

Aeronautical Decision Making (ADM)

ADM is a systematic approach to the mental process used by pilots to consistently determine the best course of action in response to a given set of circumstances.

▶ **PAVE**

The four fundamental risk elements:

▶ **P**ilot

▶ **A**ircraft

▶ **e**n**V**ironment

▶ **E**xternal Pressures

Risk area	Examples
<u>P</u>ilot	Physical and emotional readiness Total time Recent flight currency
<u>A</u>ircraft	Suitability to mission Recent maintenance Redundancy of systems Weight and balance
<u>e</u>nvironment	Weather Terrain
<u>E</u>xternal pressures	Get-there-itis Expectations of passengers Worries over unrelated matters

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Brandywine Soaring Association - "Fit to Fly"

Pilot			Aircraft		
Value	Risk	Score	Value	Risk	Score
2	less than 10 flights in type		2	first flight after reassembly	
1	less than 25 flights in type		2	first flight after inspection or maint	
1	fatigue (Less than 6 hours sleep)		1	first flight of the day for glider	
1	fatigue (flight at end of work day)		2	first flight of the day for towplane	
1	alcohol in last 10 hours		1	1-26 (tow rope shortlink)	
1	inadaquate food prior to flight		2	no wing runner available	
1	taking OTC medication		2	new tow pilot (<3 duties)	
3	inadequate hydration prior to flight		1	handheld radios in glider	
2	less than 10 hours since initial licensing				
2	pilot over age 70				
2	two equal pilots on board glider				
1	first flight in last 30 days				
2	first flight in last 60 days				
3	first flight in last 90 days				
1	taking friend for first glider ride				
4	first solo flight in glider				
2	less than 10 solo flights in glider				
TOTAL			TOTAL		

Risk	Total	Action
Normal	<5	Go and fly within your capabilities
Low	5 to 10	Mitigate risk, re-asses risk, first flight with CFIG
Medium	11 to 12	Consult or fly with CFIG
High	>13	No Go

PILOT	
AIRCRAFT	
ENVIRONMENT	
EXTERNAL PRESSURE	
YOUR TOTAL:	

EnVironment			Eexternal Pressure		
Value	Risk	Score	Value	Risk	Score
1	Runway 06 operation		4	major domestic problems	
1	cross wind 5 to 10 knots		3	illness in family	
3	cross wind >10 knots		2	schedule commitment after the flight	
1	temperature < 50 deg F		4	recent death of close family or friend	
3	temperature < 40 deg F		1	more than 2 gliders ready to launch	
4	thermal Stress "Caution"		1	visitors on the flight line	
11	thermal Stress "Danger"		2	taildragger A/C in pattern	
13	thermal Stress "Cancel"		1	other A/C in the pattern	
4	Wx is MVFR				
1	within 12 hours of TFR				
1	ops on Saturday or Sunday				
TOTAL			TOTAL		

PAVE RISK CHECKER

0

Normal Risk

Good to Go

Tap each factor that applies

Clear All

- P** Pilot ▼
- A** Aircraft ▼
- V** enVironment ▼
- E** External Pressure ▼



Are You Fit to Fly?

- ▶ If you were given an aeromedical exam right now, would you pass?
- ▶ What medications are you on / could be affecting your ability to fly?
- ▶ Stresses in your life carrying over to the cockpit?
- ▶ Are you fatigued?

The I'M SAFE Checklist

- ▶ Illness
- ▶ Medication
- ▶ Stress
- ▶ Alcohol
- ▶ Fatigue
- ▶ Emotion (or) Eating

Illness

- ▶ Even relatively minor illnesses can compromise pilot performance
- ▶ Respiratory / congestion issues are more serious when taking into account the pressure changes associated with flying



Medication



- ▶ What medications have you taken recently? This is not just prescription drugs.
- ▶ Do any of these have the potential to impair your ability to fly?
- ▶ Do you know how this medication affects you?
- ▶ Do you know how long it takes for the effects to wear off?

Stress



- ▶ Are you under a lot of stress in your day-to-day life on the ground? This can carry over to affect your focus in the air.
- ▶ What about the stress you are under to complete the flight? Do you feel pressured to get to your destination, or do you feel that your passengers are judging you?

Alcohol

- ▶ How long ago was your last alcoholic beverage?
- ▶ Are you past the 8 hours "bottle to throttle" rule?
- ▶ Is there any chance your blood alcohol content may be at or above .04%?
- ▶ You don't have to still be 'drunk' for alcohol to affect your cognition – a hangover or associated dehydration can negatively affect your abilities just as much.



Fatigue



- ▶ How much sleep did you get last night?
- ▶ Just one night's interrupted sleep can negatively affect your focus and abilities – multiple nights of missed / interrupted sleep exponentially worsen the effects of fatigue.
- ▶ Poor eating habits or missed meals also contribute to systemic fatigue

Emotion



- ▶ Seriously upsetting events like loss of a loved one, job, a move, etc should be fully recovered from before getting back in the cockpit

Eating

- ▶ Neglecting to eat, or assuming you can do it later, is taking a chance
- ▶ Accommodations at small airports range from pretty good to non-existent
- ▶ Plan beforehand, and have a nutritious snack in reserve
- ▶ Plan your hydration strategically



Hazardous
Attitudes
and
Antidotes

- The first step is **recognition**: When you hear one of those classic phrases in your head (or feel the associated emotion), label it as hazardous.
- Immediately replace it with the antidote (say it out loud if needed).
- These attitudes often combine (e.g., impulsivity + macho during a rushed approach, or invulnerability + anti-authority when skipping weather checks).

Anti-Authority

Don't tell me what to do

Follow the rules. They are usually right.

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Ignoring requirements for cross country flight

Student pilot with low hours and only 0.5 hours simulated instrument time flew cross country without instructor endorsement.

Conditions deteriorated into IMC. Fatal descent into terrain.

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Disregard for checklists and procedures

Business jet crash: crew failed to unlock flight controls or perform the required flight control check during the "After Start" and "Taxi" checklists.

Investigation revealed this wasn't a one-off: they had skipped these critical steps on 98% of their previous 175 flights, relying on memory and routine instead of proper challenge-response procedures.

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Violating restrictions

Flight crew executed circling approach at night to Aspen airport despite a specific FAA (NOTAM) prohibition due to terrain and descent requirements.

15 passengers and 3 crew all died.

Impulsivity

Do something quickly!

Not so fast. Think first.

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Wrong control pulled on takeoff

Shortly after takeoff engine began running rough. The pilot in the left seat panicked, grabbed the first knob he saw, and yanked it hard—mistaking it for carburetor heat and instead pulling the mixture control to idle cutoff. The engine quit completely.

The airplane crashed into a cemetery a quarter-mile off the runway end, killing both pilots. The mixture knob was found still in the deceased pilot's hand, pulled so forcefully that the cable detached.

Impulsivity

Do something quickly!

Reacting inappropriately to conditions

Not so fast. Think first.

Go-around (TOGA) mode inadvertently activated. Instead of recognizing the mode change, cross-checking instruments, and calmly responding per procedures, the FO reacted with rapid, inappropriate forward elevator inputs. Aircraft entered steep nose-down descent. Only 32 seconds passed from the mode activation to impact; the crew did not recover.

Macho

I can do it!

Taking chances is foolish

Macho

I can do it!

Unauthorized aerobatics

Taking chances is foolish

CFI ~ 500 hours took two students on a flight and performed spins, barrel rolls, and snap rolls in a Piper Arrow that was not approved for aerobatics. Radar data and wreckage analysis showed the aircraft entered aggressive maneuvers that overstressed the airframe, causing the wing spar to fail in flight.

The plane broke apart, killing the instructor and both students.

Macho

I can do it!

Overestimation of skill level

Taking chances is foolish

Tennessee Fly Girl (Jenny Blalock)

The NTSB final report highlighted multiple hazardous attitudes, including a macho attitude where she overestimated her own abilities. She pushed her skills and the aircraft beyond safe margins in ways that appeared intended to demonstrate prowess, contributing to the sequence of poor decisions that led to the accident.

Invulnerability

It won't happen to me.

It could happen to me.

Invulnerability

It won't happen to me.

Continuing an approach as conditions deteriorate

It could happen to me.

Crew continued approach and landing into severe thunderstorms with winds gusting to 45 knots—exceeding the aircraft's maximum crosswind limits for a wet runway. Despite clear evidence of deteriorating conditions (heavy rain, lightning, and loss of visual references), they pressed on, believing the hazards wouldn't affect them.

The aircraft overran the runway, killing the captain and 10 passengers. The NTSB highlighted the crew's sense of invulnerability in continuing despite known severe risks.

Invulnerability

It won't happen to me.

Ag pilot antics

It could happen to me.

Experienced ag pilot, accustomed to low-level "jumping from field to field," demonstrated a Thrush aircraft to potential buyers and flew aggressively. He felt invulnerable due to his routine success in marginal conditions and narrowly avoided a serious incident.

He later attributed the close call to developing a false sense that hazards wouldn't catch him. Similar patterns appear in many low-altitude ag and banner-towing accidents where pilots discount risks because "I've done this hundreds of times without issue."

Resignation

What's the use?

I'm not helpless. I can
make a difference

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Deferring to other crew

During approach in icing conditions with a flap anomaly, the FO asked the captain, "Should I go around?" The captain said no and to keep descending. Airspeed decayed and stall warnings activated. FO resigned herself to captain's authority and handed control back instead of insisting on a go-around.

The aircraft stalled and impacted short of the runway.

Resignation

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Failing to use all resources

Relatively inexperienced pilot flying complex multi-engine aircraft with his family aboard encountered deteriorating conditions. Instead of taking assertive corrective action (diverting, declaring an emergency, or troubleshooting effectively), he felt overwhelmed and resigned to "whatever happens,"

CFIT, killing everyone on board.