Australian Government
Department of Defence
Guided Weapons and
Explosive Ordnance Group

Agile risk communication

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FLTLT Charlie Watts
Royal Australian Air Force
Charlotte.watts@defence.gov.au

Agenda

- Problem identification
- Legislative and regulatory background
- Current GWEO process
- Proposed process
- Case study
- Exemplar use case
- Questions

Problem Identification – NDS 2024

Loss of warning time

1.12 Strategic warning time for conventional conflict is the time a country estimates an adversary would need to launch a major attack against it, once the adversary's intent to do so has been established.

1.13 In the post-Second World War period, Australia was protected by its geography and the limited ability of other nations in the region to project power. Defence and the nation had a 10-year warning time as the foundation for planning, capability development and preparedness for conflict.

1.14 In the contemporary strategic era, we cannot rely on geography or warning time. Regional military modernisation, underpinned by economic development, has meant that more countries are able to project combat power across greater ranges in all five domains: maritime, land, air, space and cyber. Emerging and disruptive technologies are being rapidly translated into military capability.

1.17 Ending warning time has major repercussions for Australia's management of strategic risk. It necessitates an urgent call to action, including higher levels of military preparedness and accelerated capability development.

1.18 These activities require increased Defence spending and a move away from a business-as-usual approach to policy development, risk management and Defence preparedness.

Problem Identification – Command Clearances

GM SPA.10 - Command Clearance (AUS)

1. **Purpose**. **(Context)** On occasion, to maintain key capabilities at high levels of operational readiness and to undertake non-discretionary activities in support of Australia's national interest, commanders may be required to operate aircraft outside of approved configuration, role, environment (CRE), limitations or conditions. **(Hazard)** Operating aircraft outside of approved CRE, limitations or conditions may affect Aviation Safety. **(Defence)** This regulation requires the MAO to establish a process to manage risks to Aviation Safety for aircraft operated under a Command Clearance.

Legislative and Regulatory Background

Law

WHS Act
EO Act

Work Health and Safety Act 2011

Commonwealth Explosives Act 1961

Defence Policy

DASF
ESRF

Defence Aviation Safety Framework

- Defence Aviation Safety Regulations

Explosive Safety Regulatory Framework

- Defence Explosive Ordnance Publication 100

Legislative and Regulatory Background

WHS Act

17 Management of risks

A duty imposed on a person to ensure health and safety requires the person:

(a) to eliminate risks to health and safety, so far as is reasonably practicable; and

(b) if it is not reasonably practicable to eliminate risks to health and safety, to minimise those risks so far as is reasonably practicable.

Subdivision 2—What is reasonably practicable

18 What is *reasonably practicable* in ensuring health and safety

In this Act, *reasonably practicable*, in relation to a duty to ensure health and safety, means that which is, or was at a particular time, reasonably able to be done in relation to ensuring health and safety, taking into account and weighing up all relevant matters including:

(a) the likelihood of the hazard or the risk concerned occurring; and

(b) the degree of harm that might result from the hazard or the risk; and

(c) what the person concerned knows, or ought reasonably to know, about:

(i) the hazard or the risk; and

(ii) ways of eliminating or minimising the risk; and

(d) the availability and suitability of ways to eliminate or minimise the risk; and

(e) after assessing the extent of the risk and the available ways of eliminating or minimising the risk, the cost associated with available ways of eliminating or minimising the risk, including whether the cost is grossly disproportionate to the risk.

ESRF

Fundamental Concept	ESRF Principle
Safety Management System	**Principle 1.** Defence must comply with applicable Explosives and WHS legislation and demonstrate means of compliance in a safety argument.
	Principle 2. All capability systems that involve explosives and munitions and the activities associated with research and development, procurement, manufacture, handling, maintenance, storage, transfer, testing, transportation, operation, firing (in trials, training or use) or disposal of explosives and EO must be developed, authorised and conducted in accordance with the applicable Service or Group Safety Management System and Defence Security Principles Framework (DSPF).
	Principle 3. Safety Management Systems (SMS) developed and maintained by Capability Managers, Service Chiefs and Group Heads must incorporate ESRF policy requirements with respect to explosives safety hazards.
	Principle 4. Service Chiefs and Group Heads, commanders, managers and supervisors must obtain explosives safety hazard and risk management advice from personnel and organisations competent in explosives safety management.
EO Materiel Safe and Suitable for Service	**Principle 5.** Explosives and munitions are designed, manufactured and controlled throughout their life to eliminate explosives safety hazards and/or minimise the risks of an explosives safety mishap so far as is reasonably practicable.
	Principle 6. The explosives safety hazards and residual risks of explosives and munitions shall be determined and communicated to affected Services, Groups and others (including non-Defence entities) so that risks can be controlled and managed.

Legislative and Regulatory Background

ESRF

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	Principle 3. Safety Management Systems (SMS) developed and maintained by Capability Managers, Service Chiefs and Group Heads must incorporate ESRF policy requirements with respect to explosives safety hazards.
	Principle 4. Service Chiefs and Group Heads, commanders, managers and supervisors must obtain explosives safety hazard and risk management advice from personnel and organisations competent in explosives safety management.

Current GWEO process – Exceptional hazards

RISK IDENTIFICATION						
(A)	(B)	(C)	(D)	(E)	(F)	(G)
EON	Related ECP	Risk ID and Version No	Risk ID and Version Status	Risk assessment matrix	Related Hazard ID(s)	Mishap

EXISTING RISK				
(H)	(I)	(J)	(K)	(L)
Existing controls	Existing Risk assessment	Existing Risk Likelihood rating	Existing Risk Consequence rating	Existing risk level

RISK TREATMENT					
(M)	(N)	(O)	(P)	(Q)	(R)
SFARP assessment	Controls to be applied	Responsible Coordinator	Planned or actual completion date	Control Implementation reference	Risk treatment Status

Current GWEO process – Exceptional hazards

RESIDUAL RISK			
(S)	(T)	(U)	(V)
Residual Risk Assessment	Residual Risk Likelihood rating	Residual Risk Consequence rating	Residual risk level

MONITOR AND REVIEW		RISK RETENTION		
(W)	(X)	(Y)	(Z)	(AA)
TIWG minute or record of stakeholder endorsement of assessed risks	Review Date	CLC Decision Maker	Risk assessed as minimised SFARP?	Record of risk communication to CLC Decision Maker

Current GWEO process – Tacit hazards

(A)	(B)	(C)	(D)	(E)	(F)
EON	Related ECP	Related RVS Serial(s)	Hazard ID and Version No	Hazard ID and Version No Status	Hazard Type

(G)	(H)	(I)
Hazard Description	Related Failure Mode ID(s)	Causal factor

(J)	(K)	(L)	(M)
Effect of Hazard	Hazard Indication	Tacit Risk?	Applicable Tacit Risk CoP

(N)
Argument supporting the application of the CoP to control the risk

Where is your consequence/likelihood assessment?
Where have you identified all POSSIBLE controls?
Where is your SFARP assessment for controls?

Proposed process – Tacit risks

(M)	X	(N)
Applicable Tacit Risk CoP	Identify all possible risk treatment options.	Argument supporting the application of the CoP to control the risk. Argument for other risk treatment options being grossly dispropportionate. (argument for existing CoP as SFARP)
Currently being managed with PPE in Manual X.	1. Elimination - Not perform maintanence on the weapon. 2. Substitution - No options. 3. Isolation - Only performance maintanence with one missile in facitlity at a time. 4. Engineering Control - No options. 5. Administrative Controls - Only have one person in the facility at one time. 6. PPE - extant procedures.	1. - Grossly disspraportionate as maintanence needs to occur. 2. - Nil 3. - Grossly disspraportionate as the time taken to move missiles in/out of storage to prep one at a time would take a grossly disspaportionate amount of time compared to the risk..... etc.... 4. - Nil 5. - More than one person is required as per Manual X. IAW DEOPs min personnel is CoP. 6. - Extant CoP and SFARP.

X	X	X
Residual Consequence Assessment	Residual likelihood Assessment	Residual Overall Risk Assessment (Safety)
Safety - Minor (A) - Minor injury to personnel. **Performance (not assessed)-** store considered U/S.	**(Safety/Performance) Probable (4) -** Expected to occur multiple times in the system life cycle. Is not to occur but not certain.	**Low**

Proposed process – Exceptional risks

Change: Step 3 – Risk treatment

		RISK TREATMENT
X	(M)	(N)
Identify all POSSIBLE controls.	SFARP assessment (including grossly disproportionate argument)	Controls to be applied

(O)	(P)	(Q)	(R)
Responsible Coordinator	Planned or actual completion date	Control Implementation reference	Risk treatmer Status

Case study – 7 Step process layout

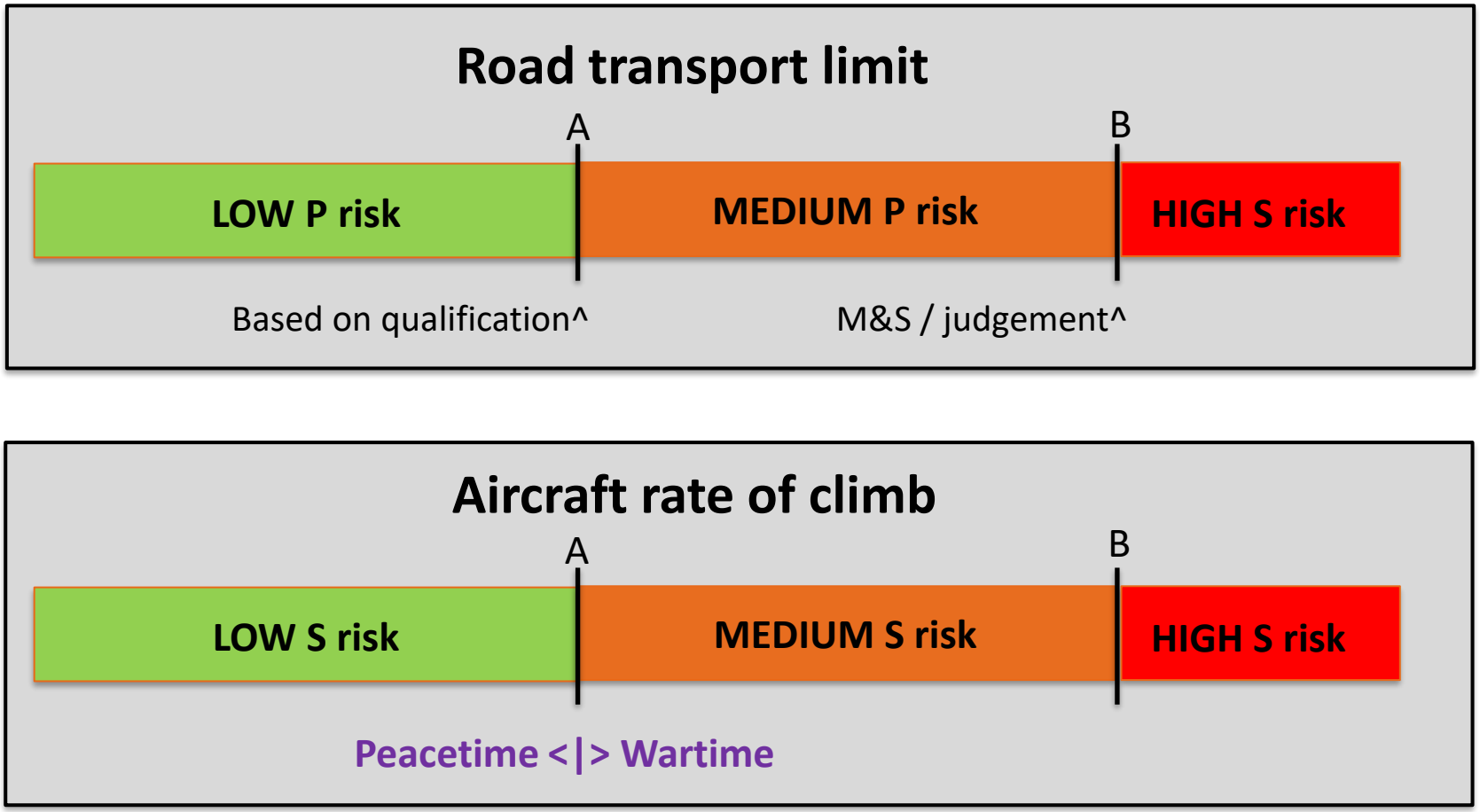
Risk I.D.	Step 2 – Be Reasonably Informed Of The Risk/s And All Possible Controls											STEP 3 Eliminate Risk SFARP							STEP 4 Minimise Risk SFARP						STEP 5				
	Be Reasonably Informed of the Risk/s			Risk Understanding				Be Reasonably Informed of All Possible Controls				Control Implementation							Control Implementation						Residual Risk				
	Description of Hazard	Risk Dimension	Hazard Type	Description of Consequence	Consequence	Description of Likelihood	Likelihood	Risk	All Possible Controls	Existing (E) / Additional (A)	Barrier (B) / Recovery (R)	Effect of Control/Mitigation	Would Implementing Control Eliminate Hazard? (Y/N)	Available? (Y/N)	Suitable? (Y/N)	Implement? (Y/N)	Implementable Now? (Y/N)	Implementation Comments	Hazard Eliminated? (Y/N)	Control Hierarchy	Available? (Y/N)	Suitable? (Y/N)	Implement? (Y/N)	Implementable Now? (Y/N)	Implementation Comments	Risk ID of new Hazards	Reference for details of control	Consequence	Likelihood	Risk	Impacts Airworthiness?
1	Toxicity of Thermally Protective (TP) coating 3 variant.	Pers Safety	Chemical	Inhalation of powderised TP coating could pose health risk to ground personnel.	Major (C)	Expected to occur less than once per year or infrequently during the system lifecycle.	Occasional (3)	Medium (C3)	Restrict the use of IS warheads.	A	B	Eliminates the possibility of personnel to encounter TP coated warheads.	Y	Y	N	N	N	Elimination of the use of warhead variants is an unacceptable implementation for the customer. Usage of this warhead is essential in the customer Statement of Requirements (SoR).	N							1A		Major (C)	Eliminated (0)	Eliminated (0)	No
									When handling the the DEOP 450-002M PPE, preparation procedures and warnings for the warheads must be followed. Warning added to FCR ICA to promulgate this.	E	B	Reduces the likelihood of personnel inhaling the powderised TP coating.							N	PPE	Y	Y	Y	Y	ACSPO to promulgate warning in ASCCERT. Using such PPE while loading of weapons in high heat environments could increase health risks to personnel.	1B	Toxicology Test of Annex B, Reference A	Major (C)	Rare (1)	Very Low (C1)	No

Case study – Endorsement of options

2	Unknown response to the vibration and shock environment during gun system firing.	Motion	Capability	Extreme induced vibrations or shock from use of the gun system could degrade EO fill of potentially causing the store to inadvertently initiate, not function correctly on impact or pose safety risk to personnel upon download due to unstable EO fill.	Critical (D)	Expected to occur less than once per year or infrequently during the system lifecycle.	Improbable (2)	Medium (D2)	**RTS:** Restrict the use of the gun system during RTS activities while carrying	A	B	Eliminates the possibility being exposed to unknown vibration or shock environment during RTS activities.	Y	Y	Y	Y	Y	Restricting usage of the gun system entirely is determined to eliminate the hazard. Recommend additional testing be done to support full usage of gun system.	Y							2A		Critical (D)	Eliminated (0)	Eliminated (0)	No
									OPS: Limit the gun system firing to 7.24s (2 magazines) total during OPS.	E	B	Reducing the total time of gun system usage reduces the total induced vibration on the store, reducing the likelihood of degradation to the EO fill during OPS.	N						N	Admin. Control	Y	Y	Y	Y	7.24s firing (2 magazine) limitation to firing of gun system during OPS flights is incorporated in FCR ICA.	2B	FCR ICA Annex A	Critical (D)	Rare (1)	Low (D1)	Impacts Airworthiness

Proposed process – Exceptional risk graduated profiles

- Adopt a similar approach to graduated risk profiles from case study



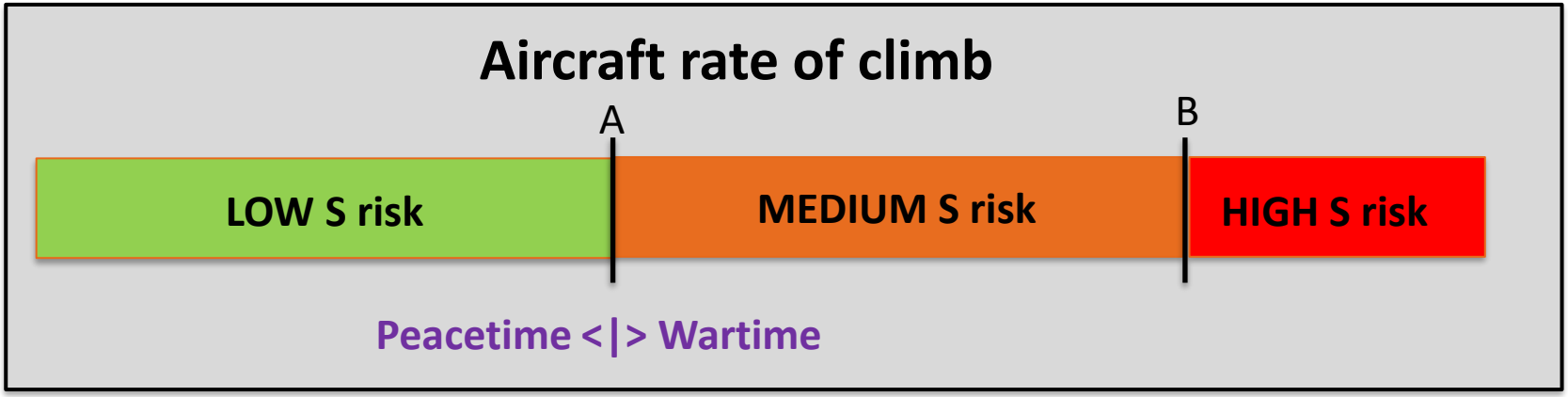
Summary

Hazard log improvements:

- Ensure 7-step process carried out at all times IAW legislation

Graduated risk profiles:

- Adding work upfront (**peacetime**) to streamline decision making in **wartime**.
- Summarising graduated threshold limits/decision trees in pictorial format in pubs, rather than requiring HazLog deep dive
- Informing quick decision making otherwise ill-informed
- Inform CONOPs



Questions/Discussion?