction of participants and trainer, scope of training.	Theoretical	30 min	PPT
Human Factor concept	Theoretical	60 min	PPT
Human reliability standards	Theoretical	30 min	PPT
Human Performance error	Theoretical	60 min	PPT, Software (or excel)
Technique for human Error Prediction (THERP)	Theoretical Practical	60 min	PPT, Software (or excel)
Lunch Break: 12:30 – 14:00 hrs.			
Operation Action Three (OAT)	Theoretical Practical	60 min	PPT, Software (or excel)
Accident Sequence Evaluation Program (ASEP)	Theoretical Practical	60 min	PPT, Software (or excel)
Human Error Reduction Technique (HEART)	Theoretical Practical	60 min	PPT, Software (or excel)
Social technical analysis of Human Reliability (STAH-R)	Theoretical Practical	60 min	Software (and excel)

Day 2:

Subject	Activity	Time	Resources
Success Likelihood Index (SLIM)	Theoretical Practical	60 min	PPT, Software (or excel)
Systematic Human Error Reduction and Prediction approach (SHERPA)	Theoretical Practical	60 min	PPT, Software (or excel)
Standardized Human Error Reduction and Prediction Approach (SPAH-R)	Theoretical Practical	60 min	PPT, Software (or excel)
Bayesian network	Theoretical Practical	60 min	PPT, Software (or excel)
Lunch Break: 12:30 – 14:00 hrs.			
Human factor influences in Safety (risk analysis)	Theoretical Practical	60 min	PPT, Software (or excel)
Human factor influences in operation	Theoretical Practical	60 min	PPT, Software (or excel)
Human factor influences in Maintenance	Theoretical Practical	60 min	PPT, Software (or excel)
Human reliability analysis application case for railways	Theoretical Practical	60 min	PPT, Software (or excel)