

Modified MIL-STD-882 Hazard Risk Matrix

Calibration Event
 Introduce a known event with established probability or severity to 'calibrate' probability estimates, i.e. risk of death due to car accident during commute to work over 25 year working life.

Likelihood (subjective probability) bins (over 20 year service life)

ID	Description	Individual (1x)	Fleet/Inventory (10x)	AIAA Threshold	Combinatorial probability
A	Frequent	Occurs regularly	Continuously experienced.	$> 8 \times 10^{-2}$	3×10^{-1}
B	Probable	Will occur several times in the life.	Occurs regularly.	$> 8 \times 10^{-3}$	3×10^{-2}
C	Occasional	Unlikely but can reasonably expect to occur in life of item.	Will occur several times in the fleets life.	$> 8 \times 10^{-4}$	3×10^{-3}
D	Remote*	Unlikely but possible in life of item.	Unlikely but can reasonably expect to occur in life of fleet.	$> 8 \times 10^{-5}$	3×10^{-4}
E	Improbable	So unlikely it may not be experienced in life of item	Unlikely but possible in life of fleet.	$> 8 \times 10^{-6}$	3×10^{-5}
F	Highly improbable	Extremely unlikely to occur in life of item.	So unlikely it may not be experienced in life of fleet	$> 8 \times 10^{-7}$	3×10^{-6}
G	Incredible	So unlikely, that a rational person would think it impossible	So unlikely, that a rational person would think it impossible	----	----

Corrected MIL-STD-882C example probability definitions with log scale and AIAA/SETC threshold and combinatorial probability index, fleet numbers will affect cumulative risk and should be used to calibrate likelihood.

Severity bins

MIL-STD-882C example severity definitions with log scale.

ID	Description	Mission	Personnel	Equipment	Environment
I	CATASTROPHIC*	Loss of mission area capability no reversionary capability	Single deaths to multiple death. Several to Numerous persons with severe long term health effects	Total loss of system, > \$1M equipment damage.	Long-term (5 yrs or greater) damage or requiring >\$2M to correct and/or in penalties.
II	CRITICAL	Significant degradation of mission area capability	Single severe injuries, to multiple Greater than 2 weeks hospitalisation. One to several persons with severe long term health effects	>\$250K to \$1M equipment damage.	Medium-term (1-5 yrs) damage or requiring \$500K-2M to correct and/or in penalties
III	MARGINAL	Degradation of mission area	Multiple Minor injuries (OH&S reportable) to single minor injury. Minor short term health effects to one to several persons	\$1K to \$250K equipment damage.	Short-term (<1 yr) damage or requiring \$2K-\$500K to correct and/or in penalties
IV	NEGLIGIBLE	Minor loss of mission functionality	No injury	< \$1K equipment damage.	Minor damage, readily repaired requiring < \$2K to correct and/or in penalties

Hazard Risk Index Matrix

Probability	Severity			
	IV	III	II	I
A (Frequent)	10	6	3	1
B (Probable)	14	9	5	2
C (Occasional)	18	13	8	4
D (Remote)	21	17	12	7*
E (Improbable)	23	20	16	11
F (H.Improbable)	24	22	19	15
G (Incredible)				

MIL-STD-882C risk acceptance curves corrected to log scale. Catastrophic risk iso-risk boundary extended to include cell 7 to reflect non-ergodic (irreversible) nature of such events

Risk treatment

Risk Zone	Risk treatment (for personnel)	Decision maker
1-7 High	Intolerable risk must be reduced.	---
8-11 Medium	Meet the SFAIRP principle. Residual risk for Catastrophic and Critical hazards must be very well understood, through quantitative or semi-quantitative means.	PCBU
11-17 Low	Meet the SFAIRP principle. Residual risk for Catastrophic and Critical hazards must be well understood, through quantitative or semi-quantitative means.	Person Assisting the PCBU
19-24 V. Low	Meet the SFAIRP principle. Application of existing best practice or standard is deemed to reduce risk to this level, without qualitative risk assessment.	Designated Staff
Negligible	Record only. Used to record eliminated risks.	Designated Staff

*If a SPOF could result in a catastrophic risk a claim limit for likelihood of no less than remote is applied until these are eliminated.