

Gliding Australia Training Manual

Pilot Guide



Unit 24

Human Factors and Pilot Limitations

Unit 24 - Human Factors and Pilot Limitations

WHAT THIS UNIT IS ABOUT

To develop the Skills and Knowledge to:

- Describe the non-technical skills and knowledge that underpin all GPC units and aviation activity;
- Assess the impact of Human Factors on operations of aircraft and;
- Develop personal limitations on operating aircraft ...

WHAT ARE THE PRE-REQUISITES FOR THIS UNIT?

- Nil

COMPLEMENTARY UNITS

This unit should be read in conjunction with:

- GPC Unit 25 Threat and Error Management

KEY MESSAGES

- All pilots are affected by human factors issues that can become threats to safe aviation.
- All pilots must learn to recognise and mitigate these issues as part of their TEM actions.
- HF issues are both physical, cognitive and interpersonal.

PILOT GUIDE FOR THIS UNIT

You are encouraged to view the PowerPoint presentation covering Human Factors.

You are encouraged to download and review the [Human Factors manual](#) from the GFA web page

Medical fitness to fly

Medical fitness to fly is not just a doctor's assessment, it is beholden on every pilot to self-assess their fitness to fly before and during each flight. The following mnemonic is an aid to that self-assessment:

IMSAFE

Illness

- Have I any illness that can affect my performance in flight?
- e.g. Colds may block sinuses leading to eardrum pain and damage
- do I feel unwell?

Medication / Drugs

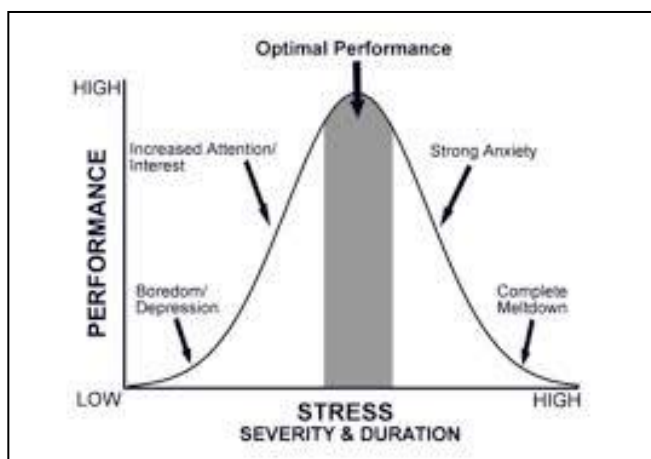
- Am I taking any prescribed or over the counter meds or drugs that can affect my performance in flight? e.g. Pain killers, codeine, anti-histamine, beta-blockers
- CASA [Drug and alcohol testing](#)

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- GFA [Alcohol, Drug & Smoking Policy](#)

Stress

- Underload
- Optimum (Eustress)
- Overload (Distress)
- Where personal problems fit.



Alcohol

- Legal limitation
- 8 hours between bottle and throttle may not be enough for a binge

Fatigue

- Adequate rest and sleep
- Long flights/ days

Eating

- Healthy and regular diet
- Hydration
- Glucose control throughout flights.

HAZATTS (Hazardous Attitudes) [FAA]

There are many personality types, some of which can cause difficulty for a pilot. If you demonstrate any of these characteristics, you are encouraged to think through the alternatives suggested.

- Anti-authority ("Don't tell me!") - Don't like anyone telling them what to do. Resentful of rules & regulations.
 - Antidote: Follow the rules, they're usually right (and written in blood!)
- Impulsive ("Do something - do it now!") - Need to do something, anything, quickly. Don't stop to think about better alternatives.
 - Antidote: Not so fast... think first.

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- Invulnerable ("It won't happen to me.") - Accidents happen to other people, not to me. Therefore, I can take chances.
 - Antidote: Sometimes it will happen to you.
- Macho ("I can do it.") - Always trying to prove themselves better than others. Take risks and try to impress others.
 - Antidote: Taking chances is foolish.
- Resignation ("What's the use?") - I really can't make a difference. It's going to happen anyway, why bother? Leave it to others.
 - Antidote: I'm not helpless, I can make a difference. Never give up.

Aviation Decision Model [FAA]

DECIDE

- Detect – the fact that a change has occurred
- Estimate – the need to react to or counter the change
- Choose – a desirable outcome for the flight or situation
- Identify – actions to control the change successfully
- Do – take the necessary actions
- Evaluate – the effects of the action to react to or counter the initial change

Additional Human limitations

Discuss the following items with reference to GFA Human Factors for Gliding

Eyesight

- Limits
- Spectacles usage
- Sun glasses

Ears

- Vertigo
- Eardrums
- Sinus blockage

"G" forces

- "G" increase in turns/aerobatics
- "G" induced Loss of Consciousness (GLOC)
- Sub-gravity (i.e. 0-1 G) testing

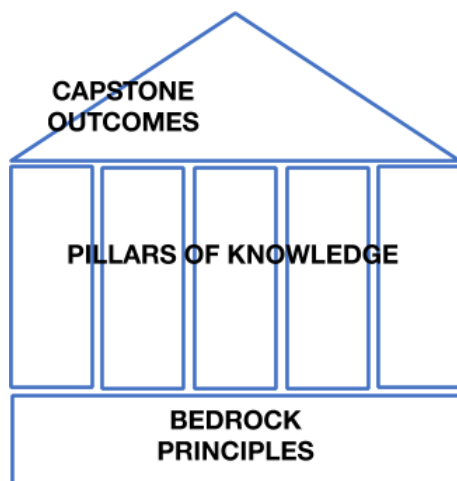
Oxygen

- Hypoxia with altitude
- Legal requirements

Airmanship (an easy proverb)

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- AIR (Heat, cold, noise, wind, weather, fit for task)
- MAN (fitness to fly, trained, recency, proficiency, type endorsed)
- SHIP (airworthy, prepared, fit for task)



CAPSTONE OUTCOMES:	Situational awareness
	Judgement
PILLARS:	Self
	Aircraft
	Team
	Environment
	Risk
BEDROCK PRINCIPLES	Discipline
	Skills
	Proficiency

Situational awareness

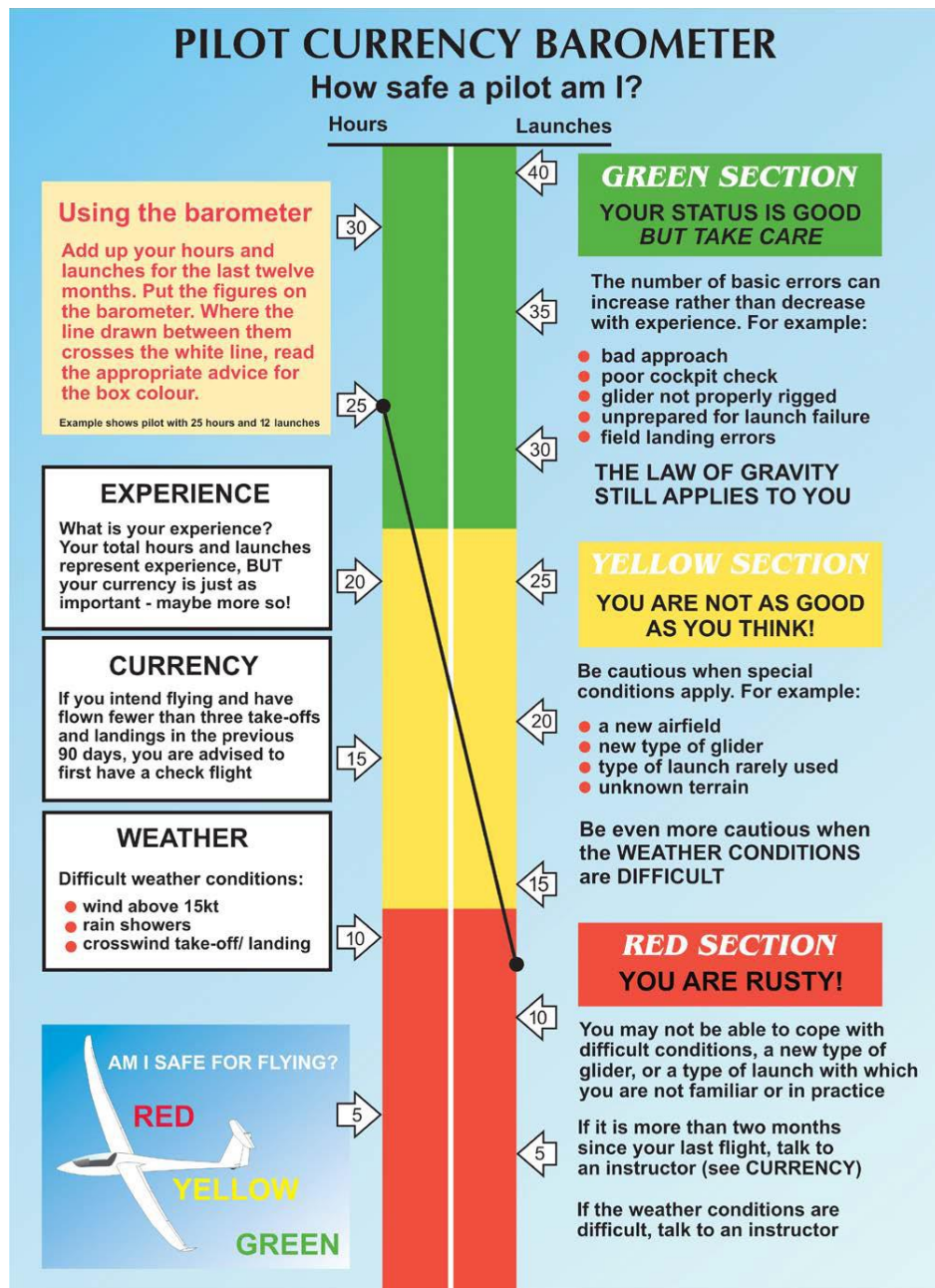
- What has happened recently?
- What is happening now?
- Projecting to: What might happen in the future?

Judgement

- Using skills, knowledge, experience and intelligence to analyse a situation and decide a course of action.

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Pilot Currency



FLIGHT EXERCISES FOR THIS UNIT

- This unit develops non-technical skills and knowledge that underpins all GPC units and aviation activity.
- These competencies will be assessed on evaluation of all flights in the GPC syllabus.

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THINGS YOU MIGHT HAVE DIFFICULTY WITH

- More than 75% of incidents/accidents are attributed to human factors
- Errors arising out of human factors must be detected, estimate the alternatives, choose the best course of action, do it, then evaluate the action
- Such errors must not be allowed to result in undesired aircraft states (UAS)
- Each pilot is responsible to identify factors that can impact of their performance, and act accordingly.

HOW DO YOU DEMONSTRATE COMPETENCE?

- Demonstrate taking action to identify various Human Factor issues utilising the tools described in this unit.

RESOURCES & REFERENCES

- GFA Human Factors for Gliding : GFA October 2013
- Aviation Decision Making: FAA Advisory Circular 60-22 1991.
- Flight Discipline: Tony Kern February 1998.
- Introduction to the Generic Pilot Proficiency Program: Mark W Riley: Aviation Safety Foundation Australasia (ASFA) 2007.
- Occurrence Summaries on the GFA website under Documents/Forms / Operations
- Risky Business: WA Department of Local Government, Sport and Cultural Industries, Website 2020.
- Safe Work Australia website glossary 2020
- Safety Management Kit: Booklet 3: Safety Risk Management: CASA December 2014
- SKYbrary website Eurocontrol: 2020

SELF-CHECK QUESTIONS

Use these questions to test your knowledge of the unit.

- What percentage of accidents are attributed to Human Factors?
- What are the five Hazatts and what are the antidotes for each?
- What are the three stages of Situational Awareness?
- What does the pneumonic "IMSAFE" stand for?
- What can you do to rectify if your ears "block" on a fast descent?
- Above what height must you use oxygen?
- What does the pneumonic "DECIDE" stand for?
- What is meant by "Eustress"?
- Why is underload stress as dangerous in aviation as overload stress?

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- Why should you not fly when you have a cold?
- What is the minimum time between consumption of alcohol and flying.
- Why is adequate hydration important?
- How is "Judgement" defined?
- What is an "UAS"? Give three examples of an UAS.