Ditching in Lake Erie

What Happened?

Lessons Learned

Presented by: Mark Neal

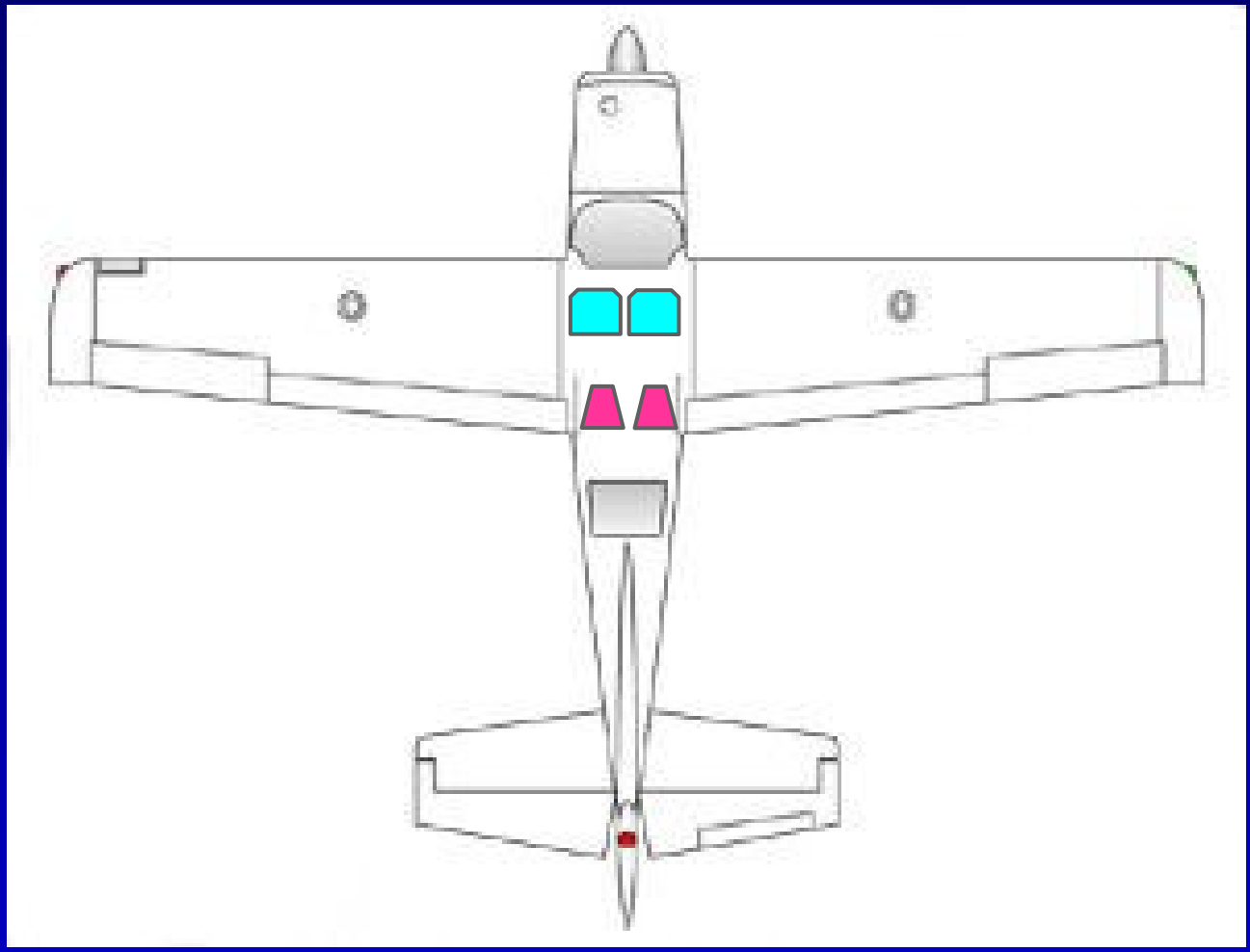
Pre-Flight

August 13, 2010

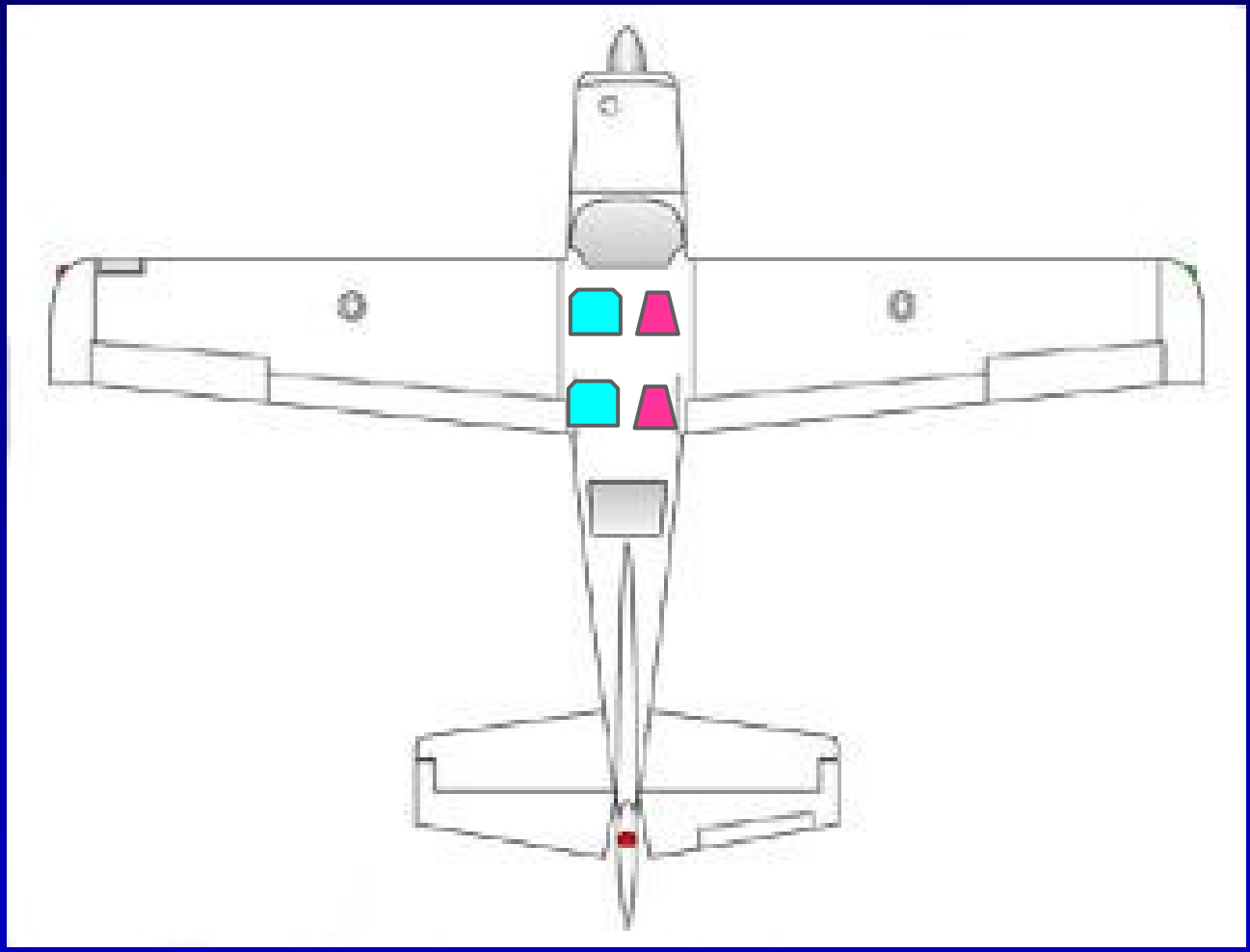
All the usual stuff:

- Oil
- Fuel sumps
- Fuel level each tank
- Fuel gauges…

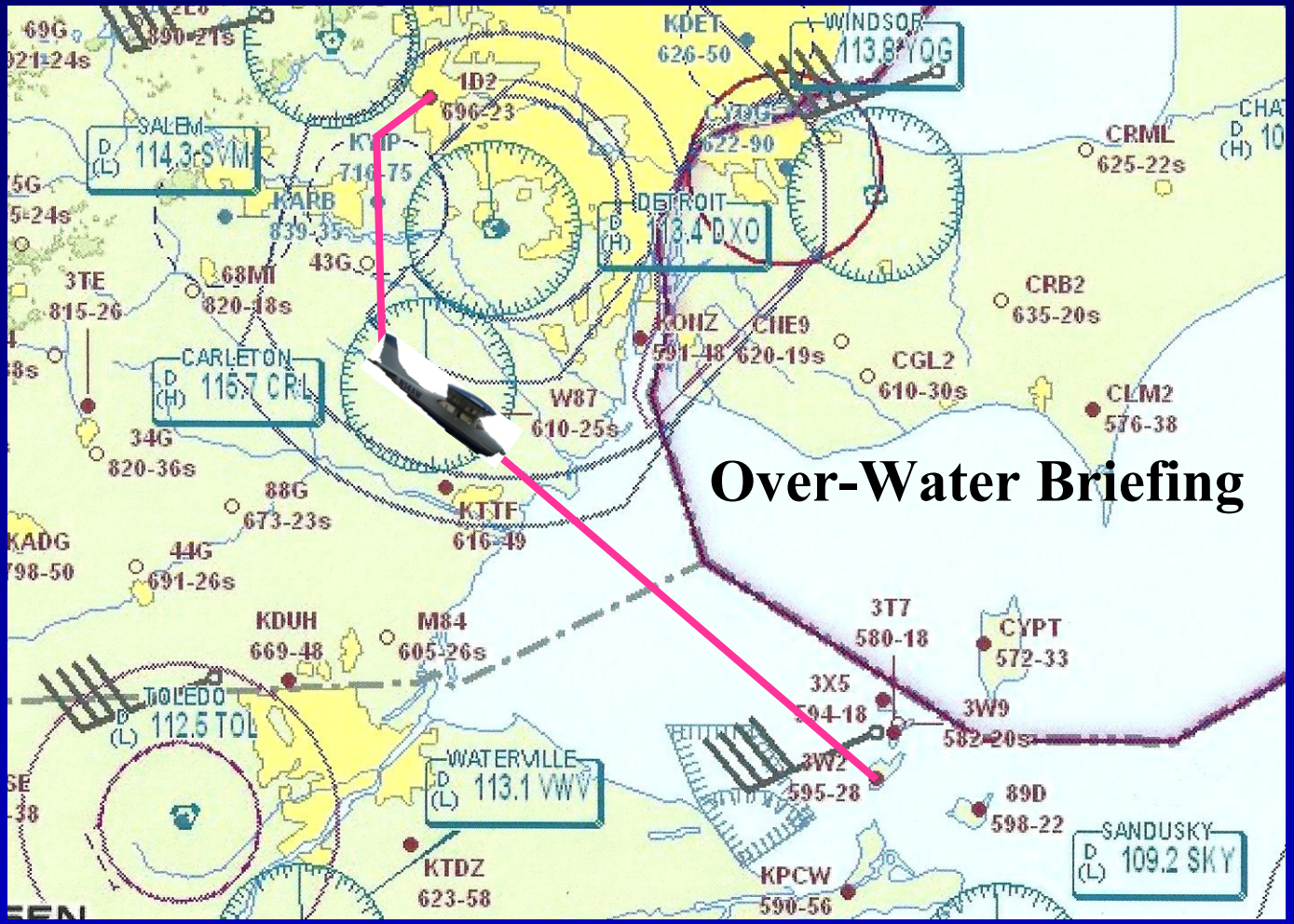
Seating-Weight & Balance



Seating-Weight & Balance



En route


KDET
626-50
WINDSOR
113.8 YQG
1D2
696-23
CYQG
622-90
CRML
625-22s
SALEM
114.3 SVM
KMIP
716-75
KARB
639-35
DETROIT
113.4 DXO
43G
3TE
815-26
68MI
820-18s
CRB2
635-20s
KOHZ
591-48
CHE9
620-19s
CGL2
610-30s
CARLETON
115.7 CRL
W87
610-25s
CLM2
576-38
34G
820-36s
88G
673-23s
KTTF
616-49
Over-Water Briefing
KADG
798-50
44G
691-26s
KDUH
669-48
M84
605-26s
3T7
580-18
CYPT
572-33
3X5
594-18
3W9
582-20s
TOLEDO
112.5 TOL
WATERVILLE
113.1 VWV
2W2
595-28
89D
598-22
SANDUSKY
109.2 SKY
KTDZ
623-58
KPCW
590-56

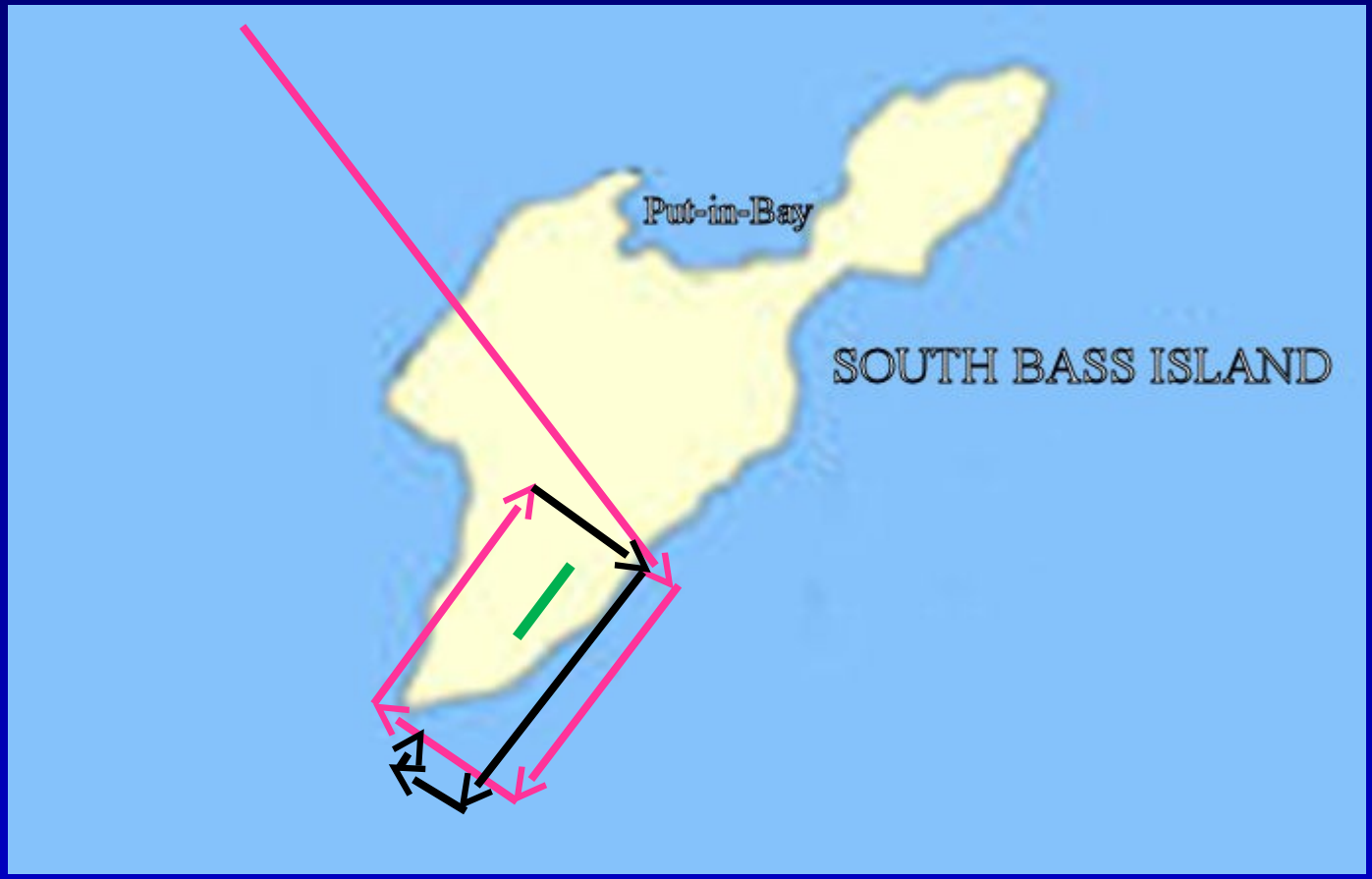
En route

Pelee Island
North Bass Island
CANADA
UNITED STATES
Middle Island
Sugar Island
Middle Bass Island
Rattlesnake Island
Put-in-Bay
Lake Erie
South Bass Island
Kelleys Island
Catawba Point
NORTH
0 1 2 4 6
Kilometres
CANADA
ONTARIO
NEW YORK
MICHIGAN
PENNSYLVANIA
OHIO
INDIANA
UNITED STATES
WEST VIRGINIA
VIRGINIA

South Bass Island

Put In Bay Airport

Arrival



Engine Failure

- Engine stopped running
- Re-start procedures-Failed to restart
- Wheels up
- Selected Ferry dock area

Engine Failure

- Mayday call on Unicom
- Advised passengers
- Pitched for slowest possible landing with tail low

Ditching

- Uneventful landing
- Water immediately began to enter cabin
- Doors would not open
- Passenger kicked pilot door open
- Immediate rush of water, cabin filled above head

Ditching

- Exited plane
- One passenger removed through luggage compartment
- Assisted by Ferry boat crew

Post-Ditching

- EMS/Put-In-Bay Police
- Ohio State Highway Patrol
- FAA
- Media

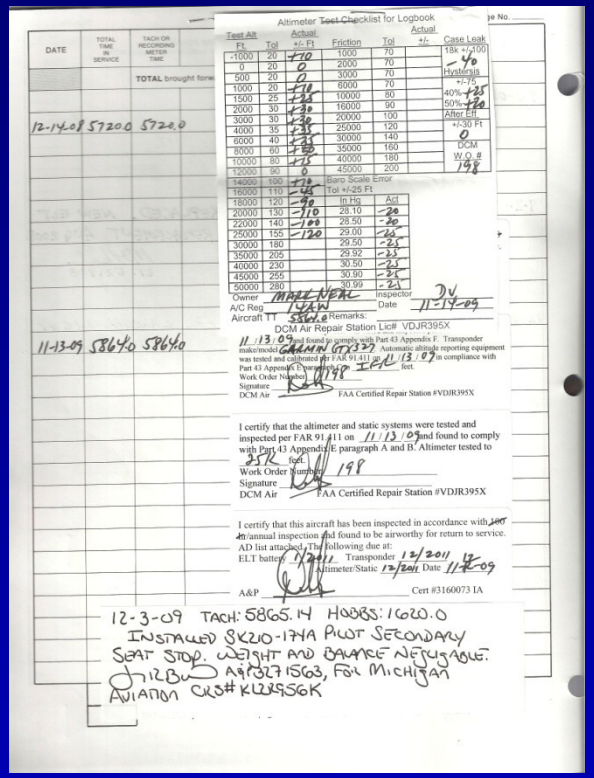
- More Media

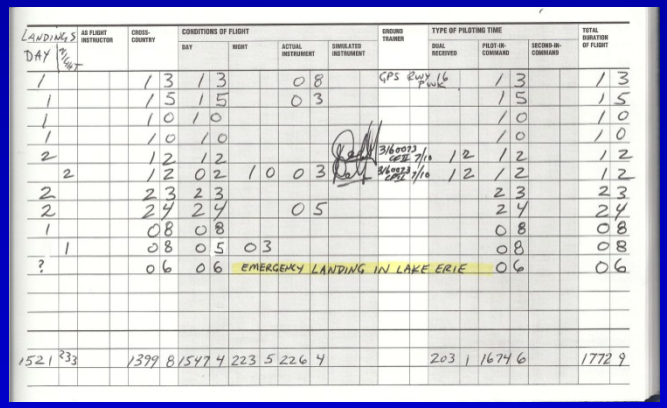
Post-Incident

- Getting Home
- Plane was recovered ~ 8 hours later
- More media

Post-Incident

- FAA/NTSB
  - ✓Flight Log books
  - ✓Maintenance Logs
  - ✓Medical
  - ✓Written statement
- Insurance
  - ✓Flight Log books
  - ✓Maintenance Logs
  - ✓Medical
  - ✓Written statement





Post-Incident

- Recovering personal items from plane

General Aviation
Accident Information

Ditching-General Aviation

2009 General Aviation Accidents

- 1474 Accidents
- 272 Fatal Incidents

- **18% Fatality Rate**

Ditching-General Aviation

5 Year Period-Ditching-General Aviation

- 39 Ditching Incidents
- 9 Fatal Incidents (17 deaths)

- **23% Fatal Incident Rate**

Ditching-General Aviation

5 Year Period-Ditching-General Aviation

Ditching Fatalities (17) by Cause of Death	
Drowning	16
Hypothermia (Drowning)	1

Ditching-General Aviation

5 Year Period-Ditching-General Aviation

Ditching Fatalities (17) by Location	
Drowned In the plane	9
Drowned Out of the plane	8

70 souls exited the plane and survived

Ditching-General Aviation

5 Year Period-Ditching-General Aviation

Fatalities Drowned In-the-Plane (9) by Contributing Cause…	
Hard Landing	6
Pre-inflated Lifejacket	2
Tied to Seat	1

Ditching-General Aviation

What if the pilot made a slower, softer landing?

- 39 Ditching Incidents
- Eliminate 3 of the 9 Fatal Incidents (6 saved)
- Remaining 6 Fatal Incidents (11 deaths)

- **15% Fatal Incident Rate**

Ditching-General Aviation

5 Year Period-Ditching-General Aviation

Fatalities Out-of-the Plane (8) by Contributing Cause	
No Lifejacket	7
No Lifejacket/Hypothermia	1

Ditching-General Aviation

What if they all wore lifejackets?

- 39 Ditching Incidents
- Eliminate 3 Fatal Incidents (7 saved)
- Remaining 3 Fatal Incidents (4 deaths)
- **8% Fatal Incident Rate**

Ditching-General Aviation

What more could we do to improve survivability?

- Remaining 3 Fatal Incidents (4 deaths)
  - Two (2) pre-inflated lifejacket
  - One (1) tied to seat
  - One (1) hypothermia

- **8% Fatal Incident Rate**

Ditching-General Aviation

What more could we do to improve survivability?

- Eliminate 2 Fatal Incidents (3 saved)
- 1 Fatal Incident (1 death) remaining
  - ✓ One (1) hypothermia
- **2.5% Fatal Incident Rate**

Ditching-General Aviation

Summary of contributing causes…

- ✓ Incapacitation due to hard landing/no shoulder harness
- ✓ Disorientation after flipping over on impact
- ✓ Inflating life jacket prior to exit
- ✓ Failure to wear life jacket/no life jacket available
- ✓ Other causes (panic, tied to seat, etc.)

Lessons Learned

Lessons Learned

Pre-Plan for Ditching

- Selecting landing area
  - ✓Shoreline
  - ✓Boats/ships
  - ✓Leeward side
  - ✓Underwater structures

Lessons Learned

Pre-Plan for Ditching

- Communicate
  - ✓Mayday
  - ✓Location
  - ✓Intentions
  - ✓Squawk 7700

Lessons Learned

Pre-Plan for Ditching

- Control Settings
  - ✓ Initial flaps for best glide
  - ✓ Flaps prior to landing

Lessons Learned

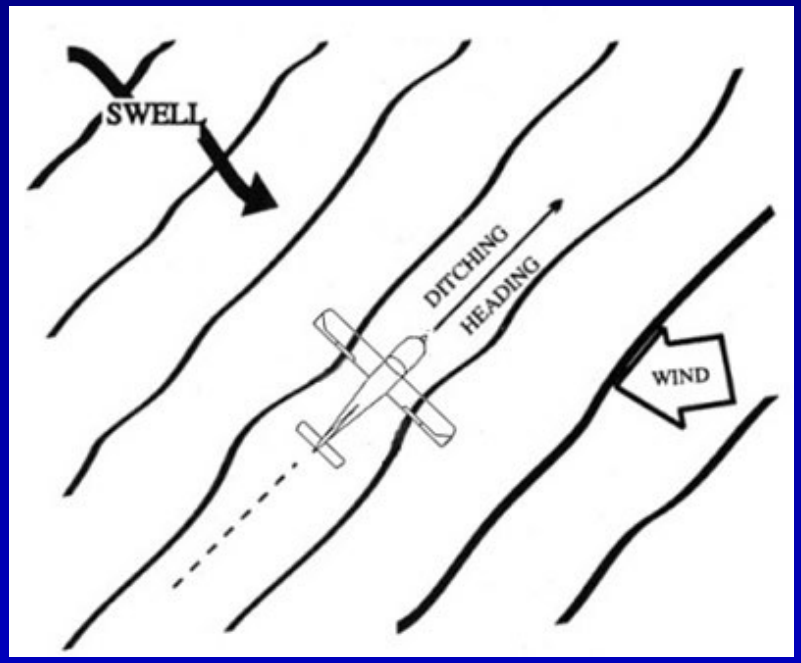
Pre-Plan for Ditching

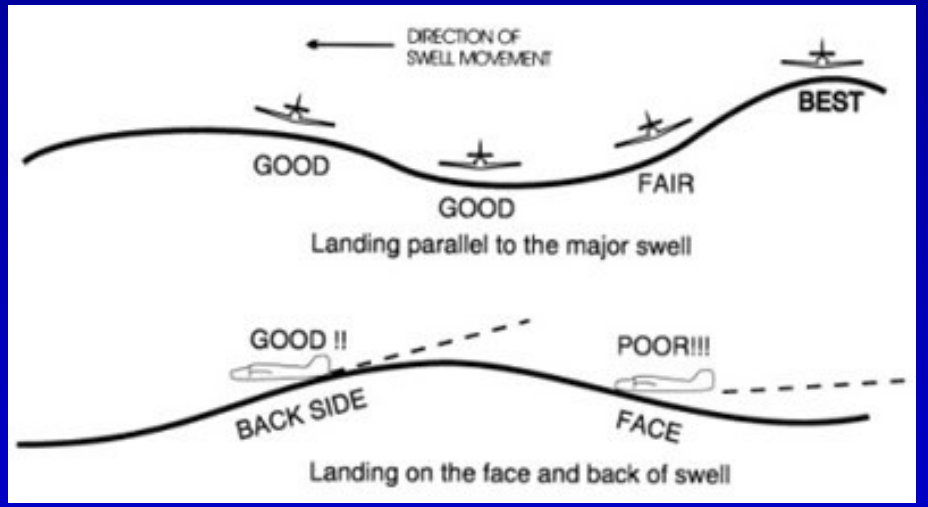
- Landing Gear
  - ✓Gear up if possible
  - ✓Gear down for beach
- Speed
  - ✓Best Glide
  - ✓In ground effect-pitch for “near stall” landing
- Orientation to water on entry
  - ✓Nose high

Lessons Learned

Pre-Plan for Ditching

- Orientation to wind/waves/swells





Lessons Learned

Pre-Plan for Ditching

- Prior to impact
  - ✓Seatbelts, shoulder harness tight
  - ✓Protect head and face
  - ✓Aircraft doors (Open or Closed?)
    - high wing vs. low wing

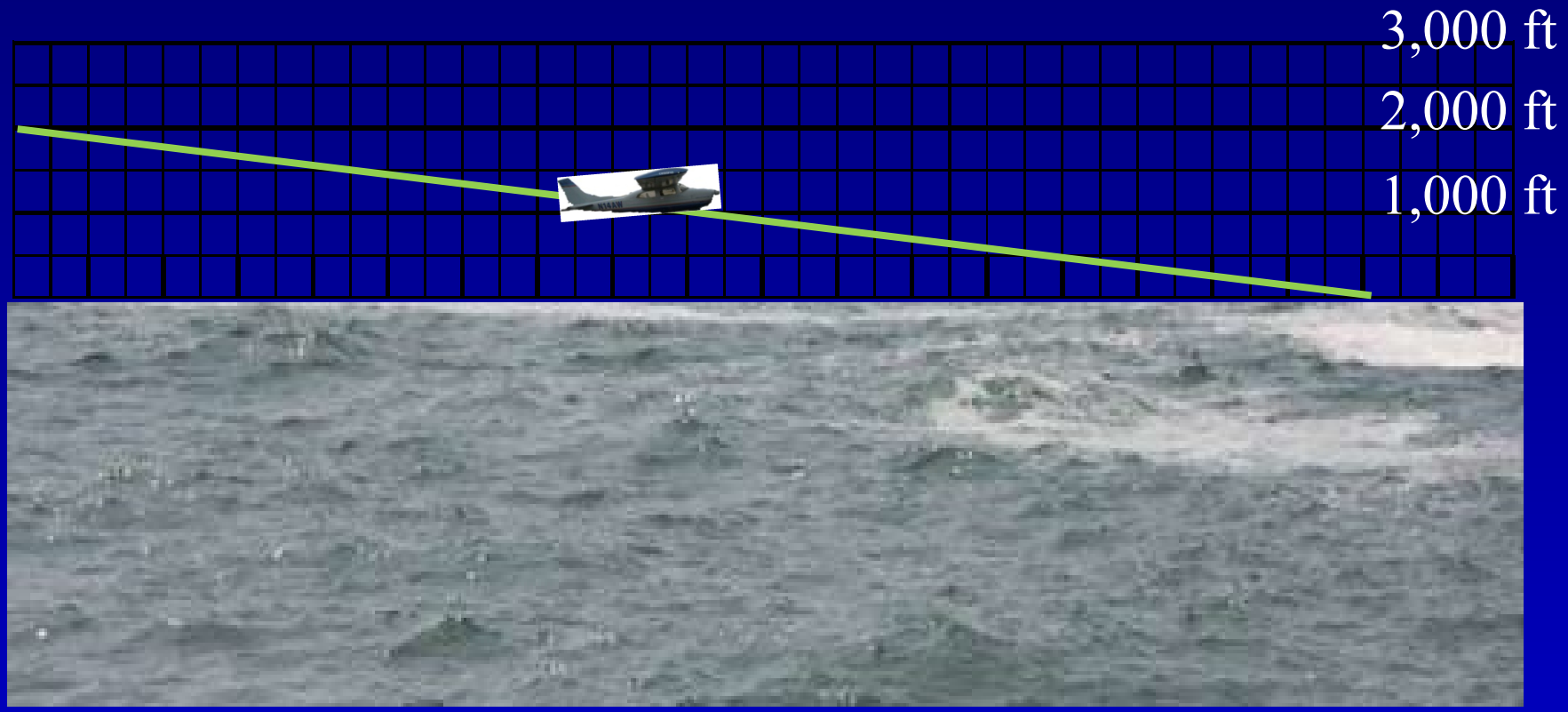
Lessons Learned

Over-water Briefing

- Include demonstration of seat belt operation
- Demonstrate and practice door latch
- Demonstrate life jacket donning/operation
- Demonstrate life boat deployment

Lessons Learned

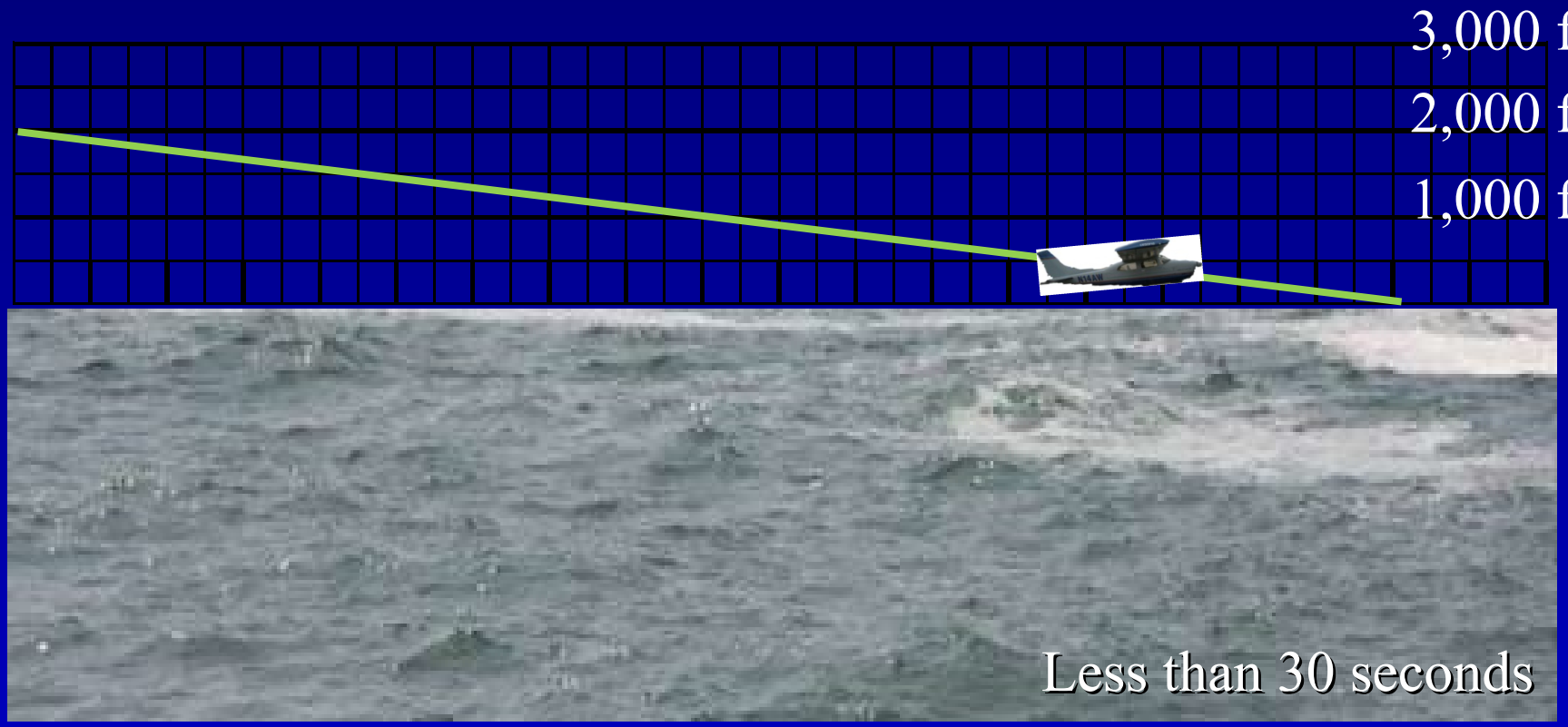
...more altitude



Approximately 1 minute glide time per 1,000 ft

Lessons Learned

…more altitude, closer pattern



Lessons Learned

Equipment Familiarization

- Know how to deploy lifeboat
- Know features/equipment on lifeboat

Lessons Learned

Equipment Familiarization

- Know how to deploy lifeboat

Lessons Learned

Equipment Familiarization

- Know how to remove lifejacket from container

Lessons Learned

Equipment Familiarization

- Know features/operation of lifejacket

Lessons Learned

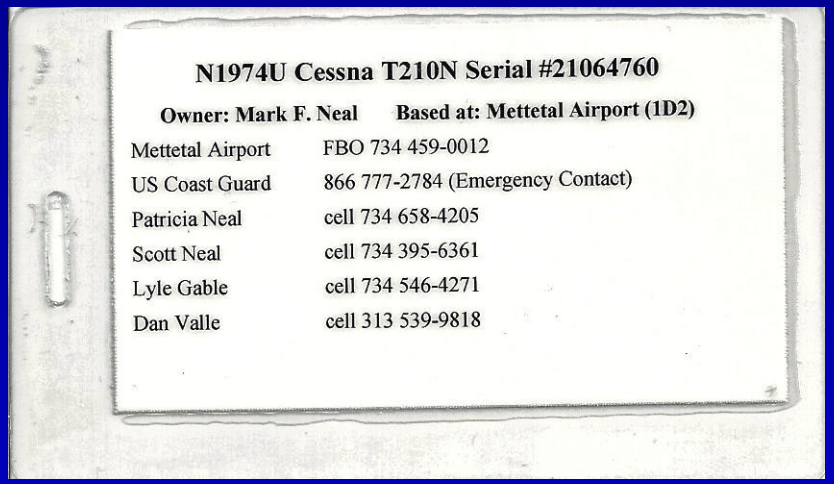
Safety Equipment

- Put on life jackets prior to crossing water
- Move life boat to accessible position
- Assign life boat/flares to able passenger(s)

Lessons Learned

Personal Items/Equipment/Resources

- Wallet/Cell Phone in water tight bags
- Handheld radio in water tight bag
- Sealed tags on life vest w/contact info



Lessons Learned

Insurance

- Contact immediately if possible
- Check contents coverage now…before you ditch
  - ✓ Maximum $500 for non-attached items in cockpit
  - ✓ Maximum $500 for Safety Equipment
  - ✓ Separate coverage for items contained in suitcase, day bag, briefcase, flight bag (Maximum $3,000)

Lessons Learned

Seating Arrangements/Capacity

- Adult in rear seat with children (if weight and balance allows)
- No more than 4 souls on board

Lessons Learned

Post-Landing Float Time

- Seconds to minutes (depends on aircraft type)
- Low wing should keep cabin higher in water
- High wing will pause/float briefly, even though cabin is under water

Lessons Learned

Post-Accident Repairs to Equipment

- Headsets
- Portable GPS
- Other Electrical Equipment
- Safety Equipment

Lessons Learned

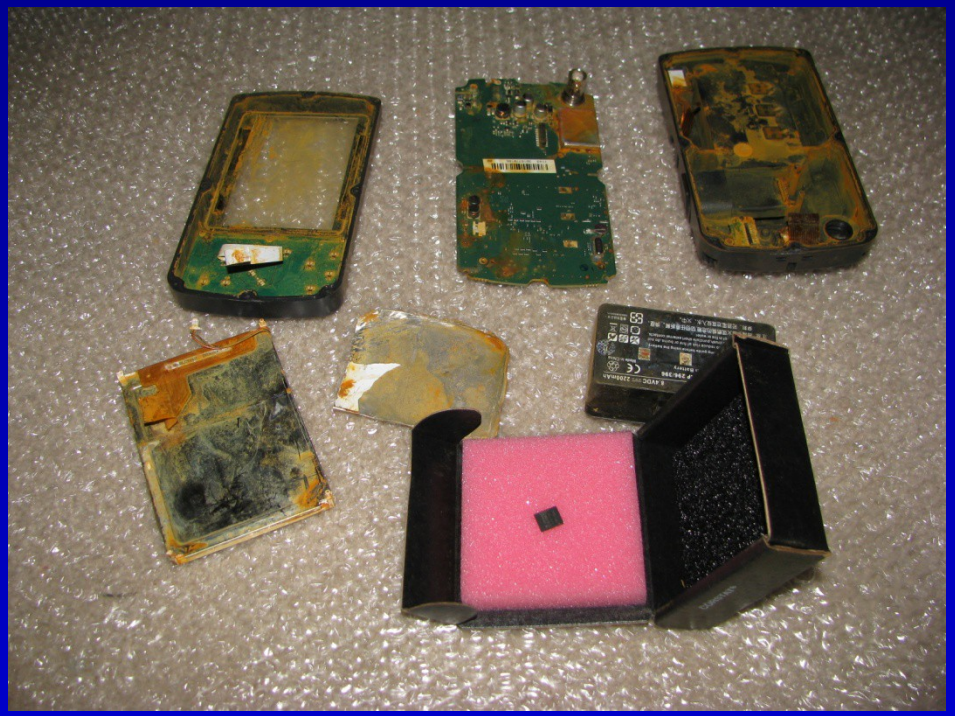
Post-Accident Repairs to Equipment

- Headsets
  - ✓David Clark
  - ✓LightSpeed
  - ✓Bose

Lessons Learned

Post-Accident Repairs to Equipment

- Headsets
- Portable GPS
  - ✓Returned from NTSB 3 months later



Lessons Learned

Post-Accident Repairs to Equipment

- Headsets
- Portable GPS
- Other Electrical Equipment
  - ✓ZAON ?

Lessons Learned

Post-Accident Repairs to Equipment

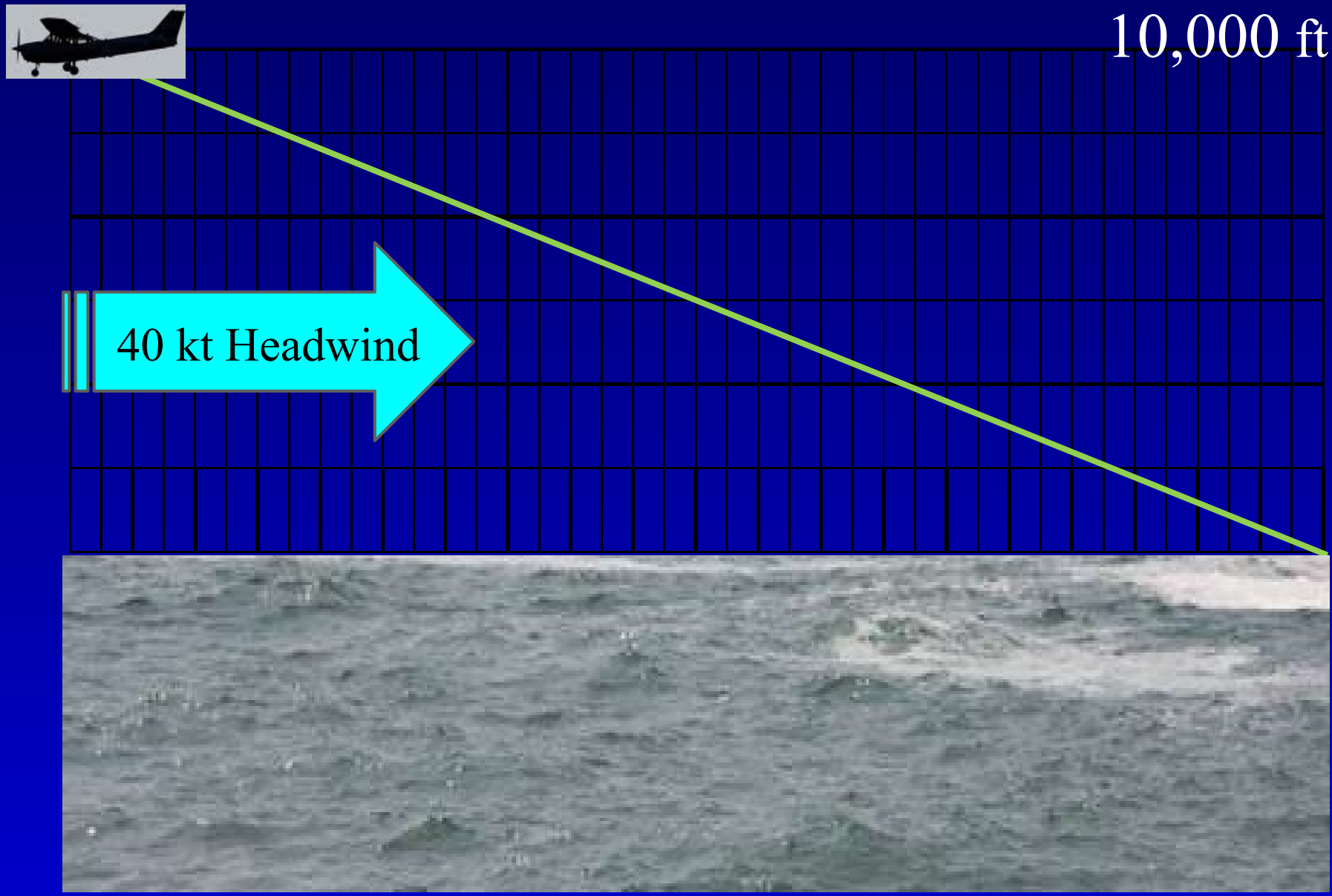
- Headsets
- Portable GPS
- Other Electrical Equipment
- Safety Equipment
  - ✓Lifejackets
  - ✓Lifeboat

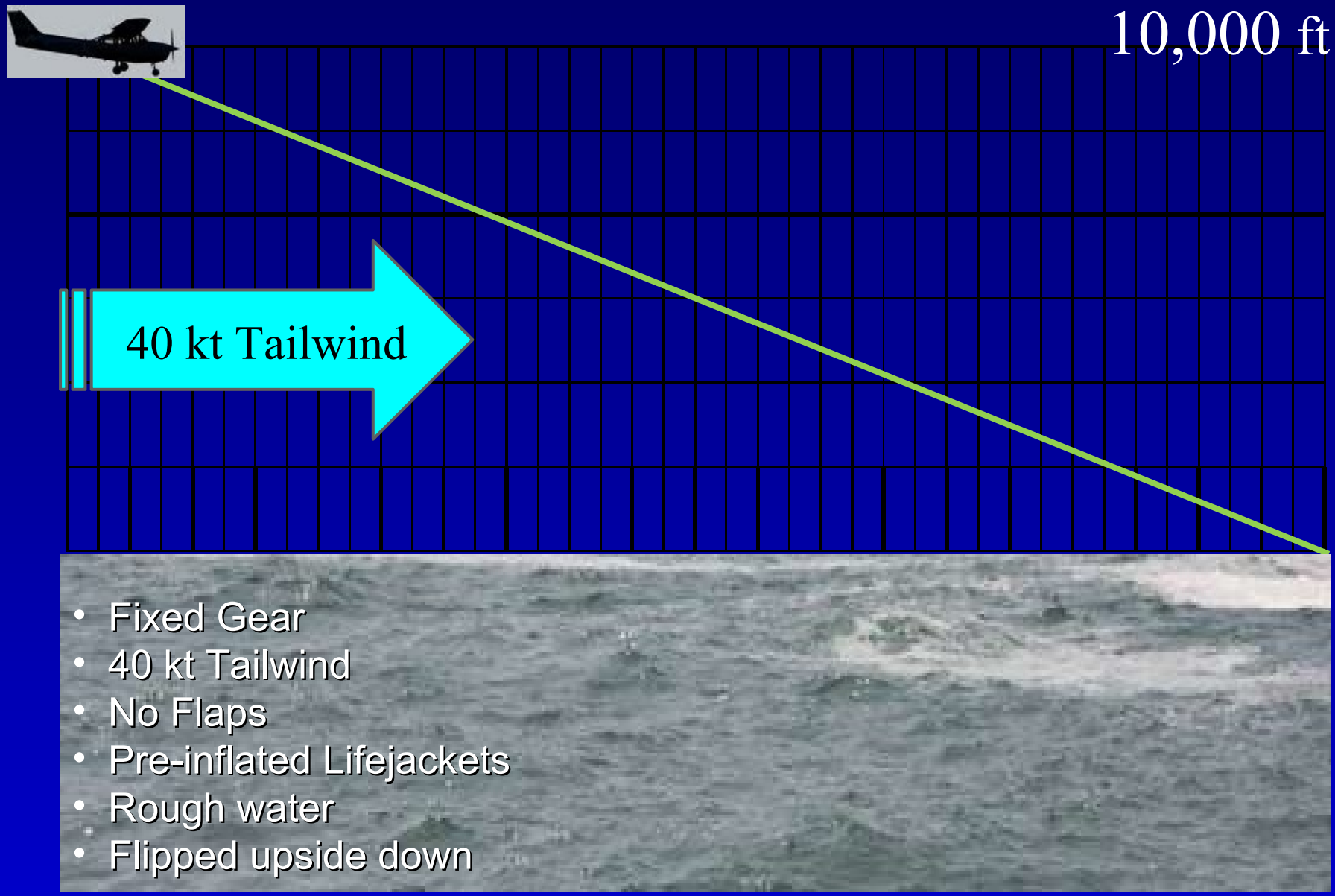
Case Study N82531

July 23, 2010

Ditching into Lake Michigan

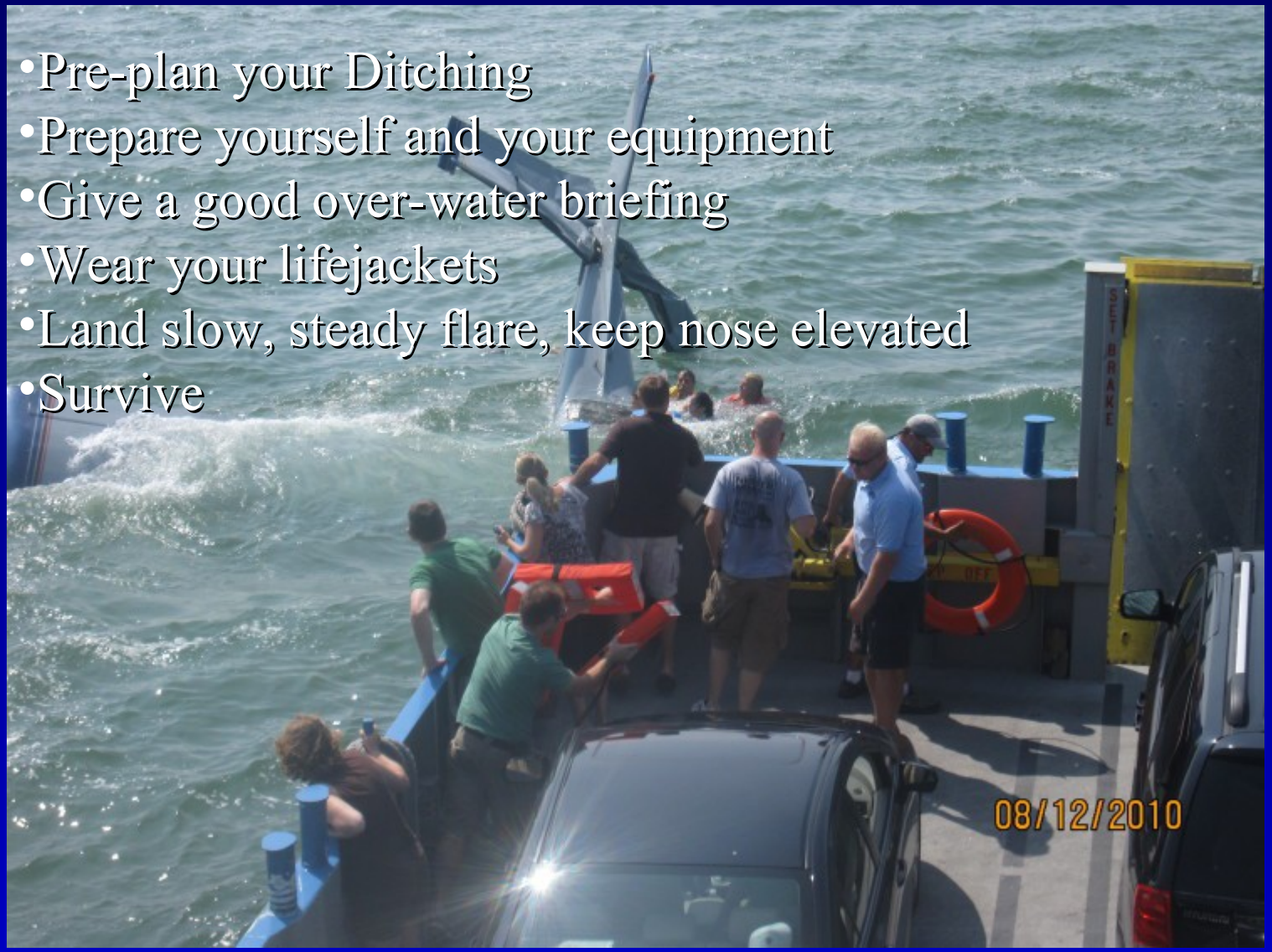
- Cessna 206
- 4 Fatal, 1 Minor Injury


10,000 ft
40 kt Headwind


10,000 ft
40 kt Tailwind
• Fixed Gear
• 40 kt Tailwind
• No Flaps
• Pre-inflated Lifejackets
• Rough water
• Flipped upside down

Ditching Checklist

- ❑ Radio—Transmit "Mayday". Give location and intentions
- ❑ Set Transponder to 7700 (unless with ATC)
- ❑ Brief Passengers
- ❑ ELT—Activate
- ❑ Heavy Objects (in baggage area)—secure or jettison
- ❑ Landing Gear—UP
- ❑ Flaps--30° for High Wing, No Flaps for Low Wing
- ❑ Power—Best Glide
- ❑ Approach—
  - Shallow approach 5 to 10 knots above stall
  - High winds, Heavy Seas—Into the wind
  - Low winds, Heavy swells—Parallel to swells
- ❑ Cabin Doors—Unlatch and open
- ❑ Face—Cushion
- ❑ Touchdown—Slight nose high
- ❑ Airplane—Evacuate
- ❑ Life vests and Raft—Inflate


•Pre-plan your Ditching
•Prepare yourself and your equipment
•Give a good over-water briefing
•Wear your lifejackets
•Land slow, steady flare, keep nose elevated
•Survive
08/12/2010

N14AW