

Truckee Tahoe Airport District

KTRK April-2024

Ten Ways to Make Your Flying Ten Times Safer

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flyphil.INFO

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Member AOPA, EAA, NAFI, SAFE, CAA, OPA, WPA



Presenter

Philip Mandel

4500 TT since 1981
2700 as CFI since 1983

FAA Steam Rep...

and a recovering
engineer

Aircraft owned →

C-172

PA-28 (140)

Christen Eagle II

RV-4

C-150

T-18

PA-23 (Apache)

T-18

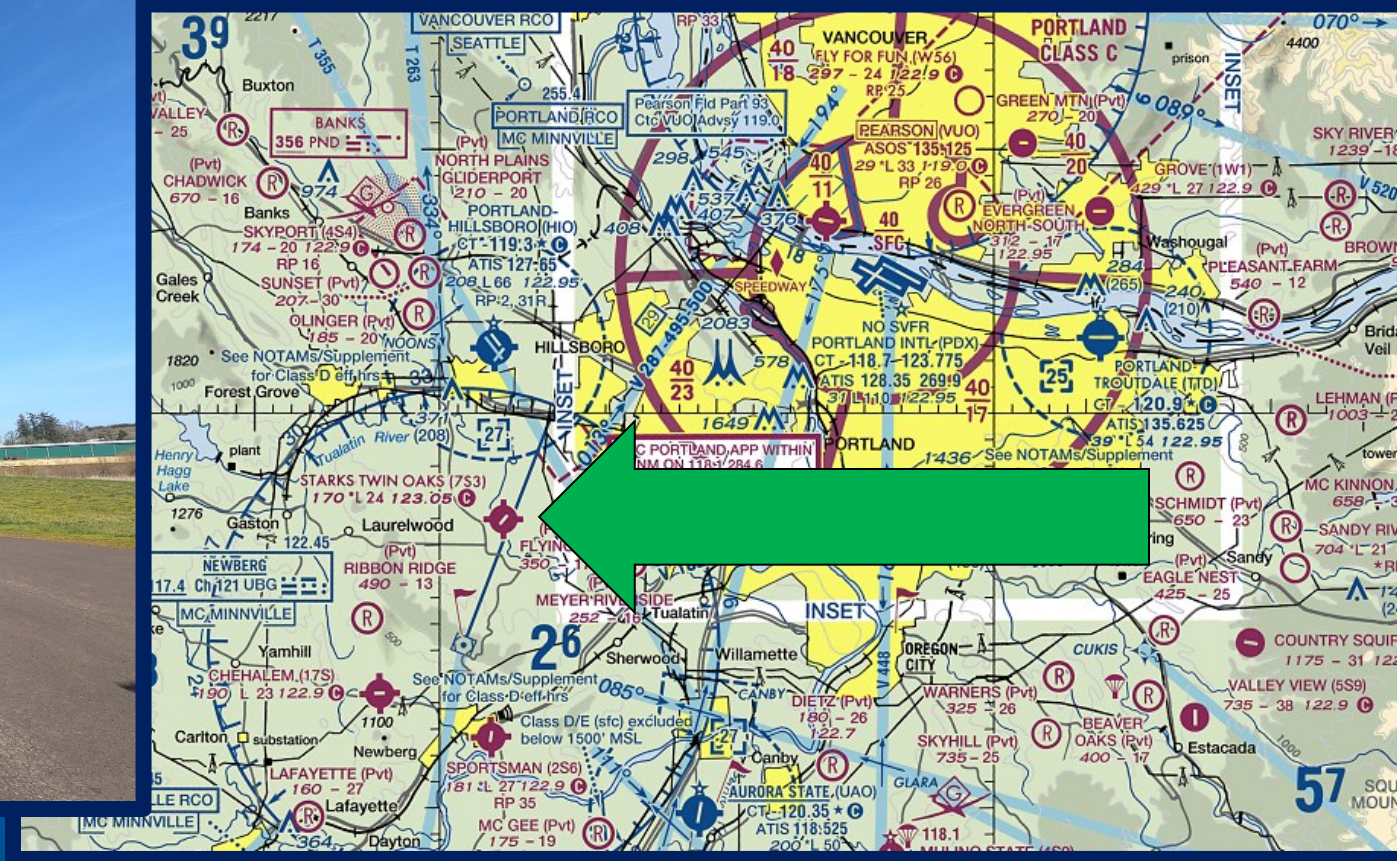
AA-5A

T-18

**Thorp T-18 built by Bill Cordoza c. 1977
Modified by Phil Albee, rebuilt by Lee Walton in
2019 – N118BC**



Starks Twin Oaks Airpark (7S3), Hillsboro OR



Twin Oaks Airpark – where dreams come true



“Ten Ways to Make Your Flying Ten Times Safer”

This seminar will review ten common ways pilots get themselves in trouble and systematically discuss what we can do to mitigate each of those risks.



“Ten Ways to Make Your Flying Ten Times Safer”

This seminar will make you think, it will make you humble, it will make you modest.

Phil learned his lessons the hard way - sweating fuel, getting caught in weather, losing power at 300 AGL - and will share his experience so you don't have to make the same mistakes yourself.

Question...

Why?

You are not a bird

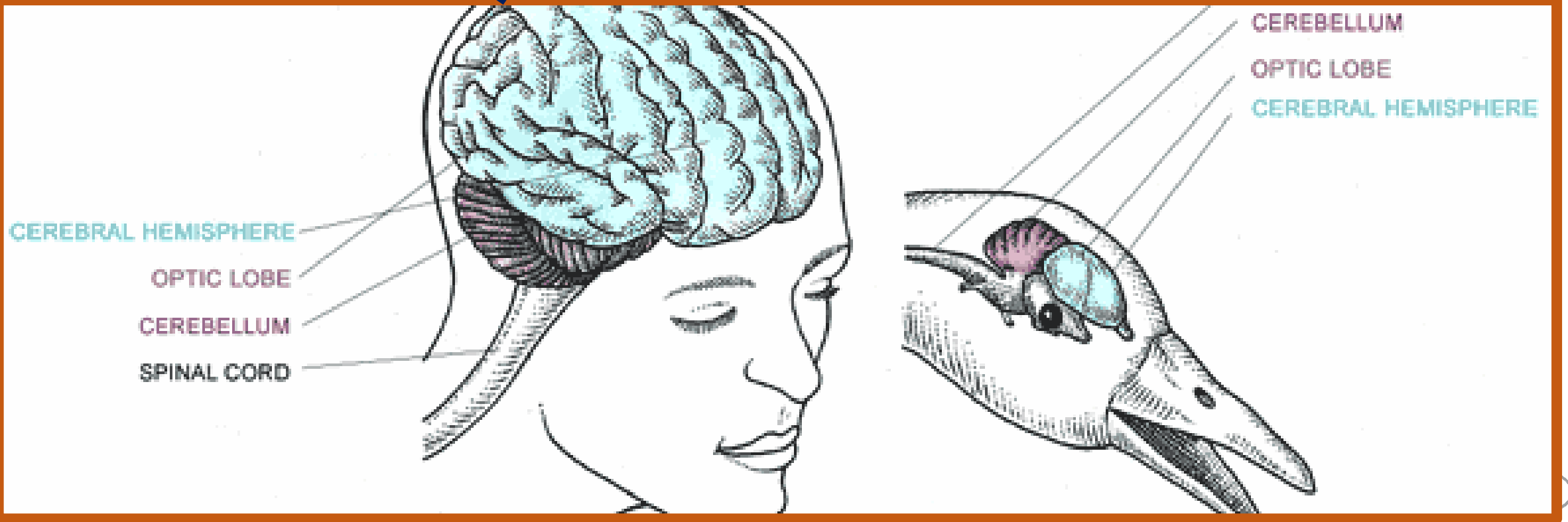


You are not a bird



You are not a bird

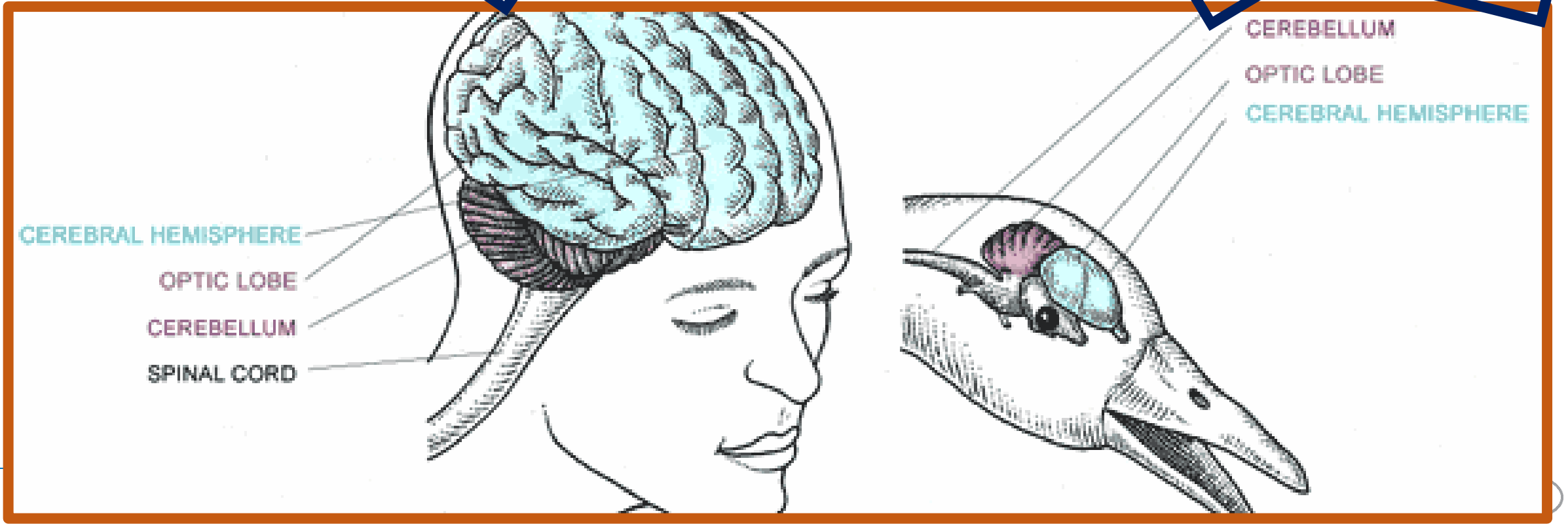
Human brain:
2-3 lbs (907-1,360 grams)



You are not a bird

Human brain:
2-3 lbs (907-1,360 grams)

Bird brain:
Single-digit GRAMS!

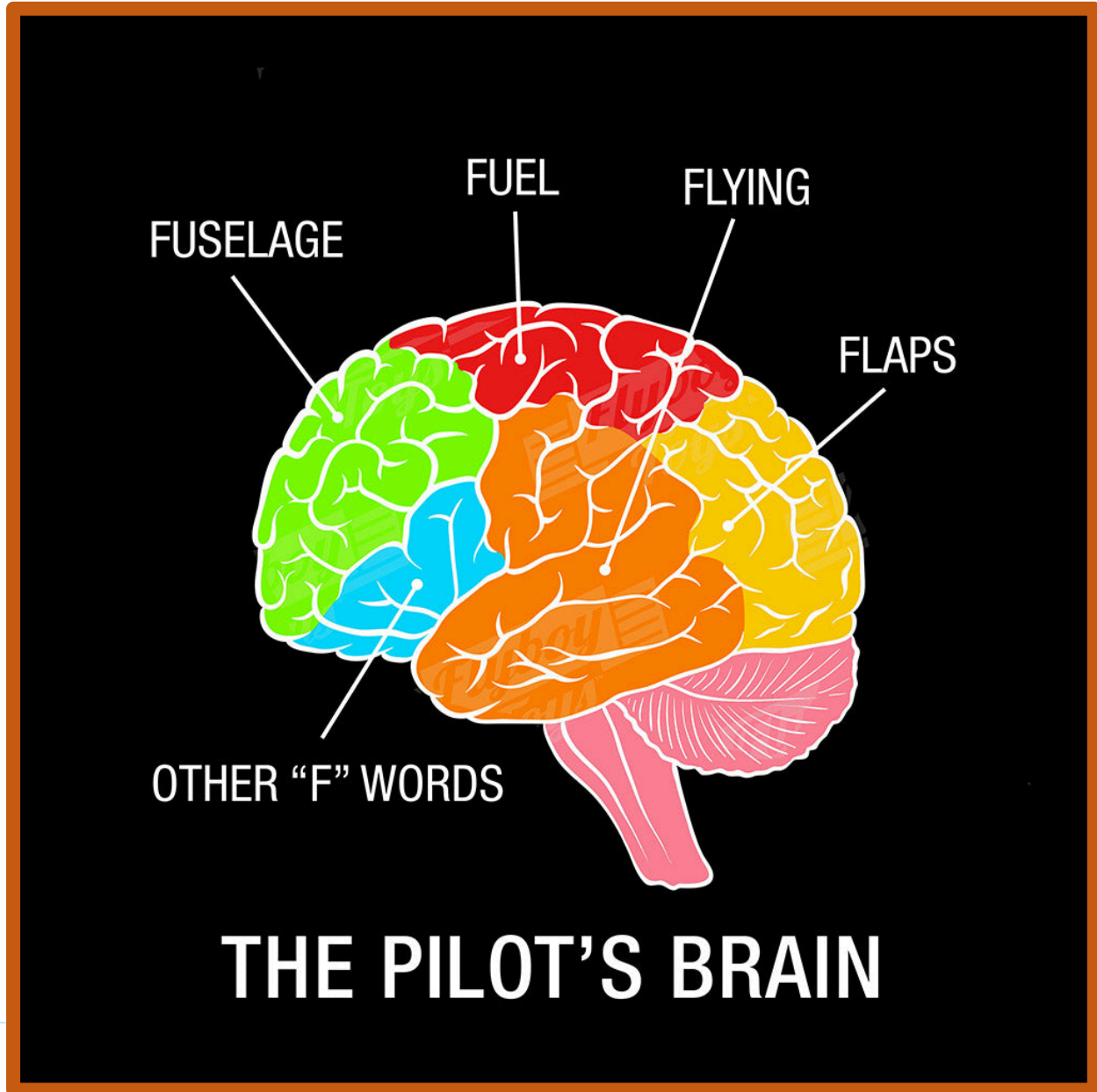


You are not a bird

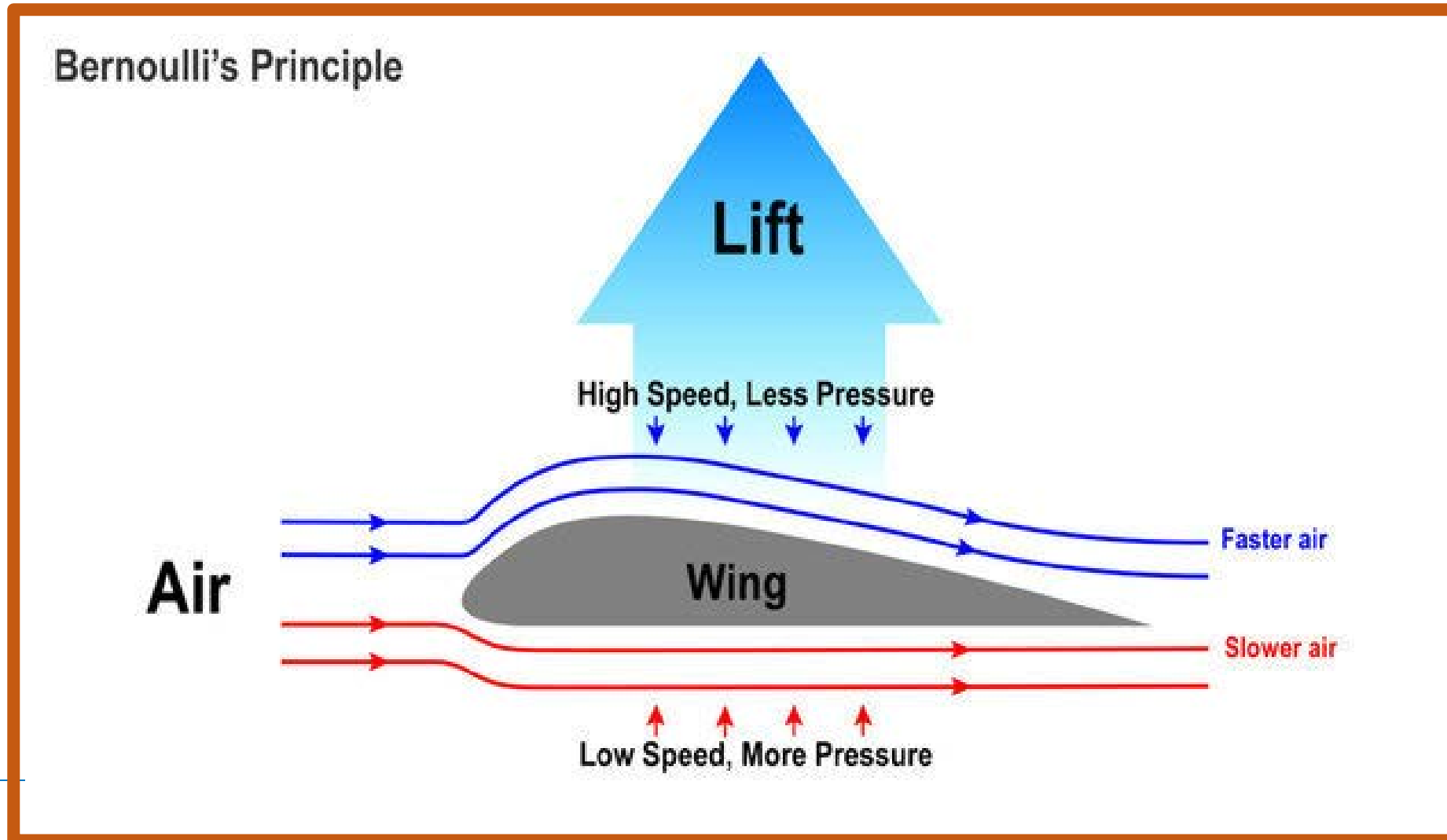


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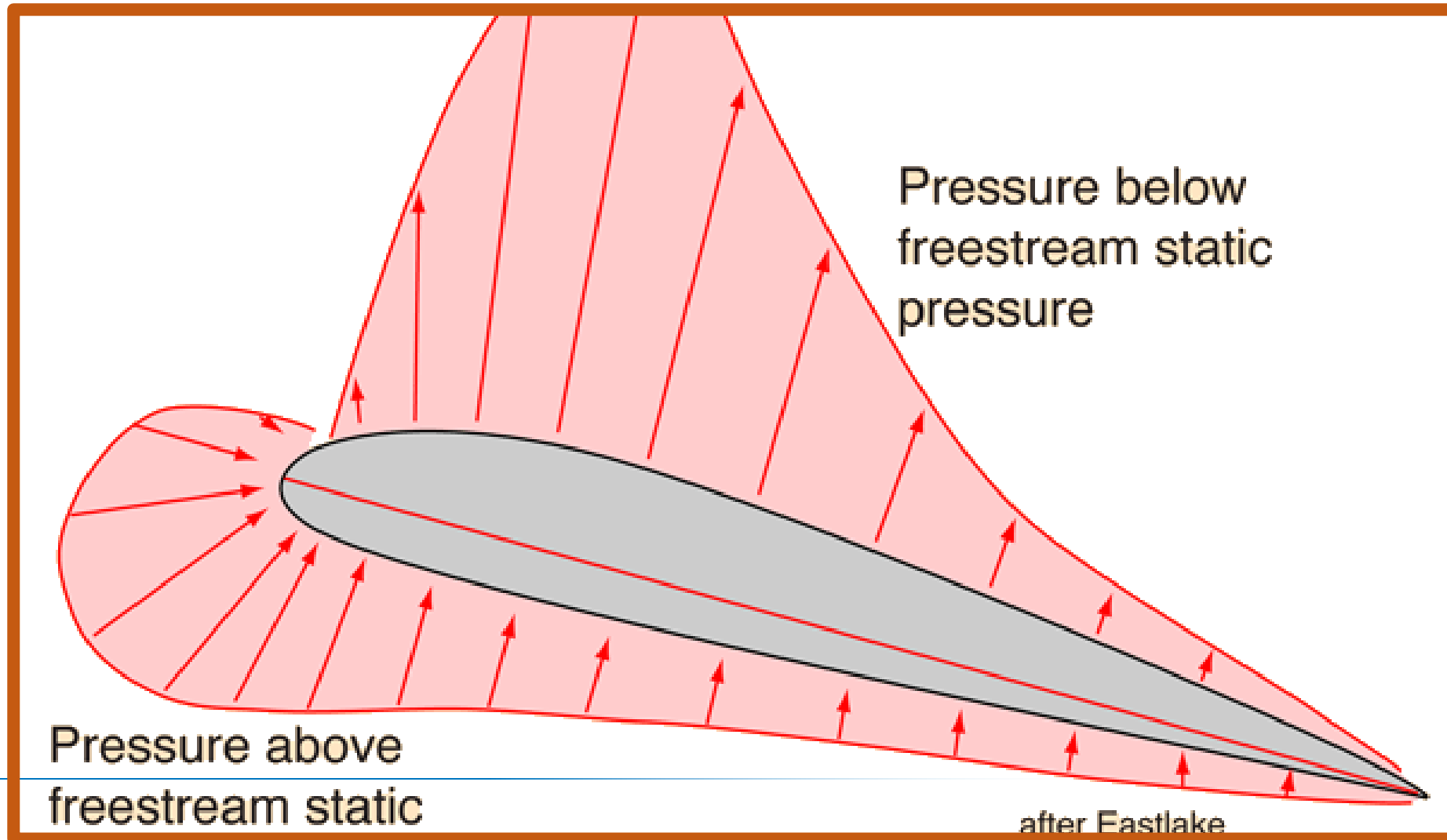
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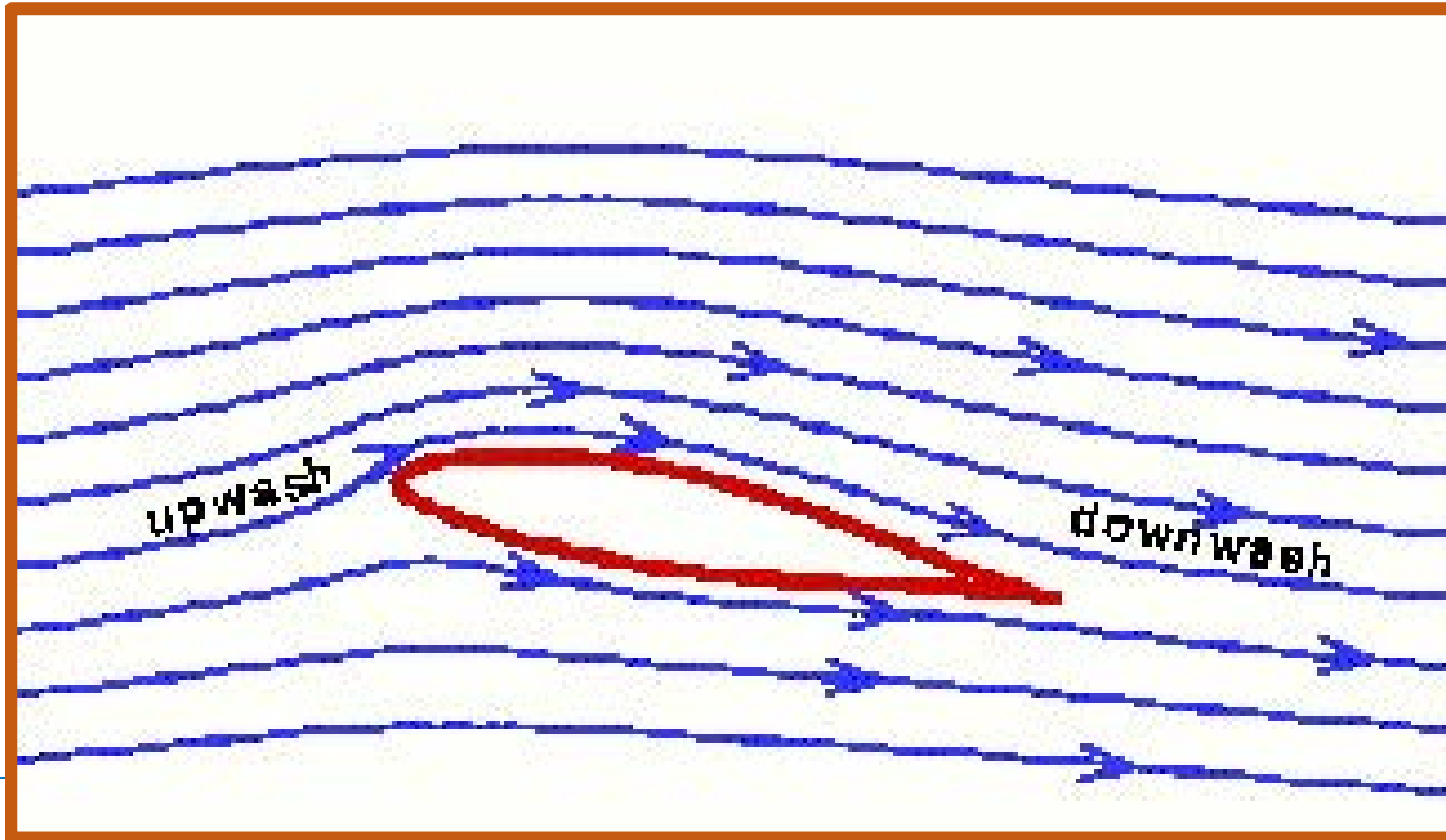
You are not a bird



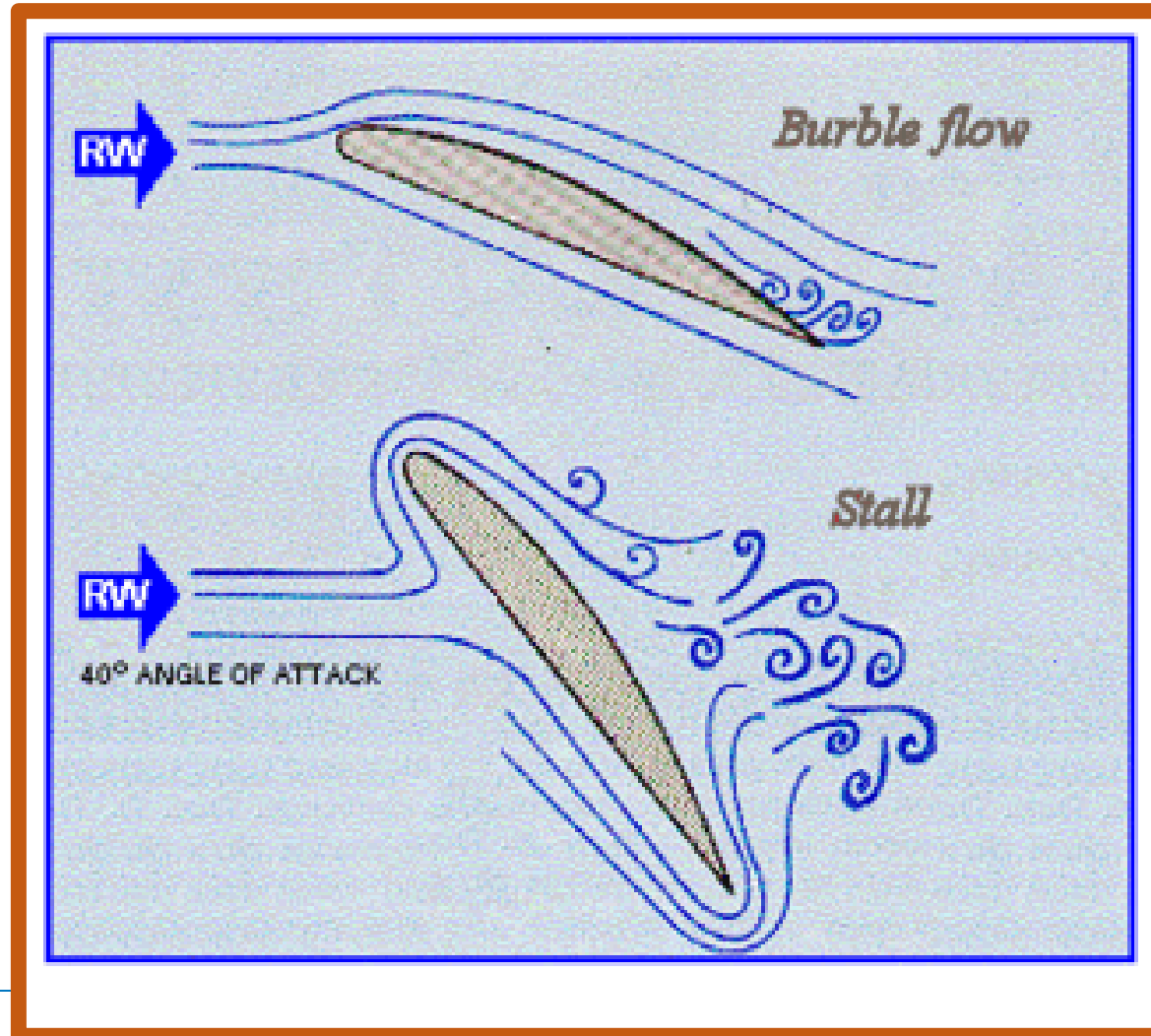
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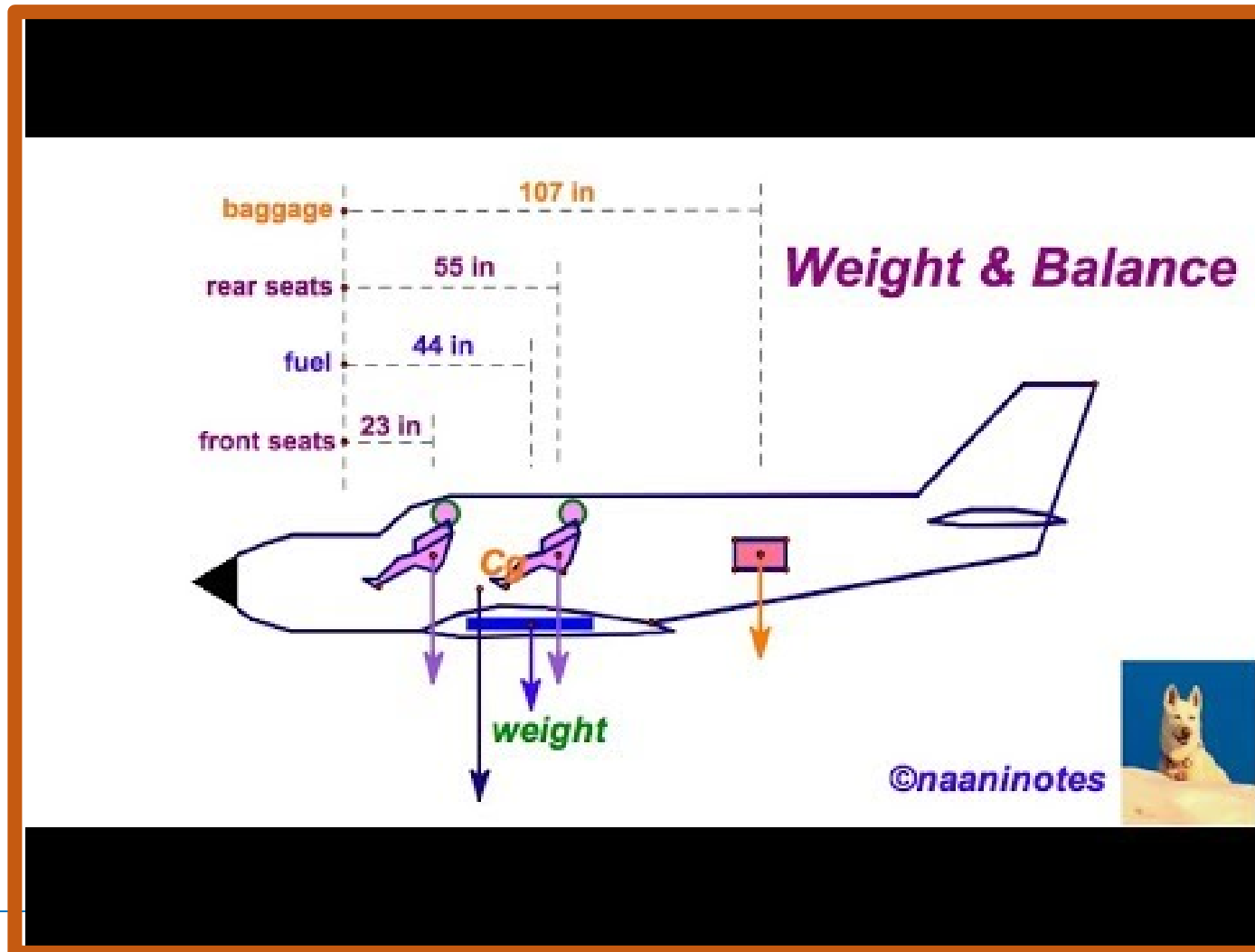
You are not a bird



You are not a bird

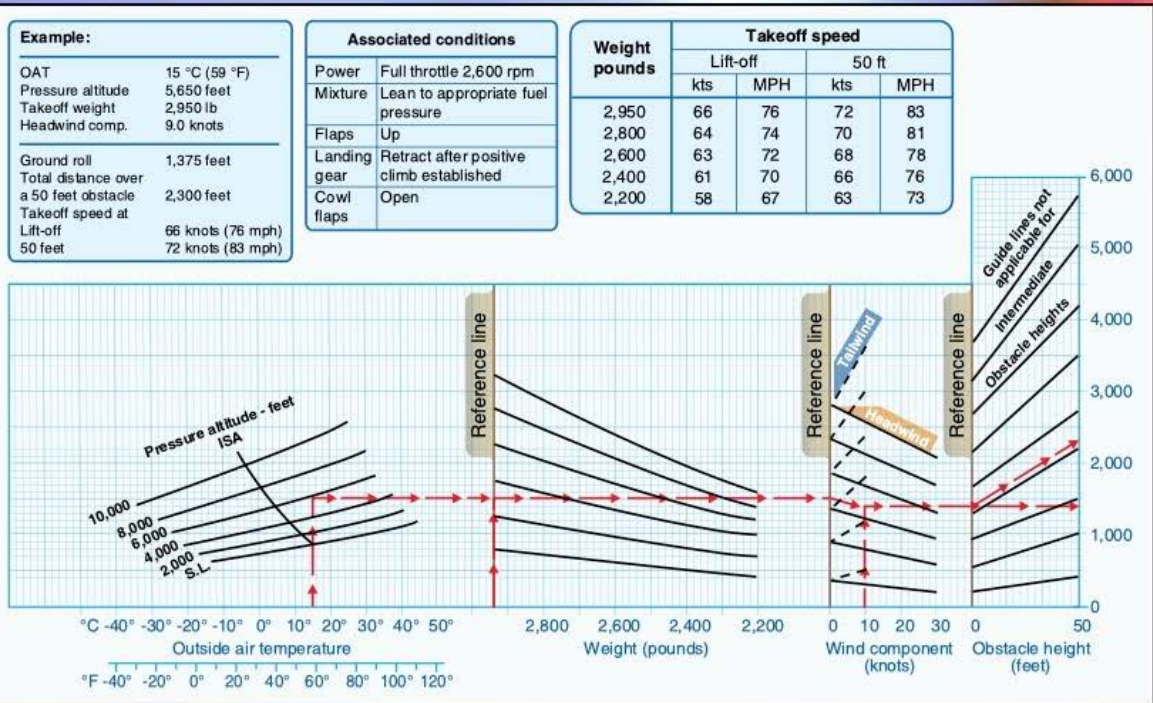


You are not a bird



You are not a bird

Calculating AIRPLANE TAKEOFF DISTANCE

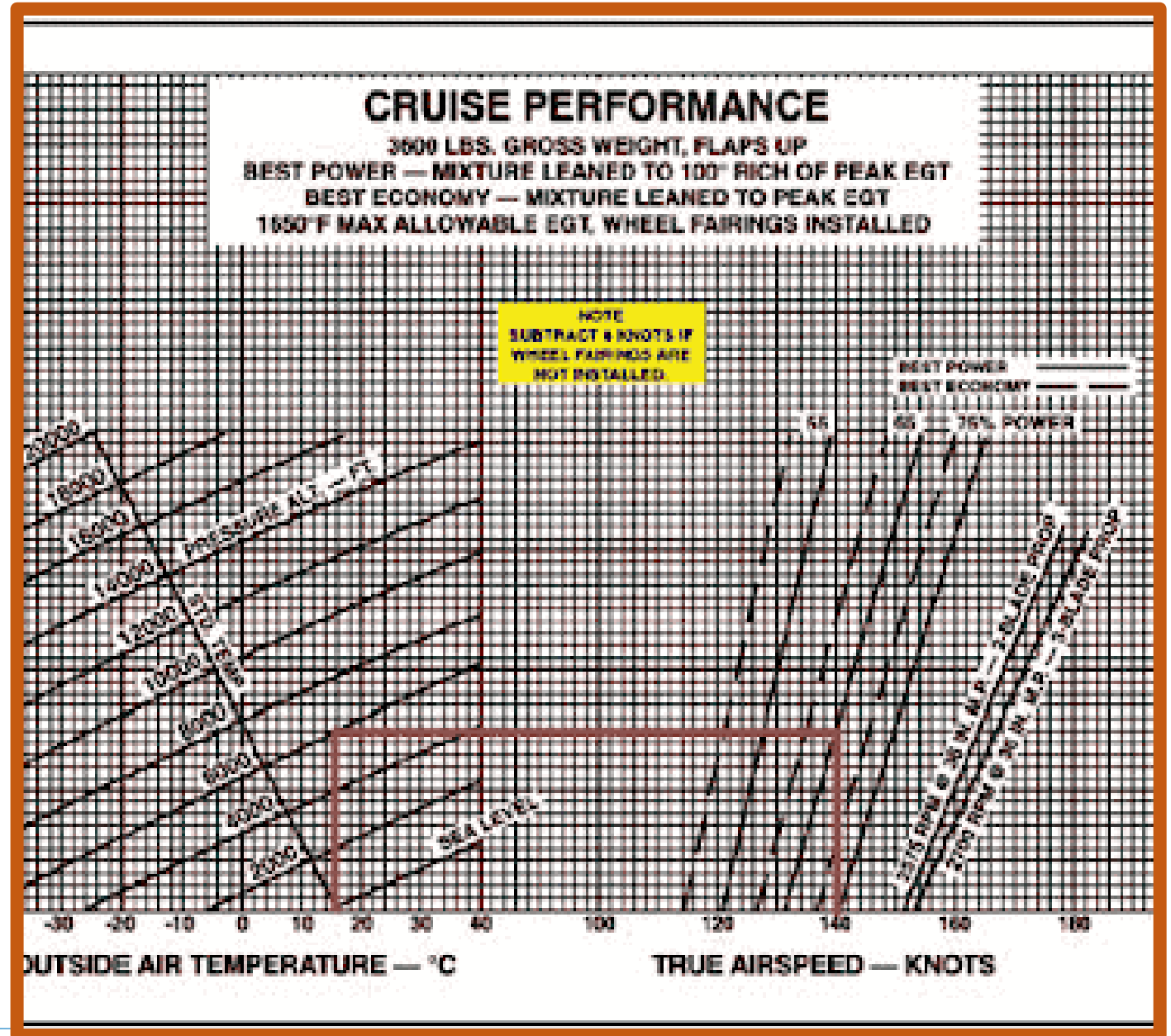


**Private Pilot
Written Test
Study**

AIDYL CONCEPTS

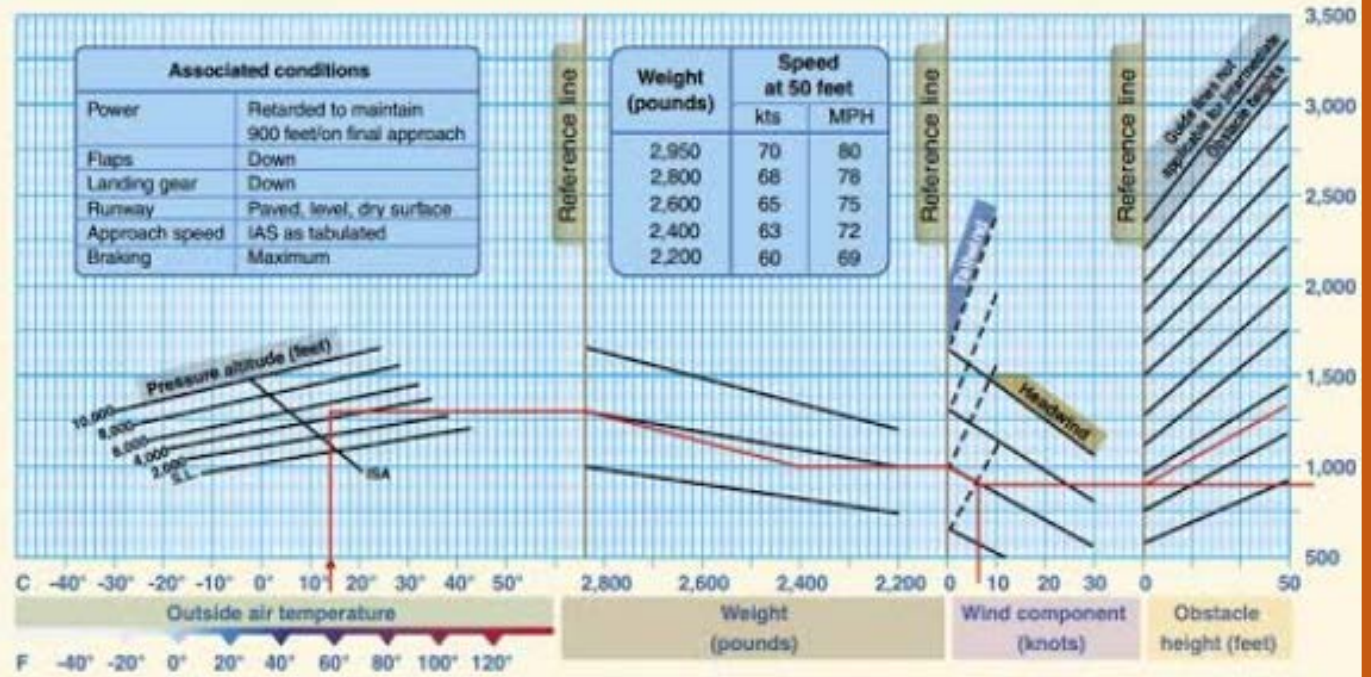


You are not a bird



You are not a bird

Landing Distance Graph



Start with the temperature and move up to the pressure altitude, then draw a line to the right to the reference line.

From the reference line draw a line proportionally down to the applicable weight.

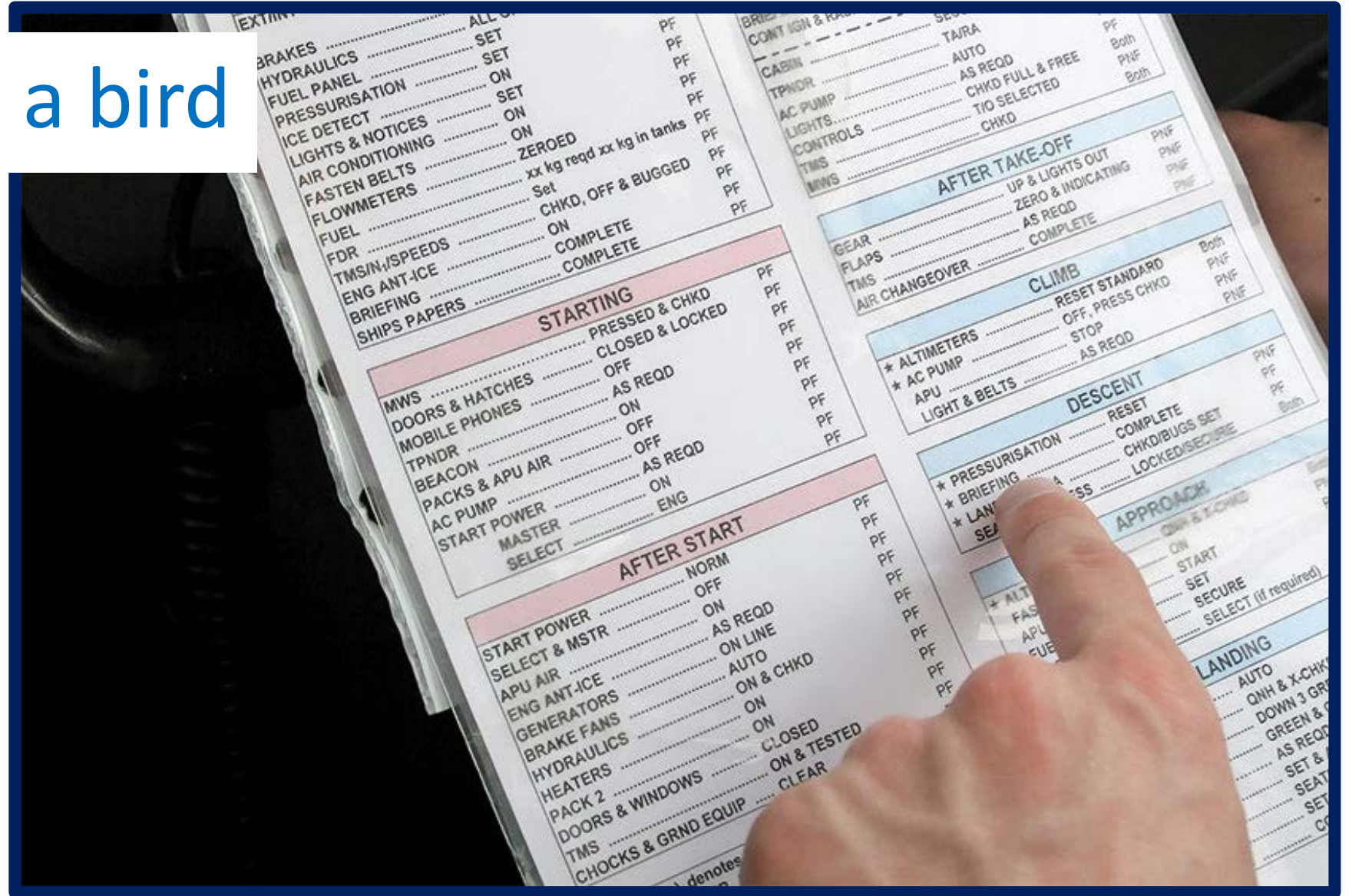
From the reference line, draw a line to the headwind or tailwind component.

From the reference line, draw a line directly to the right of landing roll. Draw a line up to the 50' line for 50' obstacle clearance distance.

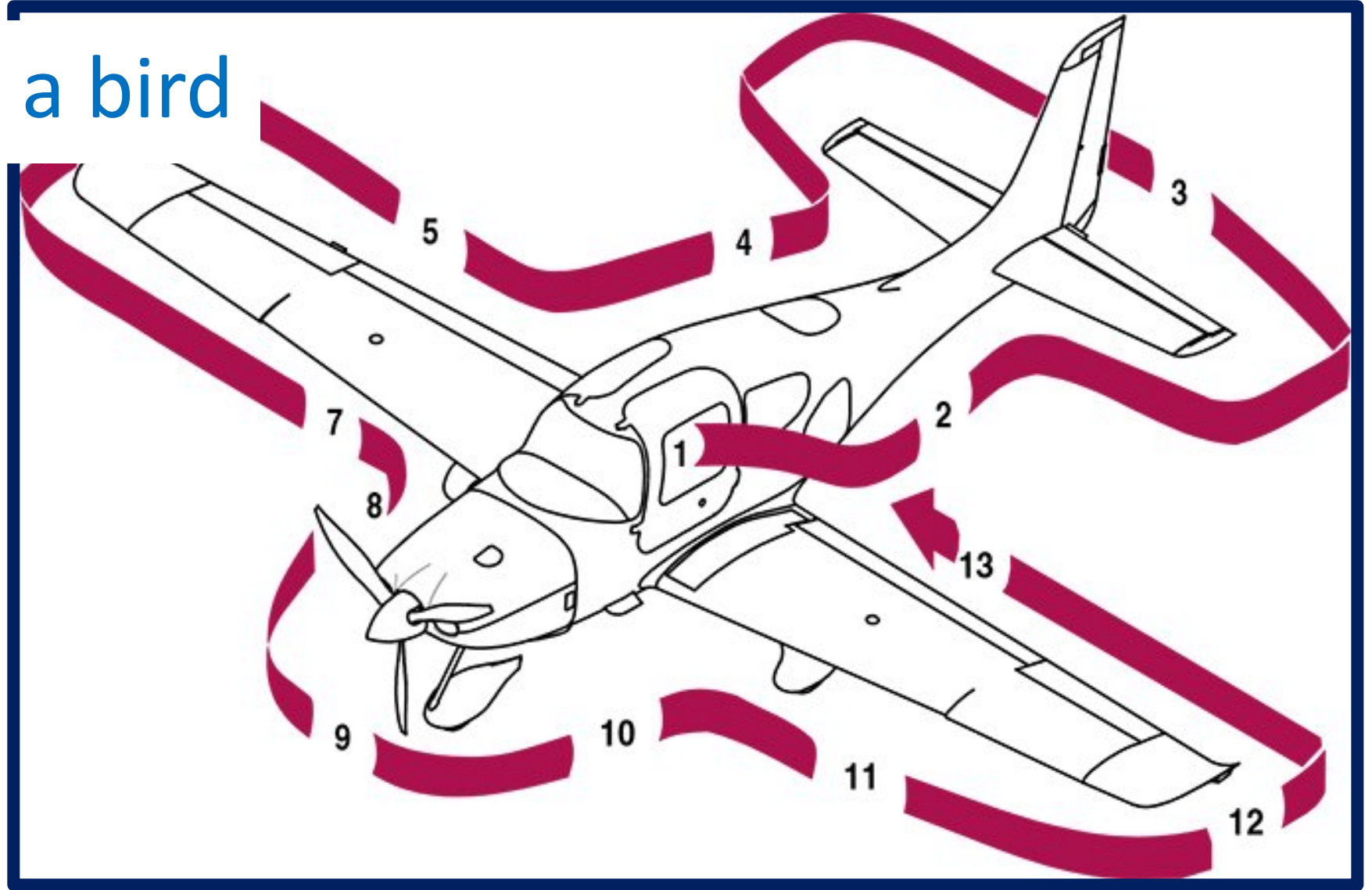
You are not a bird



You are not a bird



You are not a bird



You are not a bird

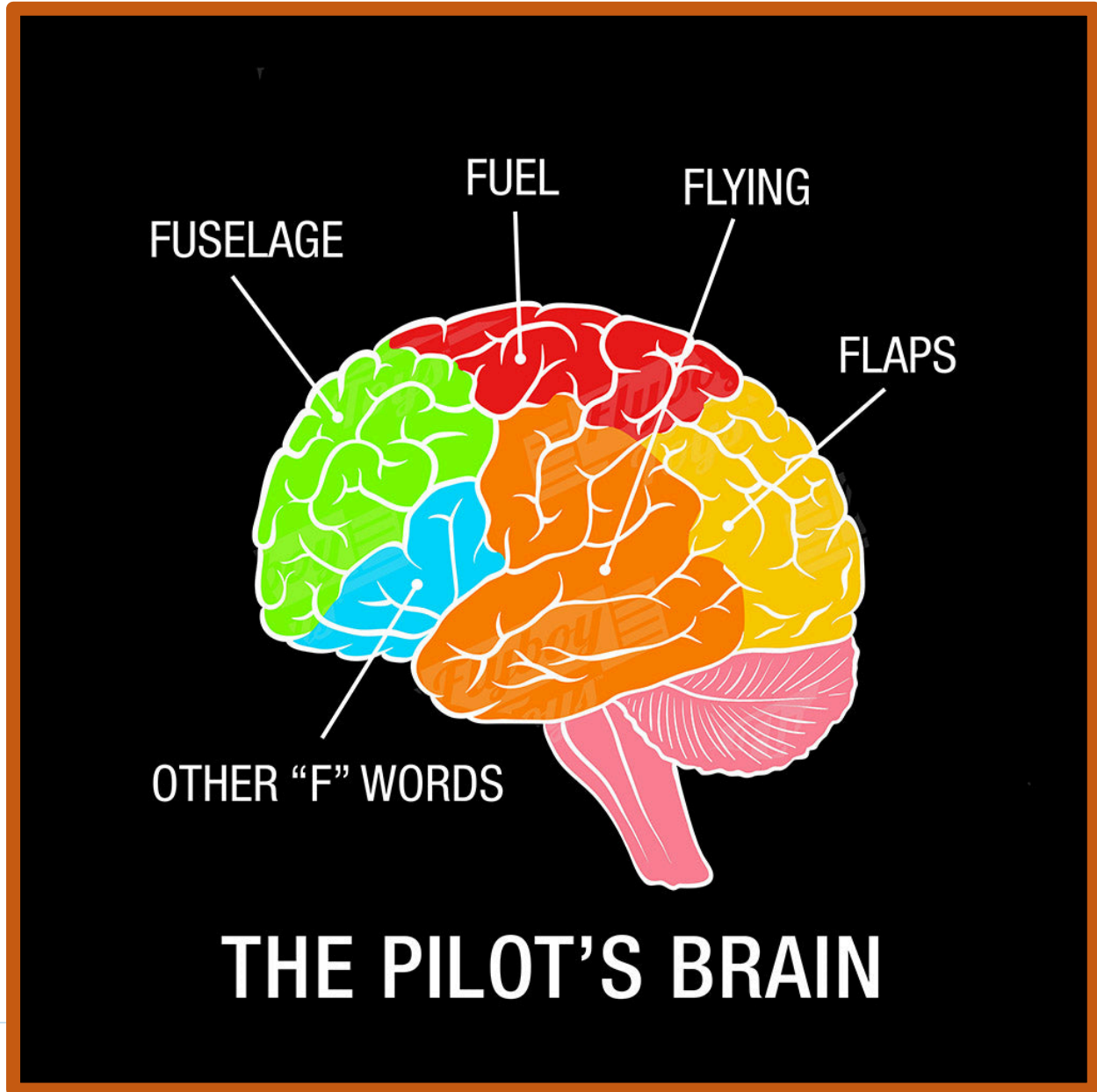


How to Use **PAVE** Checklist
for Aviation Risk Management

What's your point, Phil?



You are not a bird



What's your point, Phil?

TRAIN



TRAIN.....

Under pressure, you do not rise to the occasion, you sink to the level of your training and recent practice



What's your point, Phil?

PRACTICE



With frequent training and practice, you, too, can do this...

The pilot of an F-16 brings it back safely following a complete power loss.

F-16 Dead Stick Landing



Murphy's Law

Murphy's Law

Anything that can go wrong...
will go wrong.

Updated Murphy's Law

No longer Murphy's law but
Langewiesche's "Everything
that can go wrong usually
goes right, and then we draw
the wrong conclusion."

Updated Murphy's Law

No longer Murphy's law but
Langewiesche's "Everything
that can go wrong usually
goes right, and then we draw
the wrong conclusion."

...that it will always go right.

Normalization of Deviance



NORMALIZATION OF DEVIANCE

A Threat to
Aviation Safety



Karlene Petitt PhD

The Richard G. McSpadden (formerly Nall) Report AOPA Air Safety Institute Accident Report

2023 Preliminary Data

Figure 1.1: General Aviation Accidents in 2023

2023 Non-commercial fixed-wing



Number of accidents	924
Number of aircraft	929
Number of fatal accidents	157
Lethality (%)	17
Fatalities	253

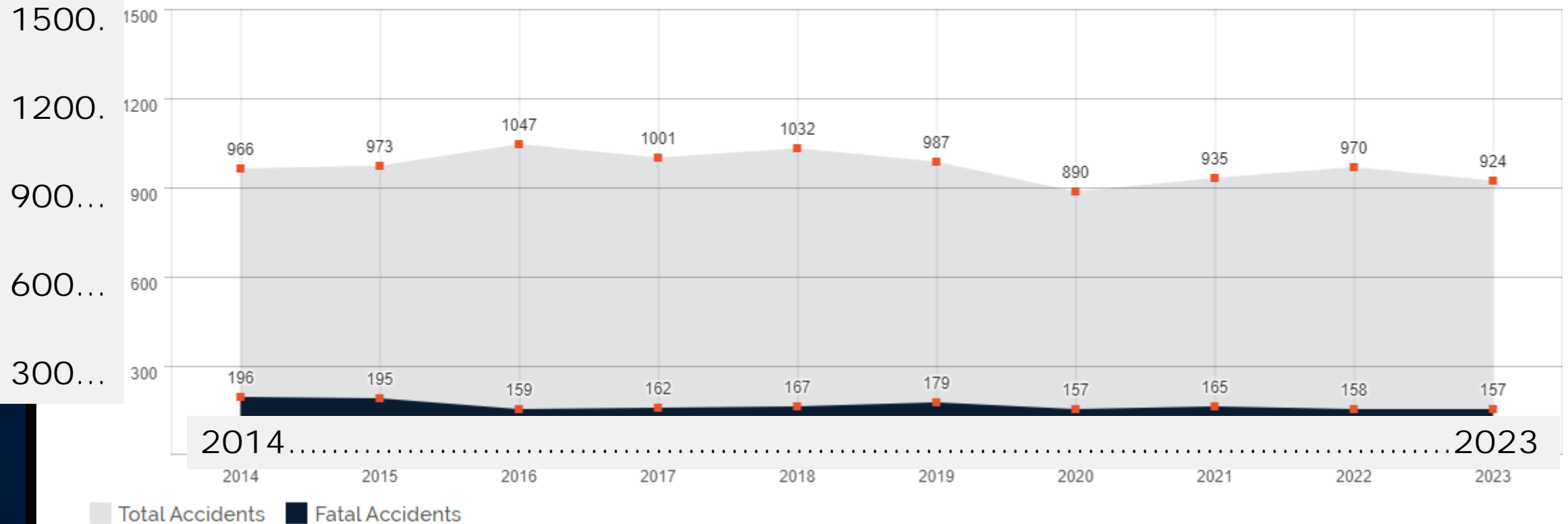
**Each aircraft involved in a collision is counted separately.*

GA Accident Trends 2014-2023

2023 Preliminary Data

Figure 1.2: General Aviation Accident Trends 2014-2023

2023 Non-commercial fixed-wing



Type of Operation

2023 Preliminary Data

Figure 1.6: Type of operation

2023 Non-commercial fixed-wing



	Accidents	Fatal Accidents	Fatalities
Aerial Application	1 0.1%	0 0%	0 0%
Personal	679 73.5%	121 77.1%	178 72.1%
Instructional	178 19.3%	22 14%	41 16.6%
Public Use	2 0.2%	0 0%	0 0%
Positioning	13 1.4%	0 0%	0 0%
Aerial Observation	8 0.9%	2 1.3%	2 0.8%
Business	13 1.4%	3 1.9%	10 4%
Executive / Corporate	2 0.2%	0 0%	0 0%
Other work use	20 2.2%	6 3.8%	11 4.5%
Other or unknown	8 0.9%	3 1.9%	5 2%

<gulp!>

Flight Conditions

2023 Preliminary Data

Figure 1.7: Flight Conditions

2023 Non-commercial fixed-wing



	Accidents		Fatal Accidents		Fatalities	
Day VMC	745	80.7%	103	7%	155	8.5%
Night VMC	65	7%	16	7%	27	8.5%
Day IMC	18	2%	17	7%	26	8.5%
Night IMC	12	1.3%	10	7%	18	8.5%
Unknown	83	9%	11	7%	21	8.5%
Day VMC	1	100%	0	7%	0	8.5%

**Night fields include dusk.*

Pilots Involved

2023 Preliminary Data

Figure 1.8: Pilots involved

2023 Non-commercial fixed-wing



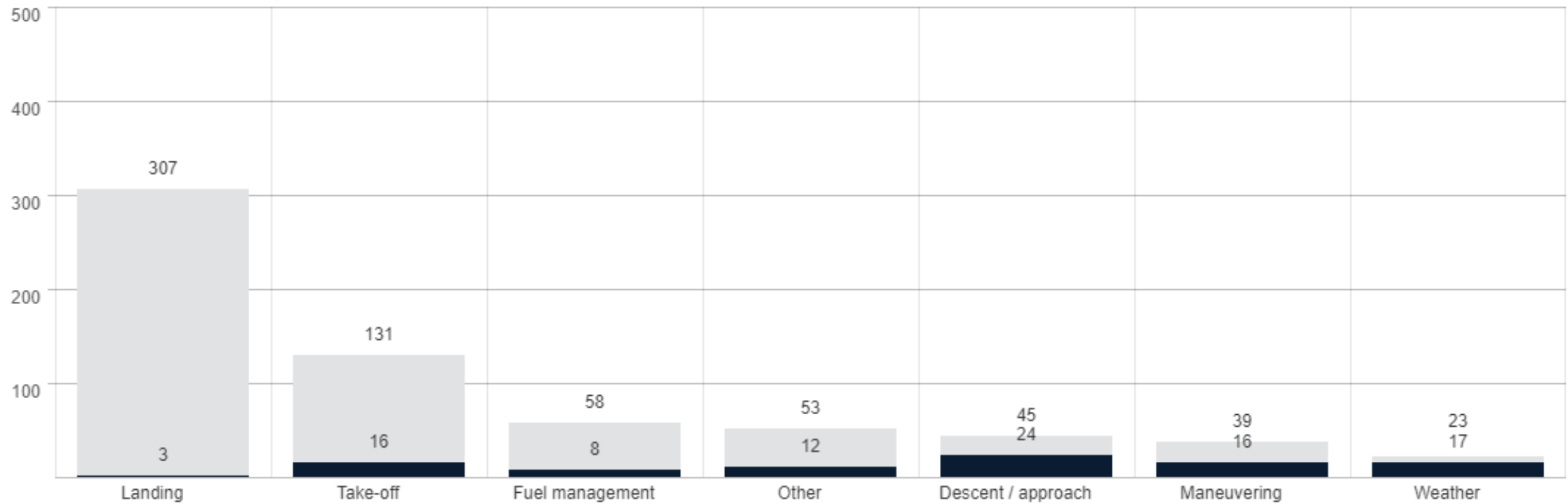
	Accidents		Fatal Accidents		Lethality
ATP	66	7.1%	0	0%	0%
Commercial	111	12%	0	0%	0%
Private	157	16.9%	1	0.6%	0.6%
Sport	6	0.6%	0	0%	0%
Student	38	4.1%	0	0%	0%
Other or unknown	1	100%	0	0%	0%
Other or unknown	550	59.3%	158	99.4%	28.7%
Second pilot on board	73	7.9%	0	0%	0%
CFI on board	131	14.1%	0	0%	0%
IFR pilot on board	218	23.5%	1	0.6%	0.5%

*CFI on board and IFR pilot on board include single-pilot flights.

Major Types of Accidents: 2020

Figure 1.11: Major types of accidents

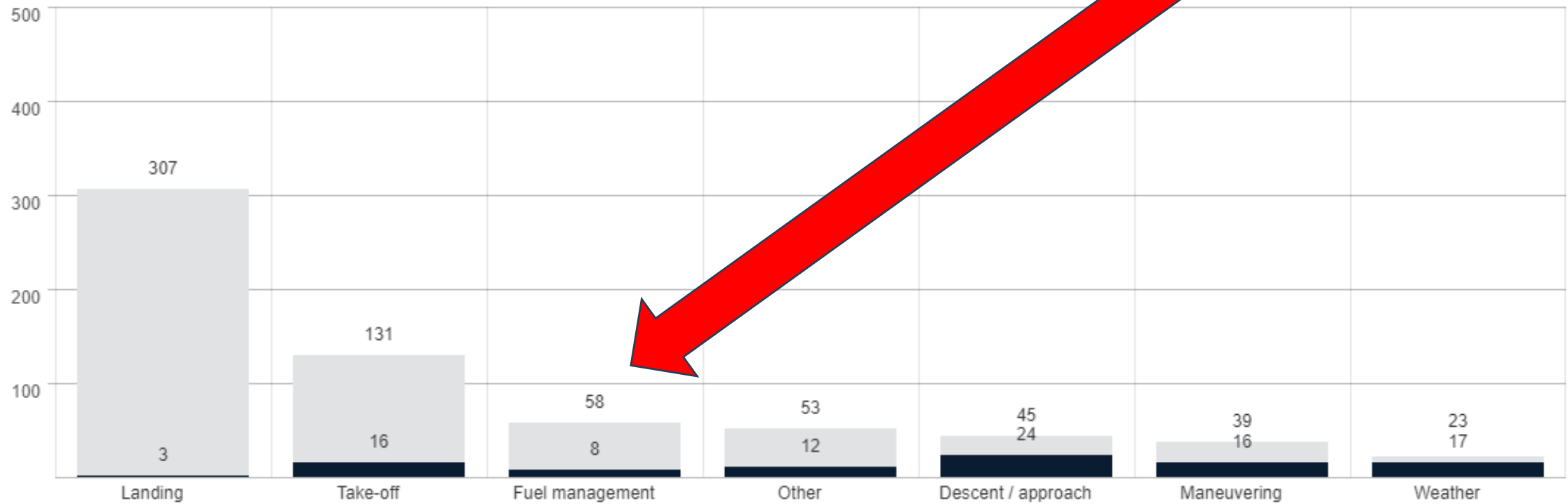
2020 Non-commercial fixed-wing



■ Total Accidents ■ Fatal Accidents

Major Types of Accidents: 2020

Figure 1.11: Major types of accidents
2020 Non-commercial fixed-wing



■ Total Accidents ■ Fatal Accidents

Fuel Mismanagement

boldmethod ▶

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Landing Accident Caused By Switching Tanks In The Pattern

By Colin Cutler | 03/16/2024 | [Previous](#) | [Next](#)



Fuel Mismanagement

The pilot stated he had an uneventful cross-country flight and on the downwind leg of the destination airport traffic pattern, he switched the fuel selector from the right tank to the left tank and turned on the boost pump. While on short final approach, the engine started losing power as the airplane was approximately 75 feet above ground level. The airplane subsequently impacted terrain about 600 feet short of the runway and came to rest upright. The pilot further stated that at the time of the engine power loss, he pushed all the controls, mixture, propeller, and throttle full forward and the engine rpm started to increase, but then quickly decreased again. The pilot then shut-off the master switch and walked to the fixed based operator to get help. He then walked back to the airplane, shut the ignition off and took his keys and headset out of the airplane. The pilot added that he did not touch the fuel selector.

Examination of the wreckage by a Federal Aviation Administration inspector revealed damage to the wings, landing gear, and stabilator...

Fuel Mismanagement

The pilot stated he had an uneventful cross-country flight and on the downwind leg of the destination airport traffic pattern, he switched the fuel selector from the right tank to the left tank and turned on the boost pump. While on short final approach, the engine started losing power as the airplane was approximately 75 feet above ground level. The airplane subsequently impacted terrain about 600 feet short of the runway and came to rest upright. The pilot further stated that at the time of the engine power loss, he pushed all the controls, mixture, propeller, and throttle full forward and the engine rpm started to increase, but then quickly decreased again. The pilot then shut-off the master switch and walked to the fixed based operator to get help. He then walked back to the airplane, shut the ignition off and took his keys and headset out of the airplane. The pilot added that he did not touch the fuel selector.

Examination of the wreckage by a Federal Aviation Administration inspector revealed damage to the wings, landing gear, and stabilator.

The inspector also noted that although adequate fuel remained in both fuel tanks, the airplane fuel selector was in the "off" position.

The pilot further reported that there were no preimpact mechanical malfunctions with the airplane.

Fuel Mismanagement

On Downwind, The Fuel Selector Was Inadvertently Positioned To "Off"



Engine quits, aircraft lands 600 feet short of the runway.



Fuel tanks switched, selector inadvertently positioned to "off"



Fuel Mismanagement

When It Comes To Fuel: “Look, Change, Wait”



Fuel Mismanagement

The fuel selector is often your point of failure:

- 1) You select a bad tank. Either an empty one or one that's contaminated.*
- 2) The valve fails and you can't feed from the tank.*
- 3) You keep burning a tank until it's empty.*
- 4) You don't move the selector all the way over to a tank, or you inadvertently select the off position.*

Fuel Management Made Easy – AOPA ASI



AOPA AIR SAFETY
INSTITUTE

0:02 / 12:39

Fuel Management Made Easy

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176,387 views Apr 20, 2017



Fuel Management

JULY 2023
Jul 23, 2023, 9:35 AM PDT
N118BC

KSPF → KRWF
Jul 23, 2023, 5:23 AM PDT
N118BC

KRXE → KSPF
Jul 22, 2023, 10:50 AM PDT
N118BC

KGCD → KRXE
Jul 22, 2023, 6:13 AM PDT
N118BC

7S3 → KGCD
Jul 21, 2023, 6:37 PM PDT
N118BC

7S3 → 7S3
Jul 17, 2023, 6:58 PM PDT
N16058

KUAO → 7S3
Jul 6, 2023, 8:13 PM PDT
N118BC

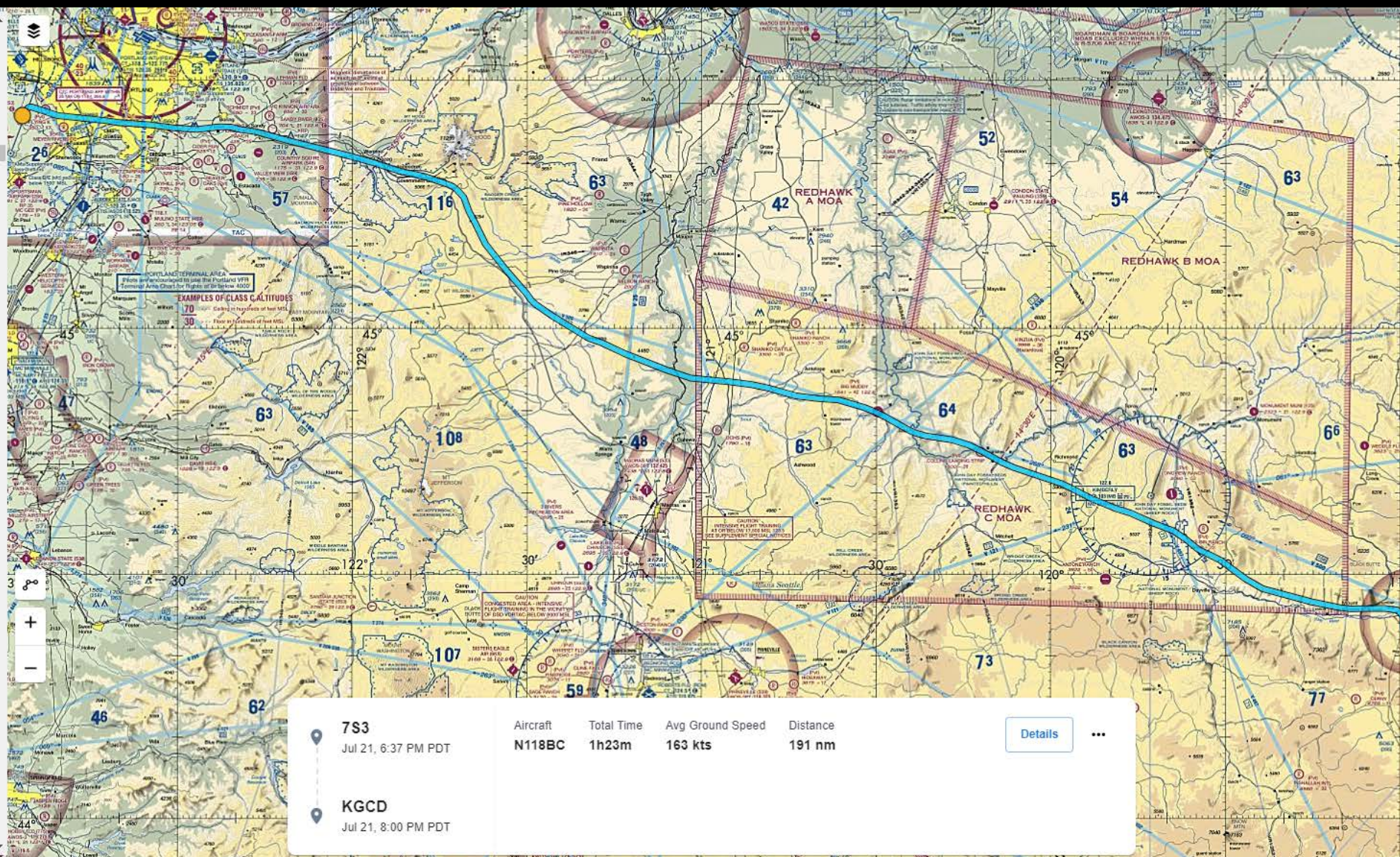
7S3 → KUAO
Jul 6, 2023, 5:17 PM PDT
N118BC

1W1 → 7S3
Jul 5, 2023, 2:34 PM PDT
N118BC

7S3 → 1W1
Jul 5, 2023, 12:28 PM PDT
N118BC

KSPB → 7S3
Jul 1, 2023, 7:01 PM PDT
N118BC

KSPB → KSPB



	Aircraft	Total Time	Avg Ground Speed	Distance	
7S3 Jul 21, 6:37 PM PDT	N118BC	1h23m	163 kts	191 nm	Details ...
KGCD Jul 21, 8:00 PM PDT					

Fuel Management

JULY 2023
Jul 23, 2023, 9:35 AM PDT
N118BC

KSPF → KRWF
Jul 23, 2023, 5:23 AM PDT
N118BC

KRXE → KSPF
Jul 22, 2023, 10:50 AM PDT
N118BC

KGCD → KRXE
Jul 22, 2023, 6:13 AM PDT
N118BC

7S3 → KGCD
Jul 21, 2023, 6:37 PM PDT
N118BC

7S3 → 7S3
Jul 17, 2023, 6:58 PM PDT
N16058

KUAO → 7S3
Jul 6, 2023, 8:13 PM PDT
N118BC

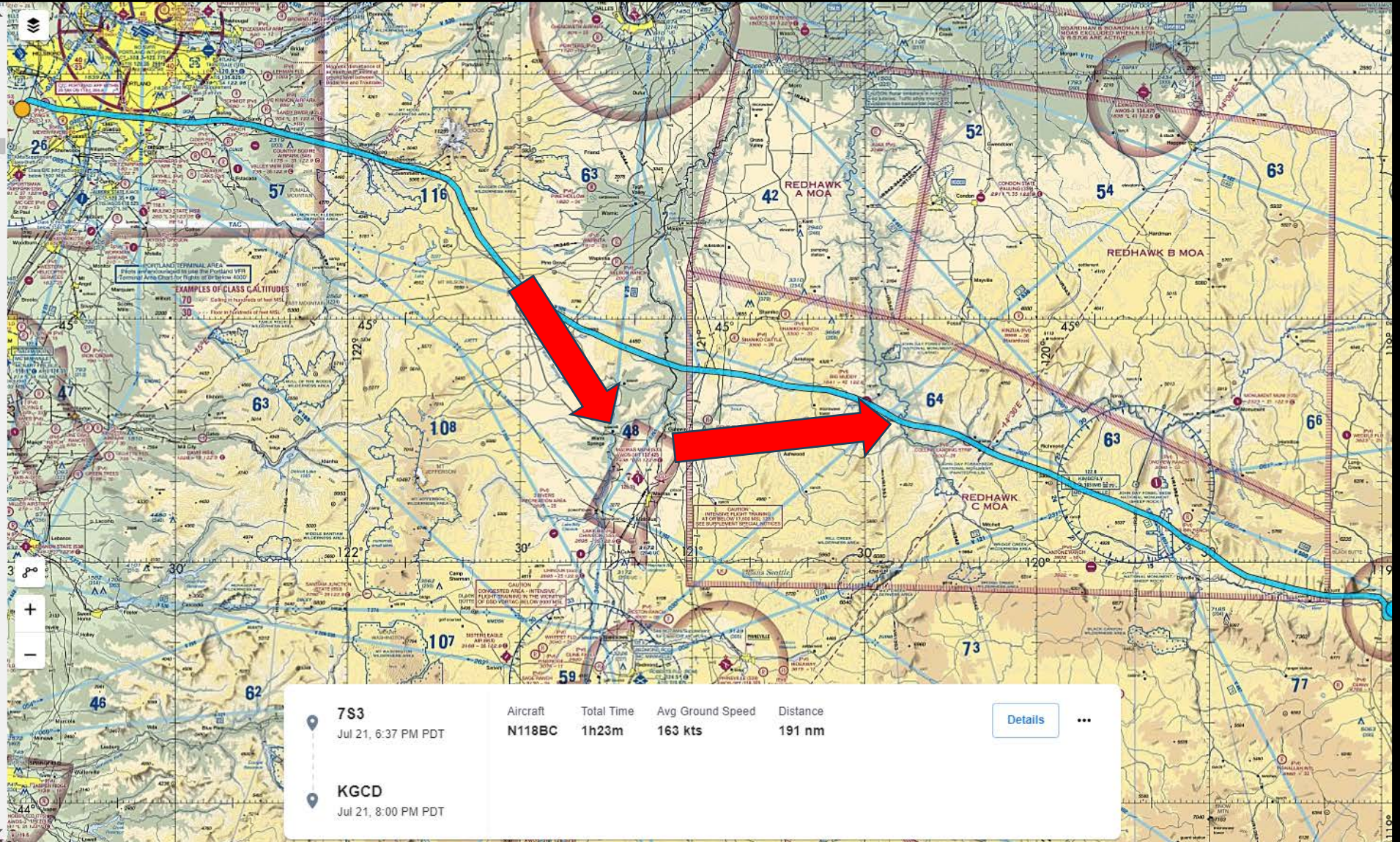
7S3 → KUAO
Jul 6, 2023, 5:17 PM PDT
N118BC

1W1 → 7S3
Jul 5, 2023, 2:34 PM PDT
N118BC

7S3 → 1W1
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Fuel Management

JULY 2023

Jul 23, 2023, 9:35 AM PDT
N118BC

KSPF → KRWF

Jul 23, 2023, 5:23 AM PDT
N118BC

KRXE → KSPF

Jul 22, 2023, 10:50 AM PDT
N118BC

KGCD → KRXE

Jul 22, 2023, 6:13 AM PDT
N118BC

7S3 → KGCD

Jul 21, 2023, 6:37 PM PDT
N118BC

7S3 → 7S3

Jul 17, 2023, 6:58 PM PDT
N16058

KUAO → 7S3

Jul 6, 2023, 8:13 PM PDT
N118BC

7S3 → KUAO

Jul 6, 2023, 5:17 PM PDT
N118BC

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Jul 5, 2023, 2:34 PM PDT
N118BC

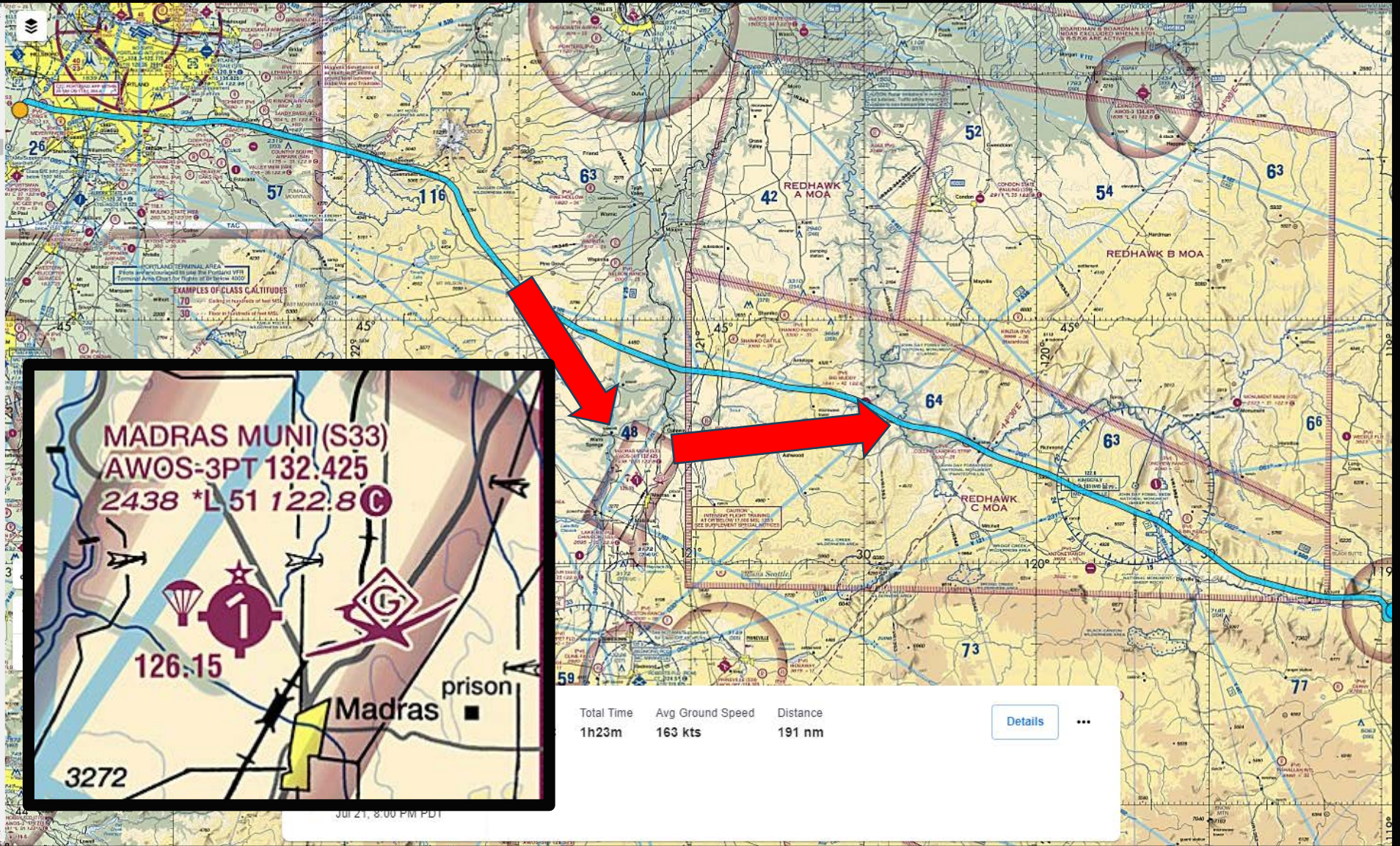
7S3 → 1W1

Jul 5, 2023, 12:28 PM PDT
N118BC

KSPB → 7S3

Jul 1, 2023, 7:01 PM PDT
N118BC

KSPB → KSPB



MADRAS MUNI (S33)
AWOS-3PT 132.425
2438 *L51 122.8

126.15

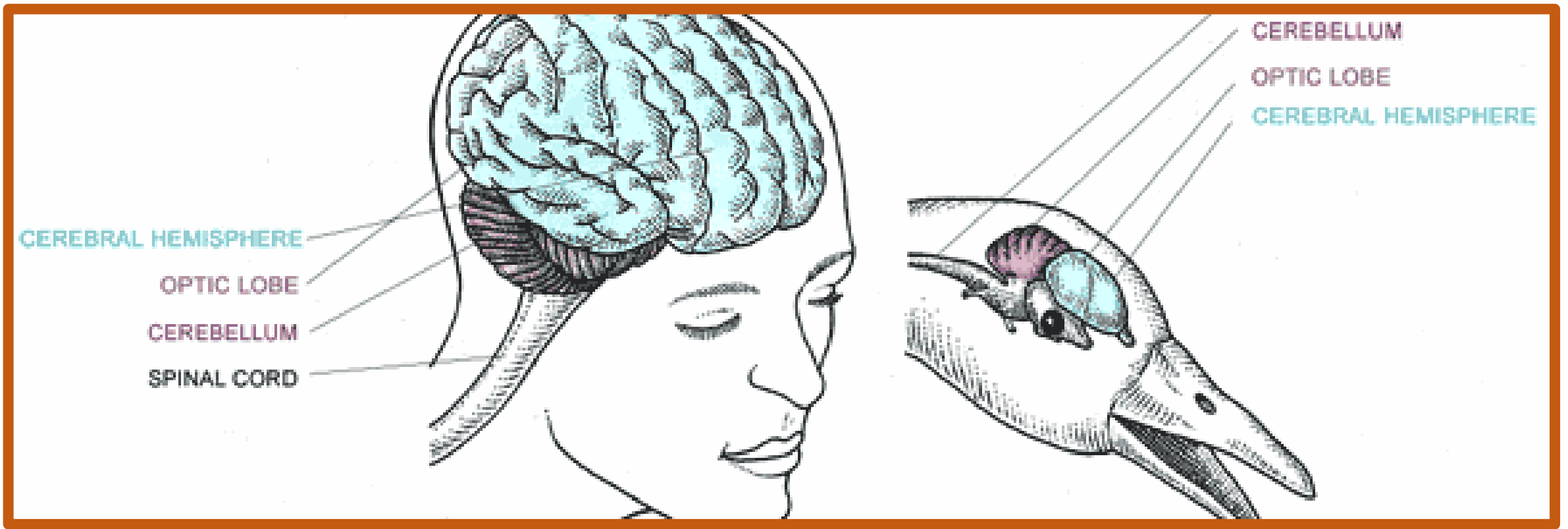
3272

Madras prison

Jul 21, 8:00 PM PDT

Total Time	Avg Ground Speed	Distance	Details	...
1h23m	163 kts	191 nm		

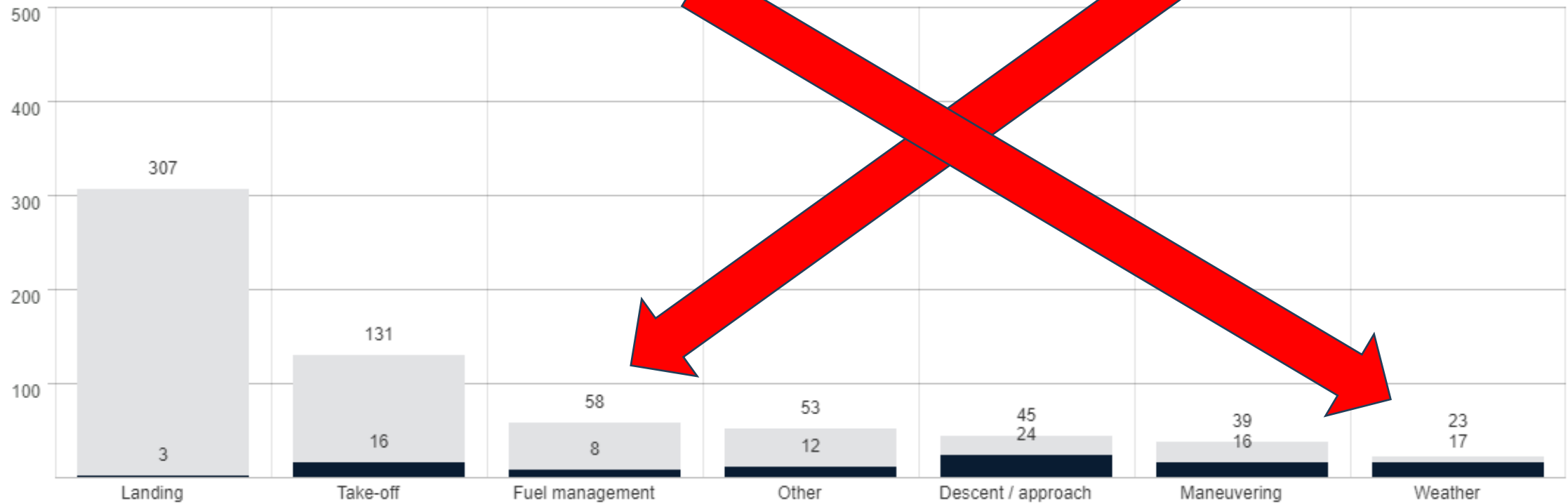
You are not a bird



Major Types of Accidents: 2020

Figure 1.11: Major types of accidents

2020 Non-commercial fixed-wing

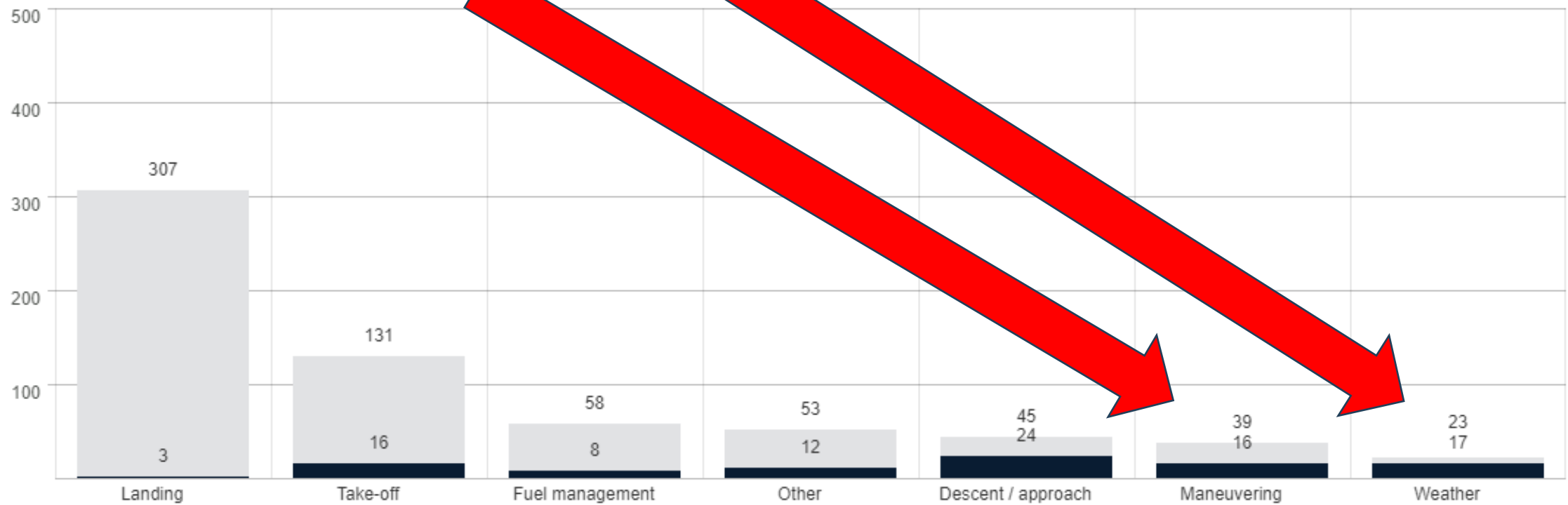


■ Total Accidents ■ Fatal Accidents

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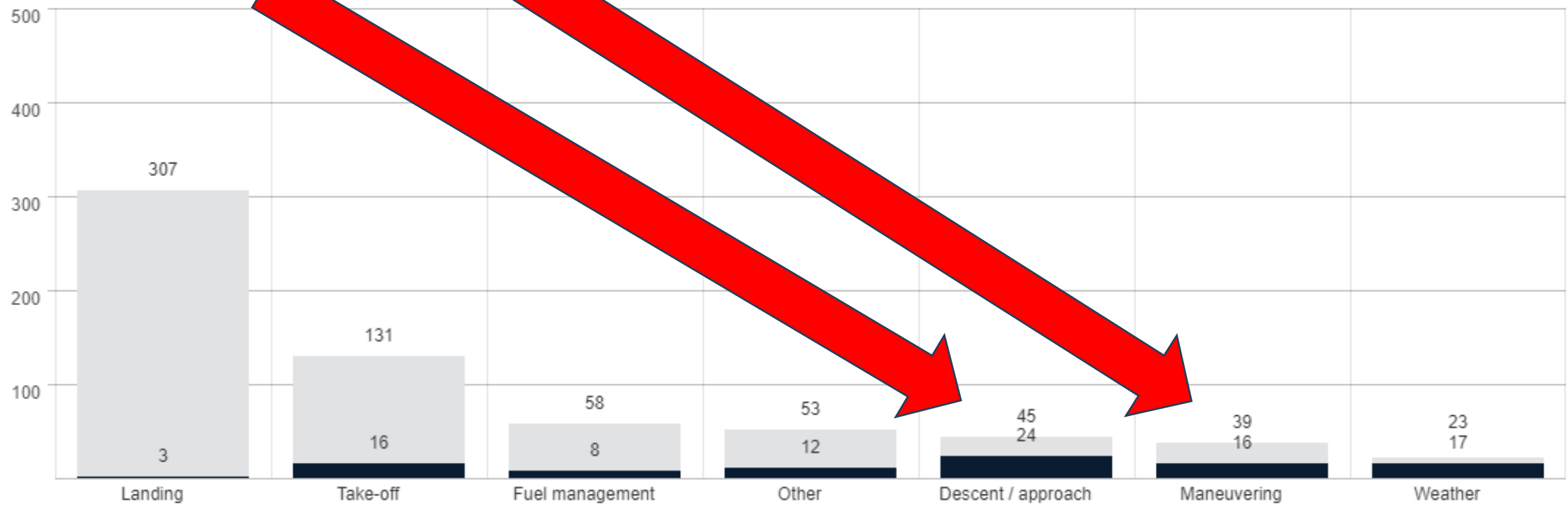


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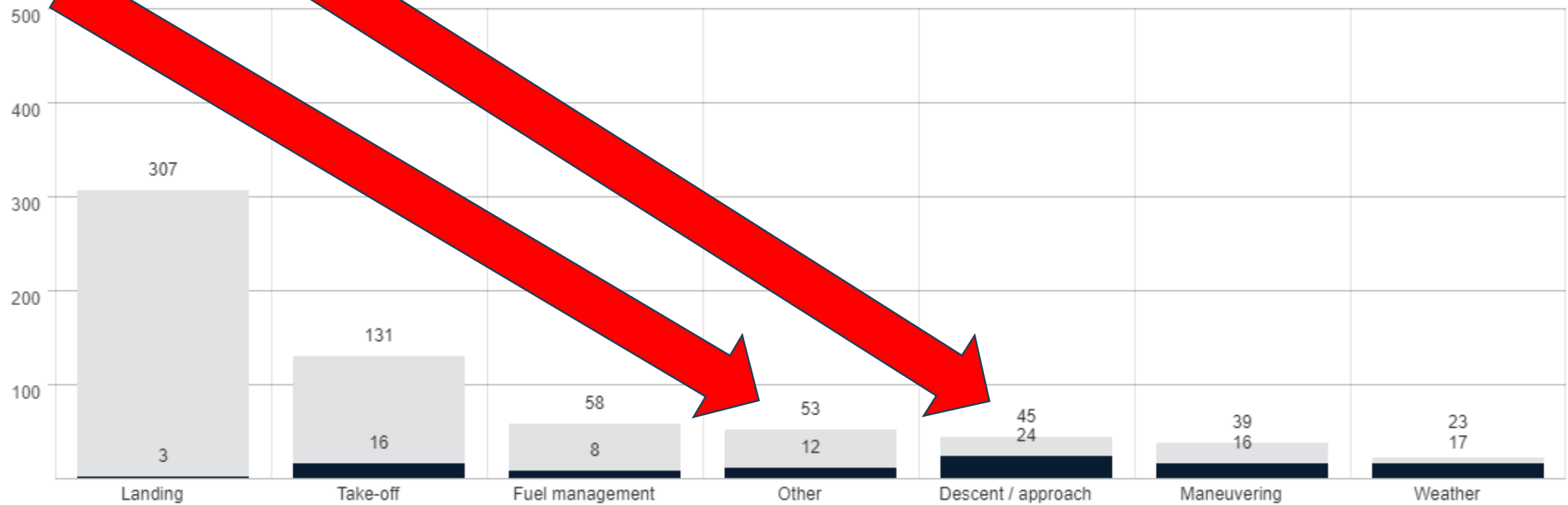


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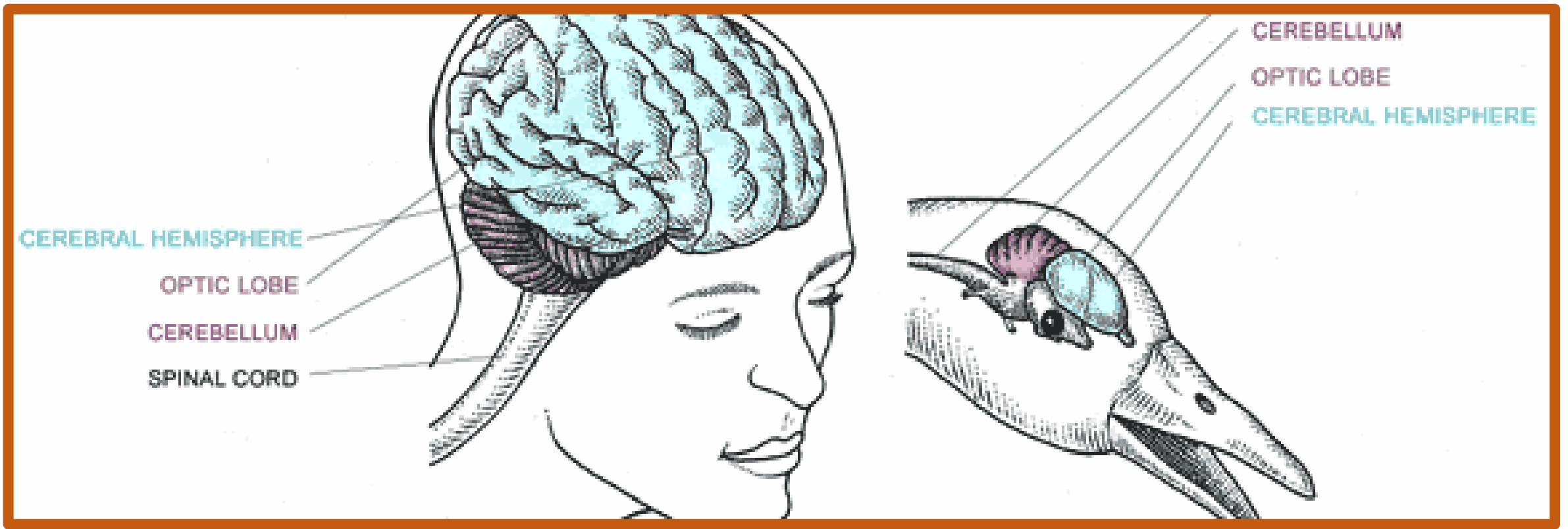


"Other"

- Fatigue
- Complacency
- Distractions
- Engine/mech/elec
- CFIT
- Mid-air collisions
- Bird strikes
- IIMC
- Etc...



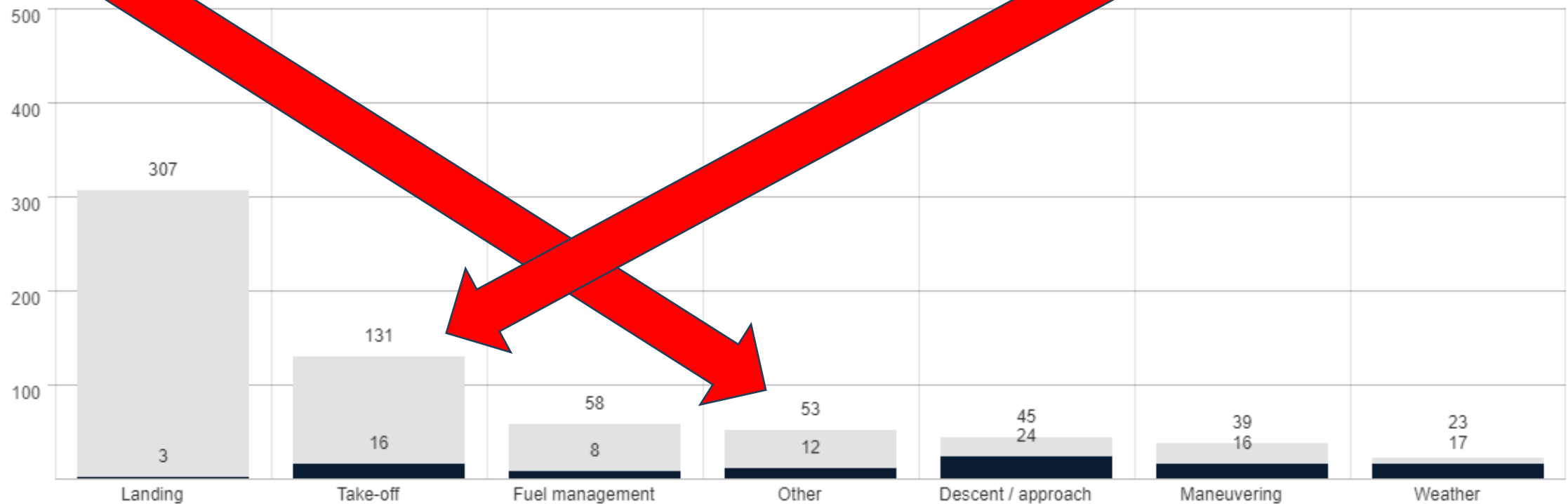
You are not a bird



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2020 Non-commercial fixed-wing

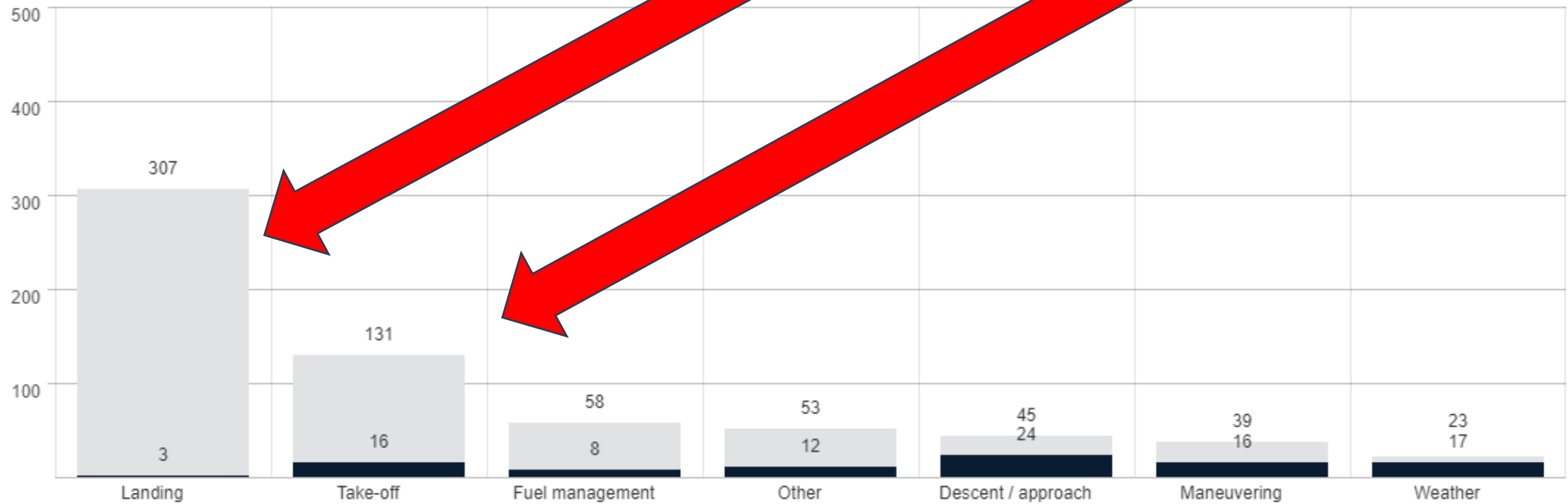


■ Total Accidents ■ Fatal Accidents

Major Types of Accidents: 2020

Figure 1.11: Major types of accidents

2020 Non-commercial fixed-wing



■ Total Accidents ■ Fatal Accidents

Review



- Think
- Train
- Practice
- Fuel Management
- Weather
- Maneuvering
- "Other"
- Descent/Approach
- Landing
- Takeoff



Normalization of Deviance



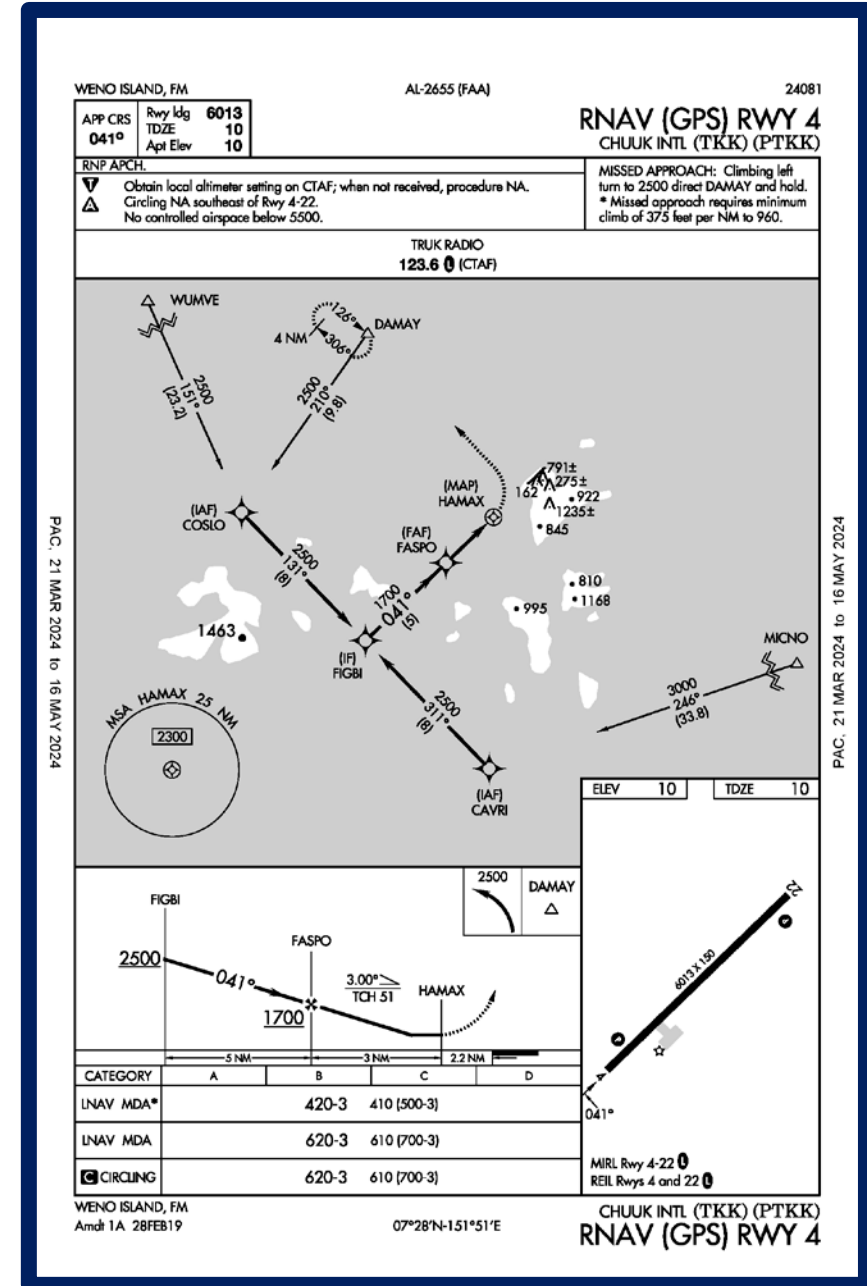
NORMALIZATION OF DEVIANCE

A Threat to
Aviation Safety



Karlene Petitt PhD

How a 737 Crashed into Water Short of the Runway (Air Niugini Flight 73)



Animation (Air Niugini Flight 73)

FEDERATED STATES OF MICRONESIA
B737-8BK, P2-PXE
Chuuk Lagoon, Chuuk International Airport (PTKK)
(28th September 2018)

LANDING ACCIDENT – FLIGHT RECONSTRUCTION



Prepared By: Papua New Guinea Accident Investigation
Commission (PNG AIC)

Air Niugini Flight 73 Crash Animation • Papua New Guinea AIC

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102K views 4 years ago #AIRBOYD #AvGeek #AirNiugini



Jump seat video (Air Niugini Flight 73)



Papua New Guinea Accident Investigation Commission

041 139 042 700 041

0:01 / 0:43

Air Niugini Flight 73 Crash • Jump Seat Video

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[youtube.com/watch?v=eOnyV8sEH1w](https://www.youtube.com/watch?v=eOnyV8sEH1w)



Normaliza

man

ORMALIZATION
DEVIANANCE

Threat to
on Safety

Norm

**Just Say
NO!**



ene Petitt PhD

You are not a bird





Thank you for attending!

You are vital members of
our GA safety community



bitly

bit.ly/training-videos-1

Thank you for attending



Thank you for participating!

Philip Mandel, CFI-I, MEI, AGI, IGI

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