NTSB National Transportation Safety Board

Pilot Professionalism

It Isn't Just For The Big Guys

Earl F Weener
Board Member

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Pilot Professionalism - NTSB Interest

- Lack of pilot/controller professionalism has been a factor in many aviation accidents
  - Most recently
    - Colgan Airlines accident - Buffalo NY in 2009
    - Hudson River Corridor Mid-Air Collision – 2009

This presentation – focus on Personal Flight Operations (FAR Part 91)

NTSB Forum - May 2010

- Professionally piloted aircraft
  - Part 121 air carrier
  - Part 135 air taxi
  - Part 91 corporate and business
- Air Traffic Control

Presentations available on NTSB website

Today's Focus

Comparison

Part 91
Operations

Piston Powered, Single Engine Land

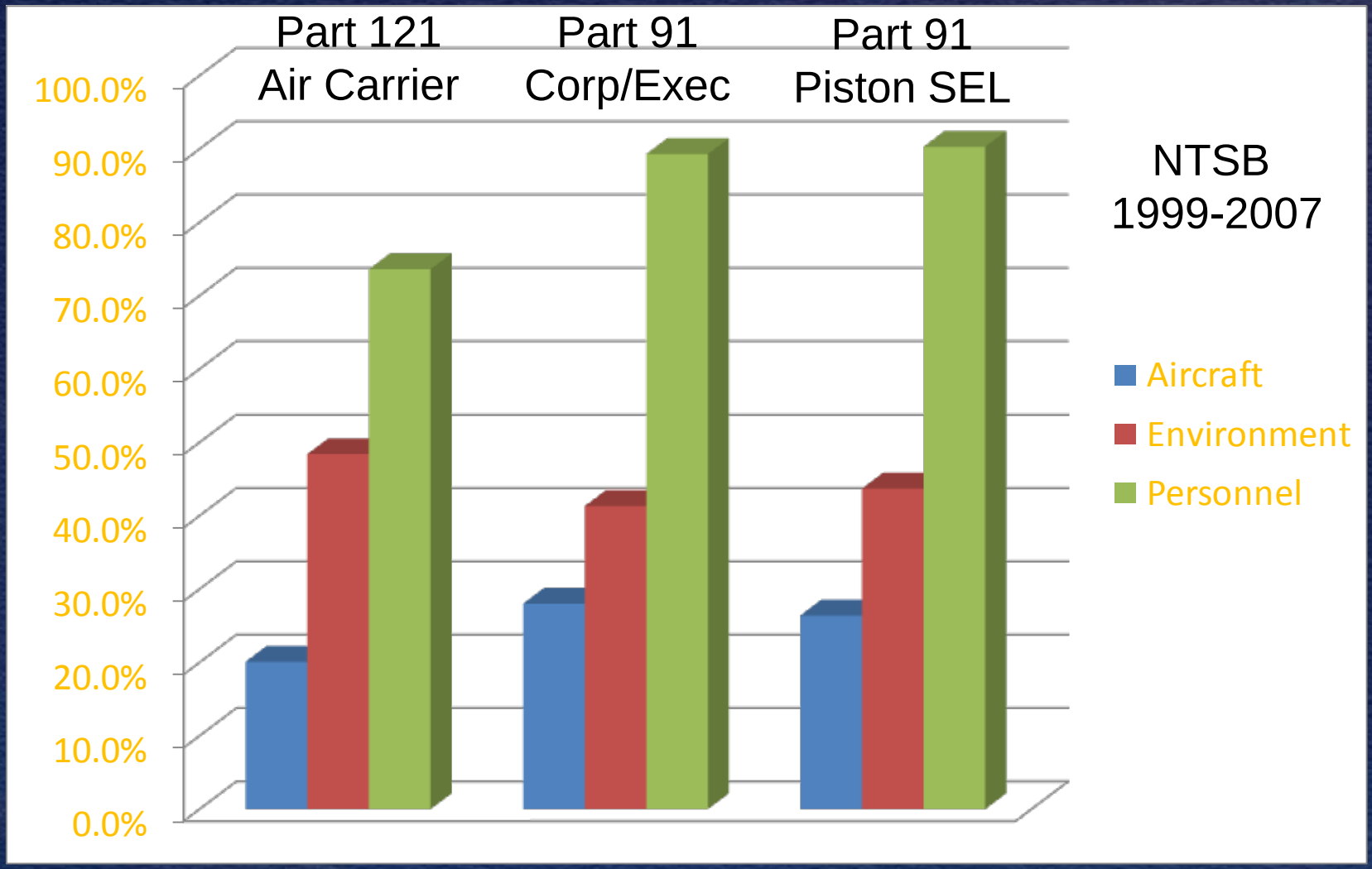
(Piston powered SEL includes personal travel, recreational flying, flight training, agricultural applications, etc.)

vs

Corporate/Executive

(Corporate and executive flying generally uses more sophisticated aircraft than the piston SEL aircraft.)

Cause Factors Cited



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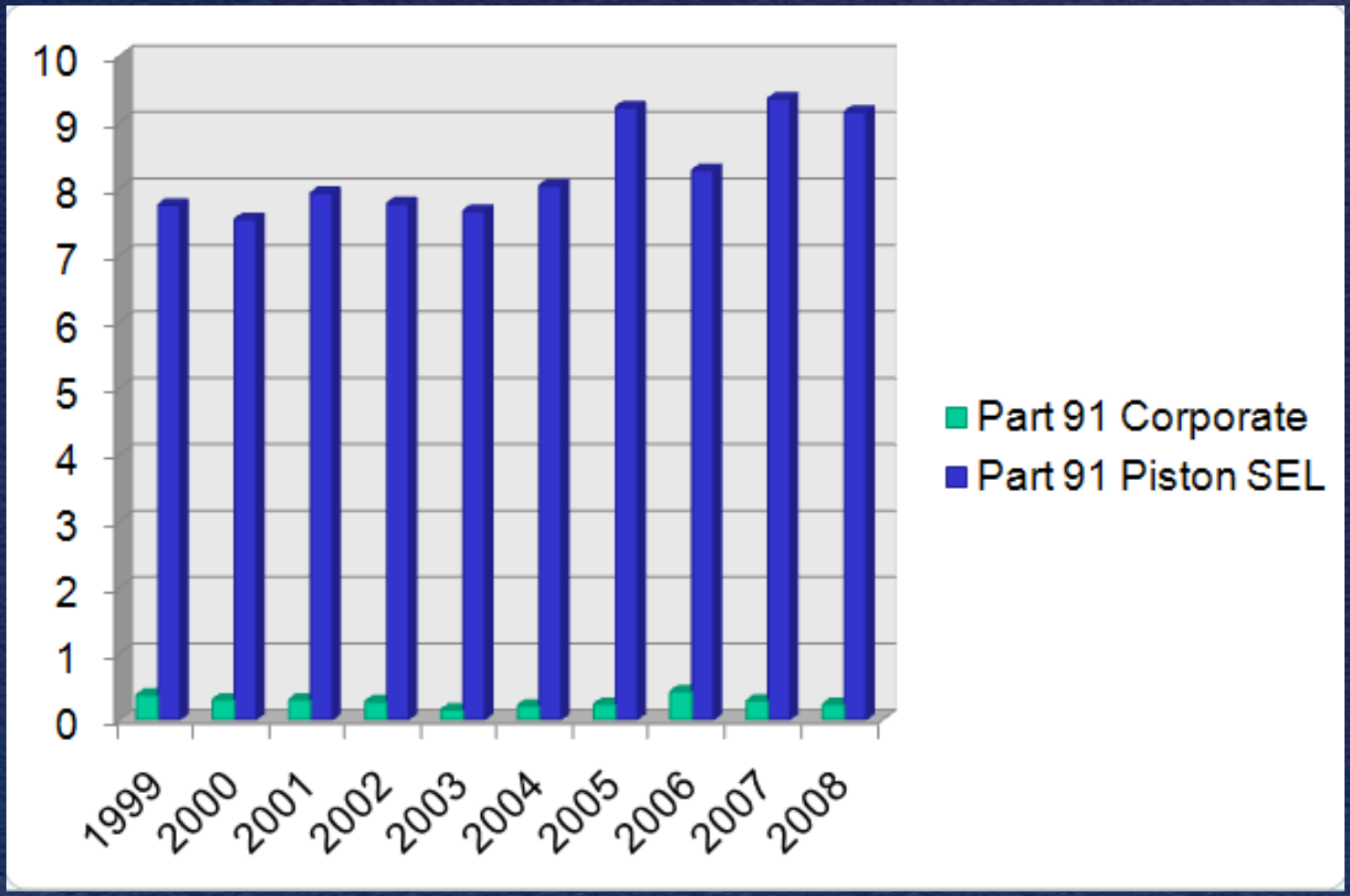
Corporate vs Piston SEL Accident Rate



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Corporate vs Piston SEL Accident Rate

- The accident rate for piston powered single engine airplanes, according to this chart, is not improving, and in fact through 2008 the accident rate had been increasing for the kind of general aviation airplanes that most of us fly.
- More spectacularly is the difference between that accident rate and that of the corporate and executive operations that are generally flown by a professional pilot.
- This is somewhat of an apples and oranges comparison in that the corporate operations are generally operating with the upper end of the general aviation fleet.
- The piston SEL operations include training, agricultural applications, banner towing, as well as personal transportation much like that of the corporate operators.

All Accidents vs Fatal Accidents

Comparison – 10 year period, 1999-2008
Accidents per 100,000 hr

	Corp/Exec	Piston SEL	Ratio
All Accidents	0.28	7.99	29
Fatal Accidents	0.07	1.38	20

Piston SEL accident rates are many times greater than Corp/Exec rates

All Accidents vs Fatal Accidents

- To simplify the comparison, this chart shows the accident rate for the ten year period from 1999 through 2008. The accident rate for corporate operations is about 3 accidents per million hours. Approximately one in four of those accidents will involve fatalities. By comparison, for that same time period for piston powered single engine land airplanes had almost 80 accidents per million hours, with about one in six involving fatalities. The piston powered SEL will be almost 30 times more likely to be involved in an accident as the corporate operated airplane.
- That is the bad news. The good news is that piston powered SEL airplanes like the ones we fly can be operated with almost the same accident risk as the corporate operators operate. So let's explore the reasons for these differences between personally operated and professionally operated airplanes.

Professional Pilot

- Personal characteristics
  - Flies frequently
  - Experience - Thousands of hours
  - Frequent health evaluations

Professional Pilot

- The reasons for difference between professional and non-professional operated airplane accident rates result from items such as how frequently the pilot flies, how long he flies as an apprentice, that is as a first officer, and how carefully his health is monitored through the flight physical process. A professional pilot can get as much as a thousand flight hours per year.

- Typically, a first office has several thousands of hours in the right seat before taking the left seat. Recent Congressional actions reinforced the need for first officers to have significant relevant experience in the form of an Air Transport Pilot credentials. ATP and Commercial pilots are required to have medical evaluations on 6 months and one year intervals, respectively.

Modern Commercial Aircraft

Turbine Powered

Two Crew

Glass instrumentation

Modern Commercial Aircraft

- Commercial aircraft often easier to operate than Single Engine Piston GA aircraft
  - More automation assistance available
    - Autopilot, auto-throttle, flight envelope protection, etc.
  - Greater redundancy of function
  - Single thrust control – not throttle, mixture & propeller trio
  - Glass cockpits with multifunction displays
  - Designed for operation by two crewmembers
  - High operational ceilings
  - Extensive icing flight capability

Professional Operational Environment

- Working environment characteristics
  - *Detailed Operating Procedures*
    - Rest and duty time requirements
    - Stabilized approach requirements
  - *Training*
    - Recurrent training
    - Transition training with Initial Operating Experience (IOE) requirements
  - *Operations and Dispatch support*
    - Weather
    - IFR Routing
    - Alternates
    - Aircraft weight & balance
    - Fuel planning, including reserves requirements
  - *Maintenance support*

Case Study - Pilot

- To better understand the difference between a typical general aviation operation and a corporate/executive operation an actual accident case study is useful. The data for this case study is taken from a recent accident that was investigated by the NTSB and is available on the NTSB.gov website. The pilot in this accident was the sole occupant of the aircraft. He held a Private License, with Single Engine Land (SEL) and Instrument ratings.

Case Study - Pilot

- Private license with SEL, Instrument ratings
- Medical – 3rd Class with no limitations or restrictions
- Sole occupant
- 900 hours total all aircraft
  - Last 90 days – unknown
- Total Instrument time – 7 hrs simulated, 41 hrs actual
- Total Make/Model - 11 hrs
  - No apparent instrument instruction in new airplane
  - May have used VistaNav for some part of navigation, approach information and 3D course view

Case Study – Airplane

Accident Airplane - ***A36 Bonanza***
with no apparent pre-accident defects

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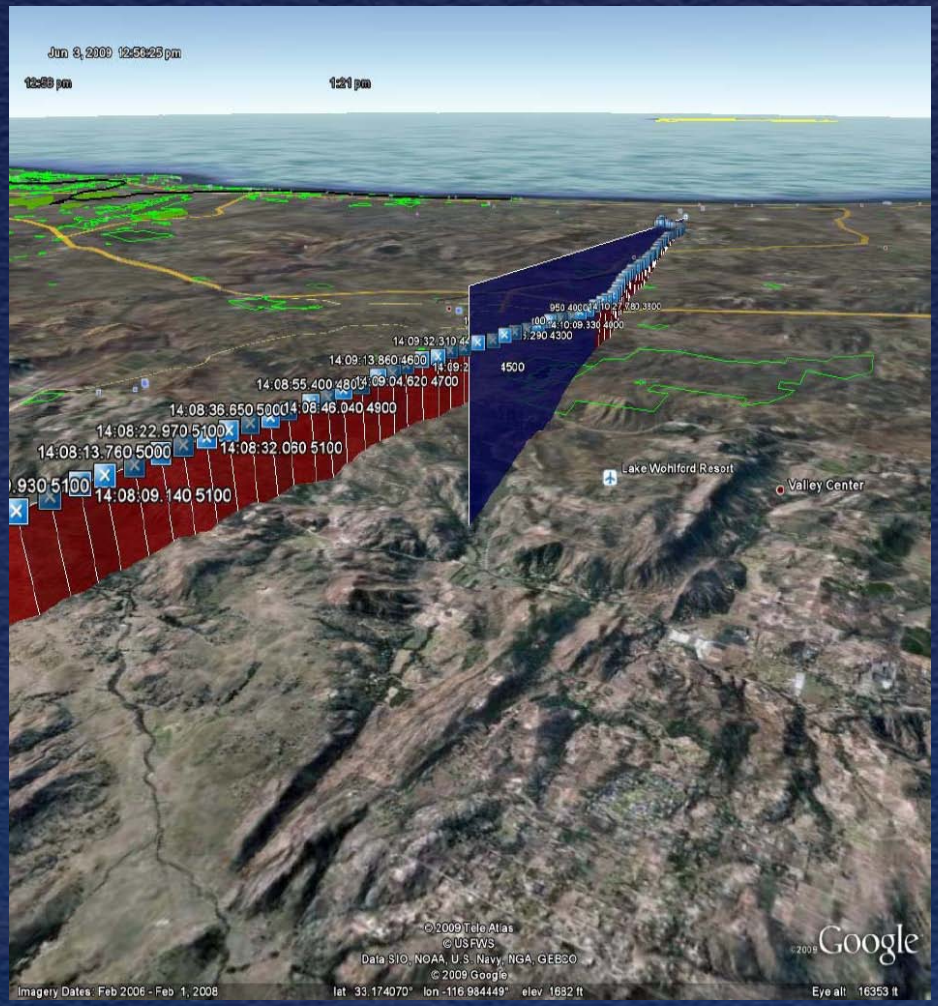
Case Study – Pre-Flight Situation

- Filed IFR flight plan via DUAT
  - Early morning flight
- Destination weather at that time:
  - 100 ft ceiling & ½ mile visibility in fog
  - calm winds
  - Temp 17 degrees C, dew point 16 degrees C
  - No alternate destination filed

Case Study – Arrival

- Arrival weather:
  - 100 ft ceiling & ¼ mile visibility in fog
  - Wind 350 degrees at 3 kt
- ILS Approach published minimums:
  - 200 ft ceiling & ¾ mile visibility

Case Study - Approach



0711:14 - Tower relayed that RVR was 1600 ft, winds 280 at 5 kt, and cleared flight to land runway 24

0713:52 - Tower issued a low altitude alert

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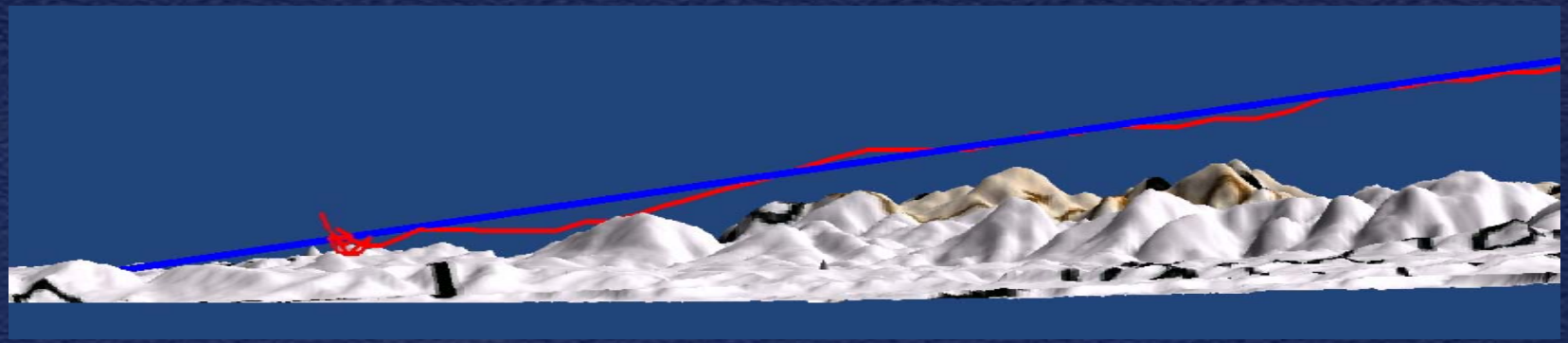
Case Study – Final Moments

0714:41 – Radar data showed aircraft 2 miles from approach end of runway 24, the airplane crossed over the final approach course at 800 ft msl, headed south (airport elevation 331 ft msl)



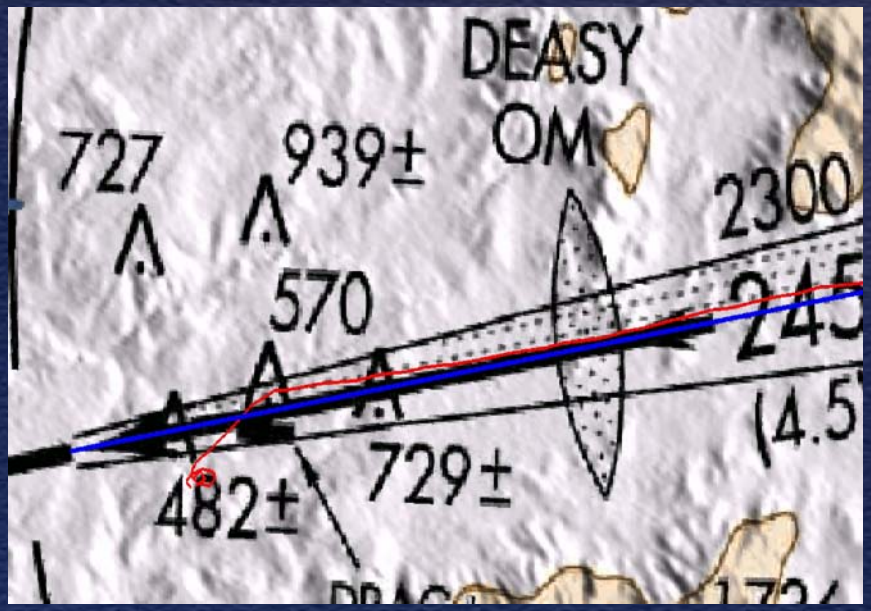
0714:58 - Tower notified pilot that he was south of approach course

Case Study – Impact

0715:09 - the track started a tight left-hand turn with altitude readings that fluctuated between 600 msl and 1,100 ft msl

0715:16 – Pilot transmitted that he was going to "abort" the approach

0716:04 - the last radar return depicted the airplane at 900 ft msl, and a ground speed of 56 kt.



0716:06 - Pilot transmitted "I'm in trouble"

No further communications

Case Study – Wreckage

Wreckage located on a hillside 1.3 miles southeast of the approach end of runway 24

Wreckage located in the same vicinity as the last radar return

Case Study – Wreckage

- Airplane
  - No evidence of structural failures prior to impact
  - No evidence of airplane flight control issues
  - No evidence of airplane propulsion issues
  - No evidence of fuel issues
  - No evidence of instrumentation issues
- Pilot
  - Cause of death ‘multiple blunt force injuries’

Comparison - Professional Pilots

- Approach weather minima – no “go down and take a look”
- IFR Alternate airports are practical and valid
- Explicit Initial Operational Experience (IOE)
- Thorough training on aircraft and systems
- Recurrently drilled on non-normal and emergency procedures
- Self assessment of both fitness for duty and recency of experience

Dispatch Support

- Professional pilots often have dispatch support
  - Route planning and alternates
  - Weather assessment and forecasting
  - Fuel planning
  - Aircraft takeoff and landing performance

Dispatch – Bonanza Pilots

- Personal aviation dispatch functions
  - Done by the pilot
- Potential dispatch support - ***SPOUSE***
  - Knows pilot better than anyone else
  - Any sign of hesitance or concern – ask questions
    - Weather
    - Route
    - Fuel
    - Performance

Spouse Messages

- For a safer pilot and safer flight
  - Encourage your pilot to fly often
  - Designate some flying for proficiency
  - Encourage use of safety equipment
    - IFR GPS/FMC
    - Map displays with terrain warning
    - On-board weather display
    - Fuel usage/state instrumentation
    - Carbon Monoxide (CO) monitor

Professionalism – Personal Flying

- *Accident rate difference* between Professional Pilots and GA Pilots should be much smaller
  - Proficiency – recurrent training
  - Equipment – more than just airworthy
  - Good health – fit to fly
  - Match weather demands to capabilities

Conclusion

- You don’t need to fly for a living to be a professional
  - *Professionalism is a quality*
  - *Professionalism is a state-of-mind*
  - *Professionalism is an expectation*

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Safety Tips

- Approach and landing accidents - 1 in 6 fatal accidents (airspeed management biggest problem)
- Intentional VFR into IMC – 1 in 8 fatal accidents
- Fuel exhaustion – 1 in 20 accidents
- Time of day significantly effects accident risk - Night VFR doubles risk of fatal accident