UNDERSTANDING SAFETY INTEGRITY LEVELS

SAFETY: FREEDOM FROM UNACCEPTABLE RISK

Vapor cloud explosion (BLEVE)

Failure Rate: \( \lambda = \text{Components exposed to functional failure} \times 10^{-6} \text{ failures per unit time} \)

Availability and Reliability

MTBF = MTTF + MTTR

Safety Integrity Level Calculation

TOLERABLE RISKS AND ALARP (ANNEX 'B')

Risk cannot be justified except in extraordinary circumstances

Tolerable only if further risk reduction is impracticable or if its cost is grossly disproportionate to the gained improvement.

As the risk is reduced, the less proportionately it is necessary to spend to reduce it further, to satisfy ALARP.

The concept of diminishing proportion is shown by the triangle.

Risk cannot be justified except in extraordinary circumstances

Availability and Reliability

Reliability = MTBF

Safety integrity of non-SIS prevention/ protection layers, and SIS matched to the proportion is shown by the triangle.

Risk reduction necessary risk reduction, after its cost is impracticable or if its cost are

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