Training Program	:	**RISK MANAGEMENT**
Discipline	:	**RELIABILITY, MAINTENANCE & SAFETY ENGINEERING**
System	:	**PROCESS PLANT**
Subsystem	:	**Pipes, Vessels, Tanks, Compressors, valves, SIFs, others**
Training Focus	:	**Risk Management Concept, qualitative and quantitative risk methods**
Lesson Code	:	**108**
Lesson Title	:	**Risk Management, hazard identification, risk assessment, risk evaluation, risk mitigation, risk communication**

Training Elements :

Risk Management
Qualitative and quantitative risk methods
Risk criteria
Hazard identification,
Risk assessment,
Risk evaluation, risk mitigation, risk communication

Training Objectives:

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

Day 1:

Subject	Activity	Time	Resources
Module 1 - Welcome and Introduction of participants and trainer, scope of training.	Theoretical	30 min	Forms & PPT
Module 2 - Risk Management concept and Risk criteria	Theoretical	30 min	PPT
Module 3 - ISO 31000, 2009 and Seveso Directive concepts	Theoretical	60 min	PPT
Module 4 - Preliminary Hazard Analysis (PHA)	Theoretical	60 min	PPT
Module 5 - Preliminary Hazard Analysis (PHA)	Practical	60 min	Software (and excel)
Lunch Break: 12:30 – 14:00 hrs.			
Module 6 - Hazard and Operability Analysis (HAZOP)	Theoretical	60 min	PPT
Module 7 - Hazard and Operability Analysis (HAZOP)	Practical	60 min	Software (or excel)
Module 8 - Failure Mode and Effect and Criticality Analysis (FMEA)	Theoretical	60 min	PPT
Module 9 - Failure Mode and Effect and Criticality Analysis (FMEA)	Practical	60 min	Software (or excel)

Day 2:

Subject	Activity	Time	Resources
Module 10 - Risk Based Inspection (RBI)	Theoretical	60 min	PPT
Module 11 - Risk Based inspection (RBI)	Practical	60 min	Software (or excel)
Module 12 - Safety Integrity Level Analysis (SIL)	Theoretical	60 min	PPT
Module 13 - Safety Integrity Level Analysis (SIL)	Practical	60 min	Software (or excel)
Lunch Break: 12:30 – 14:00 hrs.			
Module 14 - Fault Tree Analysis (FTA), Event Tree Analysis (ETA), Layer of Protection Analysis (LOPA) & BTA	Theoretical	60 min	PPT
Module 15 - Fault Tree Analysis (FTA), Event Tree Analysis (ETA), Layer of Protection Analysis (LOPA) & BTA	Practical	60 min	Software
Module 16 - Consequence and effect analysis	Theoretical	60 min	PPT
Module 17 - Consequence and effect analysis	Practical	60 min	ALOHA EPA Software (or excel)