Tight Spots:

Collision Avoidance in the Hudson Corridor

What We'll Cover

- Hudson River midair accident
- Class B "Exclusion" (corridor)
- Changes to Hudson Corridor
- Best practices for preventing midair collisions
- Resources

Hudson River Midair

- August 8, 2009
- Piper PA32R-300 (N71MC)
- Eurocopter AS 350 BA (N401LH)
- Wx: TEB 08005KT 10SM CLR
- Time of accident: 11:53am

AIR SAFETY AOPA FOUNDATION

Hudson River Midair

Indecisiveness?

- **TEB ATC**: Asked the pilot whether he wanted to go down the river or head southwest…
- **Pilot**: "Either."
- **ATC:** "Let me know"
- **Pilot:**"OK, tell you what, I'll take down the river."

Hudson River Midair

Hudson River Midair

Hudson River Midair

Hudson River Midair

Witness

- **Warning from Liberty Tours helicopter pilot on ground:**

"Jeremy - you have an airplane off to your back right side, I don't know if he is going to pass behind you, to your left, or what…"

"It was 3-4 seconds and I saw the impact."

Hudson River Midair

Hudson River Midair

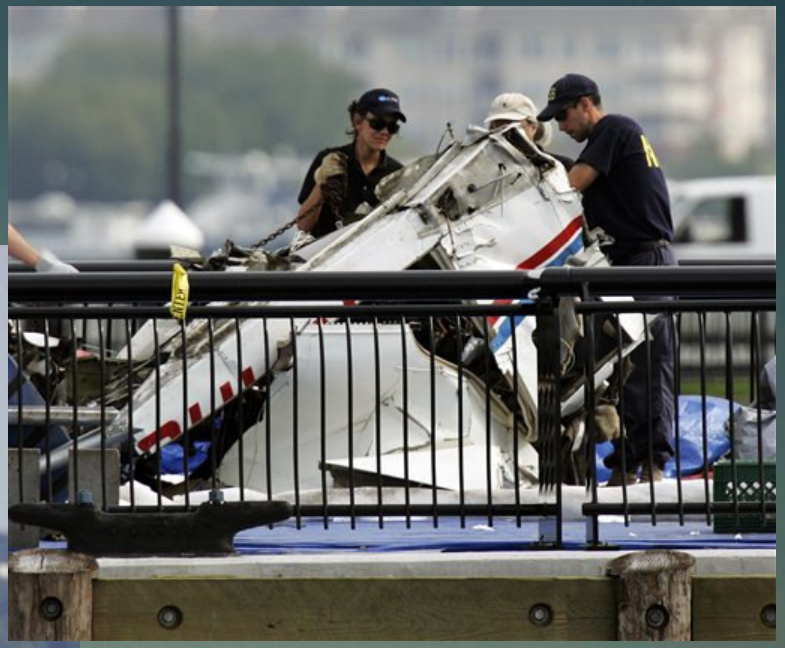
Blind spots

- **Piper**
  - **Banking to avoid helicopter?**
  - **Or just turning south down river?**
- **Helicopter**
  - **Heading south in a climb**
  - **Piper at his four o'clock**

Hudson River Midair

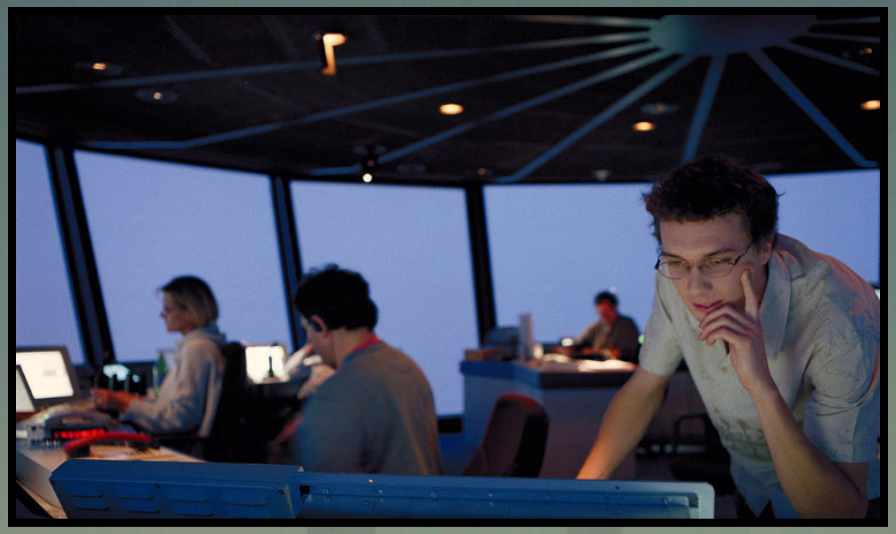
No survivors; nine fatalities

- **Three Piper**
- **Six helicopter**



Hudson River Midair

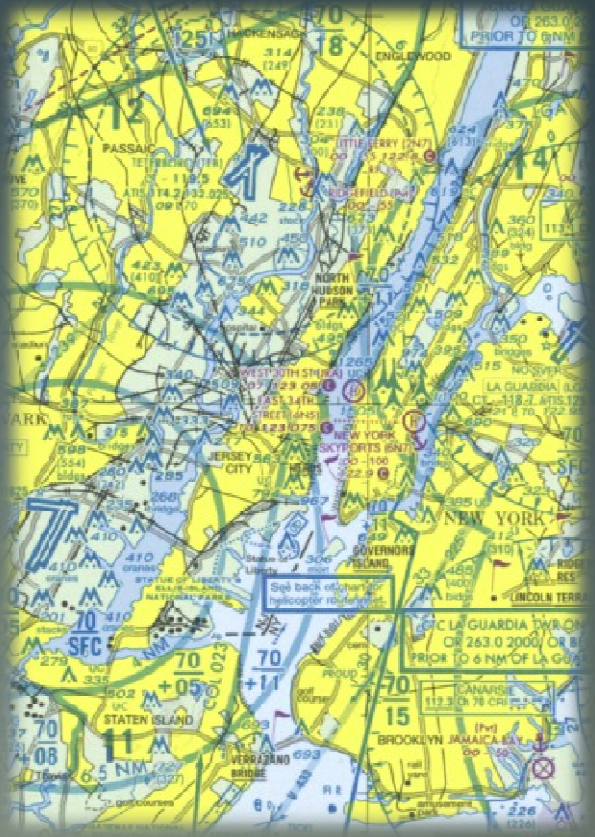
- **Piper pilot requested flight following…**
- **But handoff never accomplished**
- **Other concern?**
  - **Was he monitoring CTAF and ATC? …lot of radio chatter.**



Hudson River Class B Exclusion

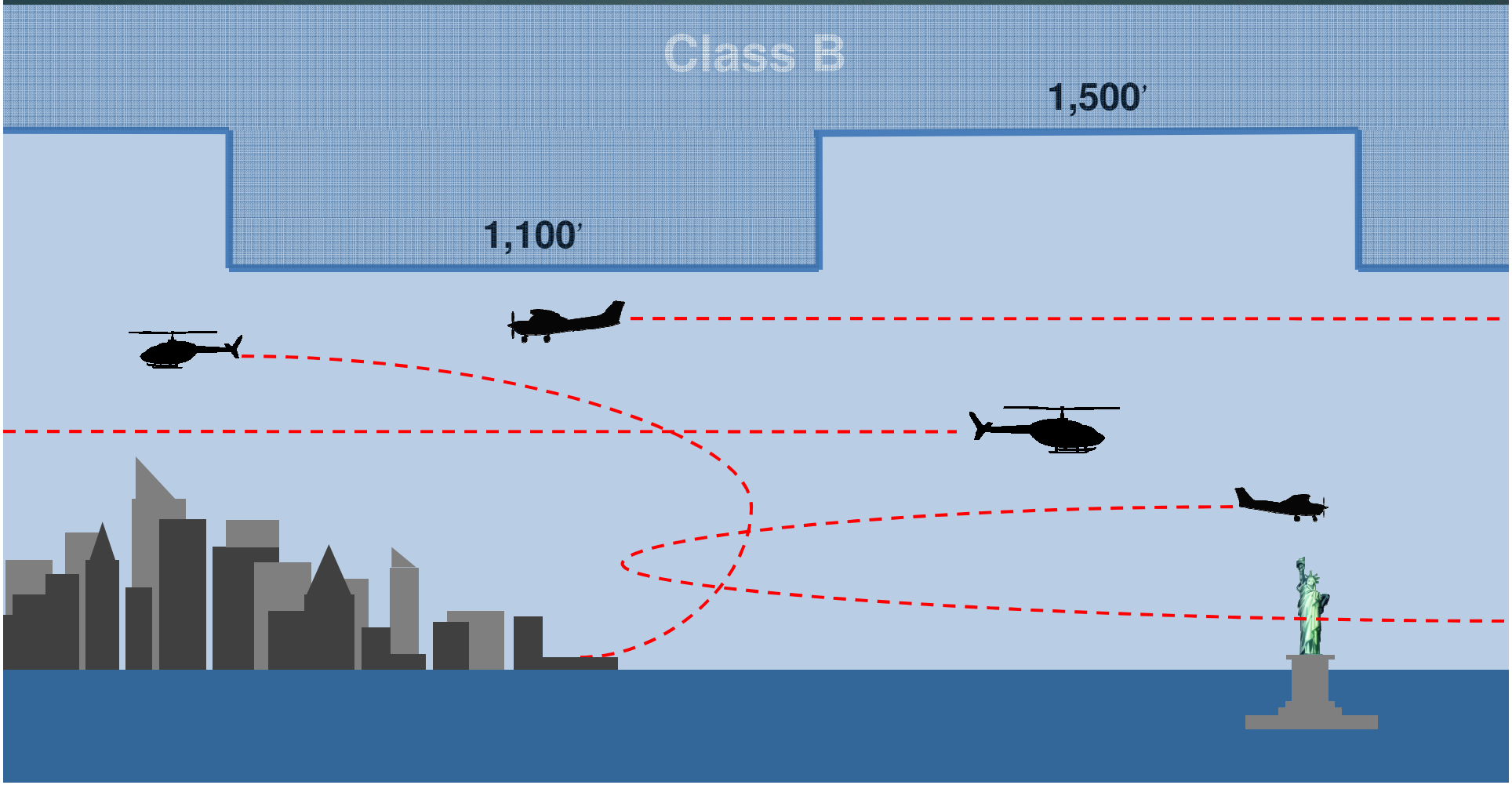
History:

- **AKA "Hudson River Corridor"**
- **Opened in 1971 for VFR river ops**
- **No collision history but…**



Hudson River Class B Exclusion

What it was…



Hudson River Class B Exclusion

Operations:

- **225 daily operations within 3 miles of crash site***
- **First Hudson midair in over 45 years**

***Based on eight-day NTSB survey conducted prior to midair**

Background

- Media frenzy
- Demands from Local, State, and Federal levels (previous noise issues)
  - City Council
    - Mayor (supporting aviation)
  - State Politicians
    - Two hearings; Senate and House
- NTSB

Background

- **Working group established**
  - Accident scenario
  - Safety enhancements
- **Eight recommendations**
  - Airspace
  - Charting
  - ATC
  - Flight
  - Education/Training

What's changing?

- Airspace
  - Corridor becoming Special Flight Rules Area (SFRA)
  - New Class B VFR Transition Route
- New charts
- Recommended procedures NOW mandatory
- Required self-announcements
- Standardized reporting points
- Online training available 11/19 – FAASTeam

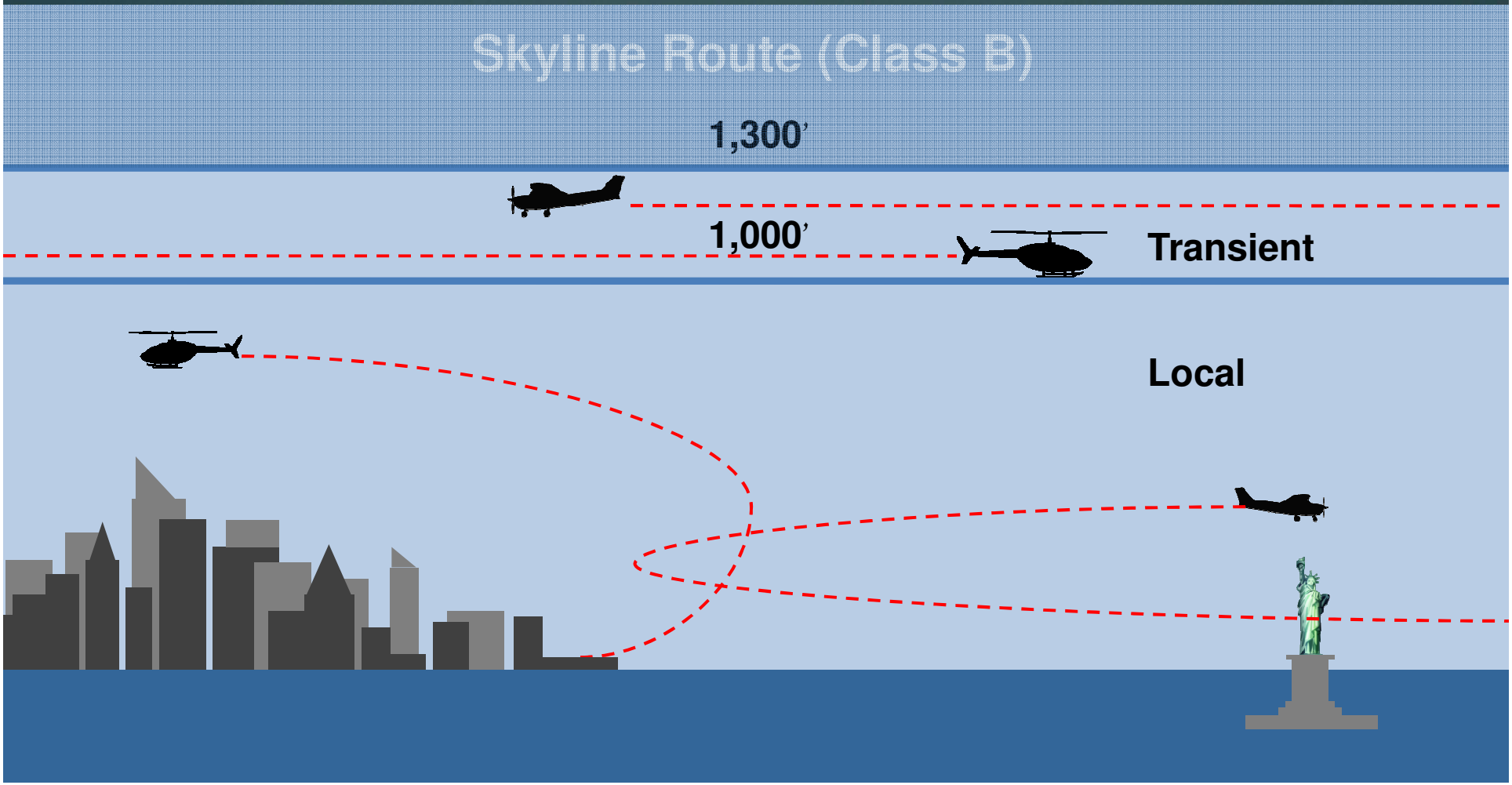
Transient vs. Local

- **Transient**
  - **Flying entire corridor from end to end**
- **Local**
  - **An operation other than overflying (e.g., sightseeing, news, law enforcement)**

SFRA

What it is now…

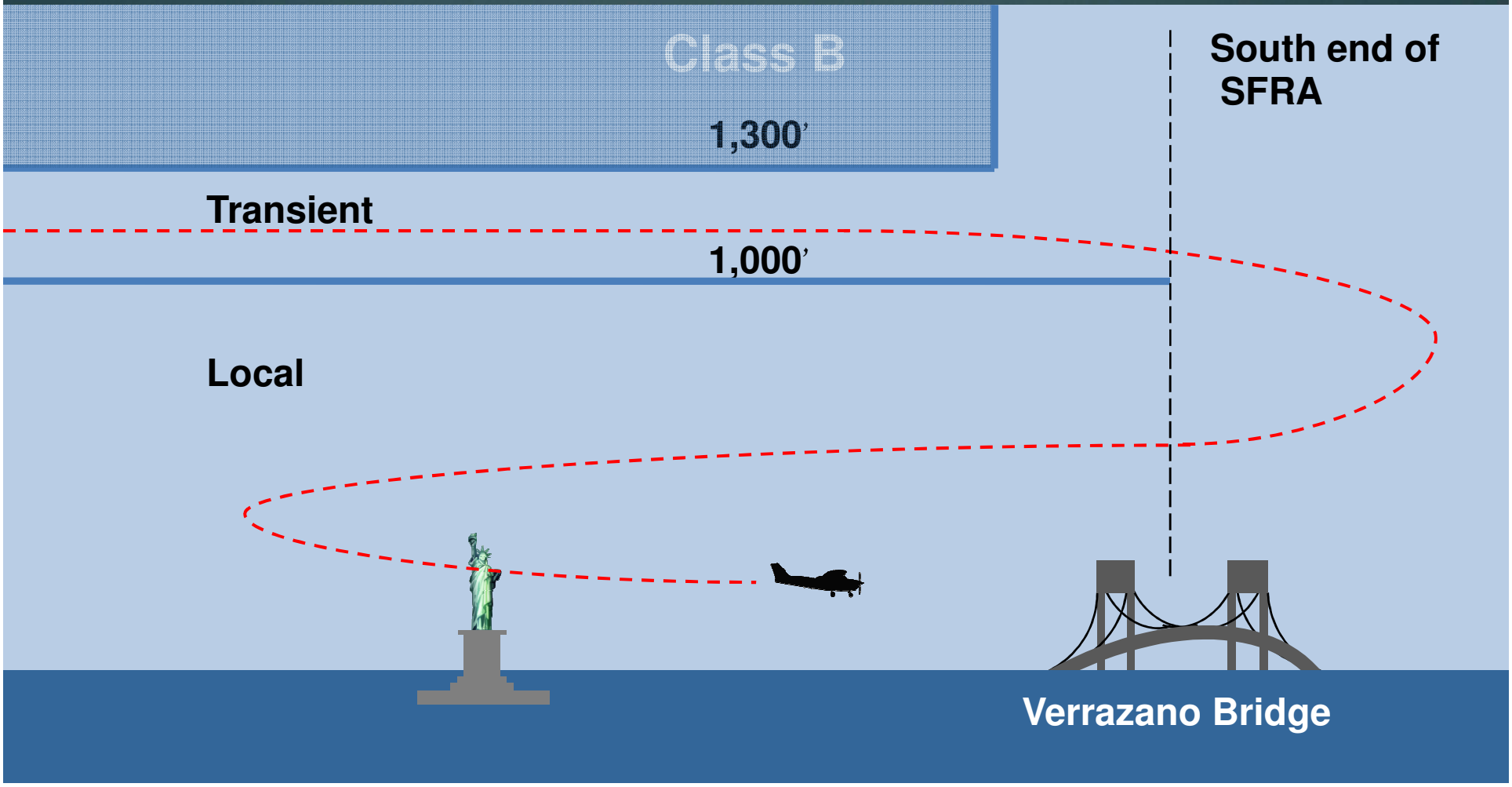
Special Flight Rules Area (SFRA)



SFRA

One Alternative…

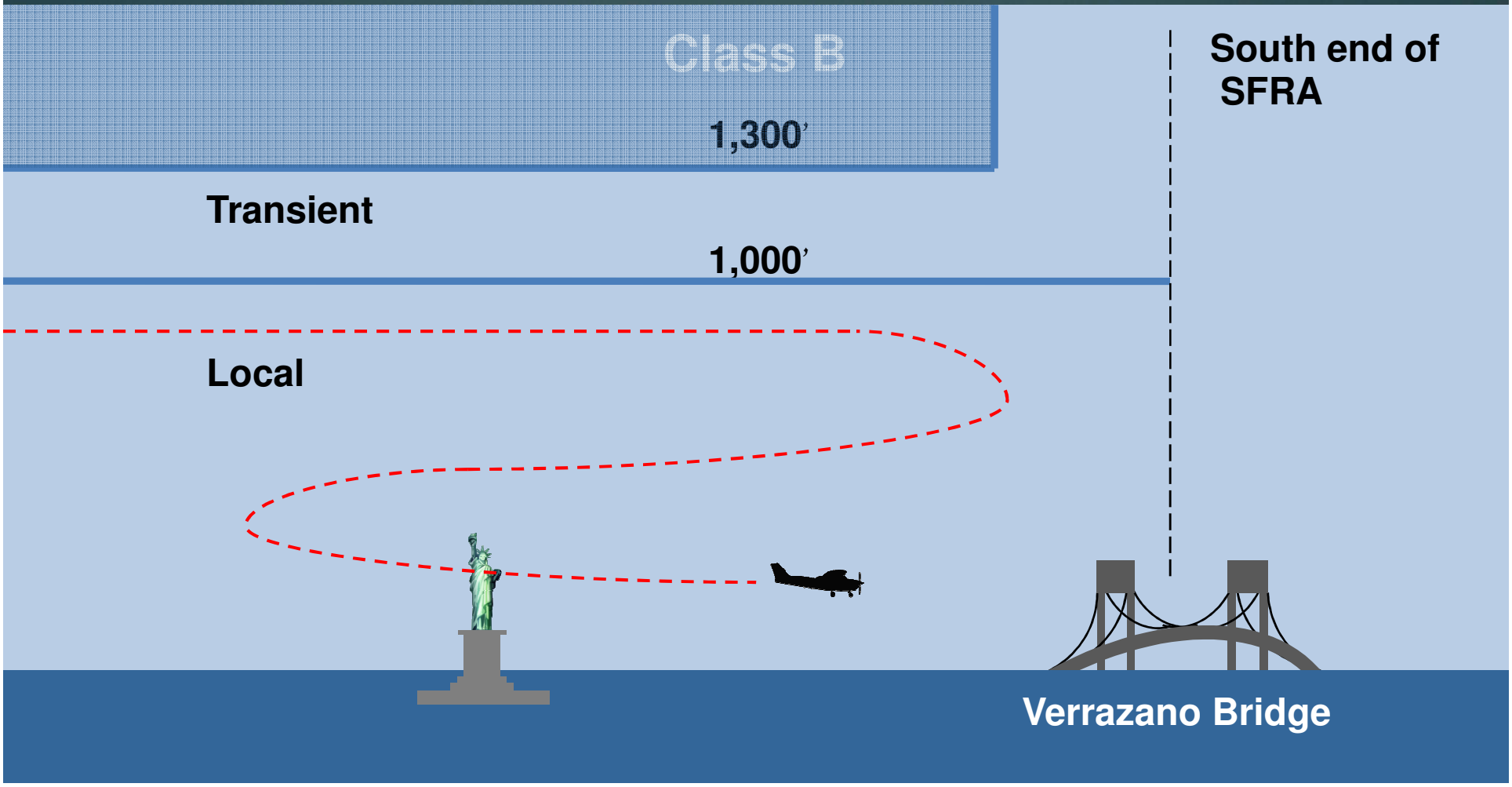
Transient vs. Local



SFRA

Other Alternative…

Transient vs. Local



SFRA

Procedures:

- **140 knots max (slower is better)**
- **Lights ON:**
  - **Anti-collision**
  - **Position/Nav**
  - **Landing lights (recommended)**
- **Stay to the right**
- **Self announce 123.05**

SFRA

Self-announce requirements:

- **Aircraft type**
- **Position**
- **Direction**
- **Altitude**

SFRA

Equipment requirements:

- **Mode C transponder**
- **Radio**
  - **Below 1,300 (Class B): Mandatory reporting points**
  - **Lost comm? Handheld and lights**

SFRA

Mandatory reporting points

- **Alpine tower**

SFRA

Mandatory reporting points

- **Alpine tower**
- **GWB (George Washington Bridge)**

SFRA

Mandatory reporting points

- **Alpine tower**
- **GWB**
- **Intrepid**

SFRA

Mandatory reporting points

- **Alpine tower**
- **GWB**
- **Intrepid**
- **Goldman Sachs**

SFRA

Mandatory reporting points

- **Alpine tower**
- **GWB**
- **Intrepid**
- **Goldman Sachs**
- **Statue of Liberty**

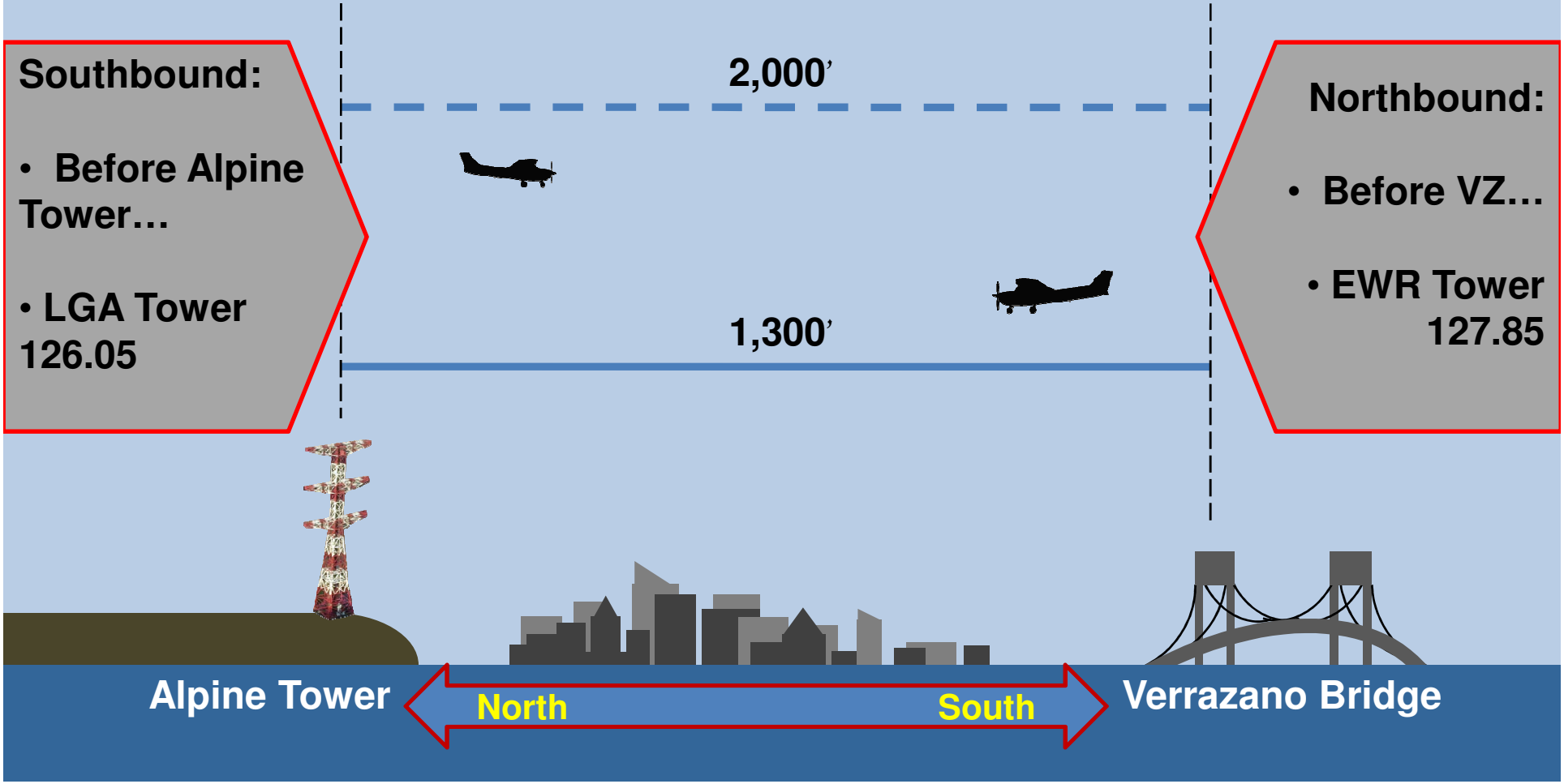
SFRA

Mandatory reporting points

- Alpine tower
- GWB
- Intrepid
- Goldman Sachs
- Statue of Liberty
- VZ (Verrazano Bridge)

VFR Transition Route…ATC Clearance Required

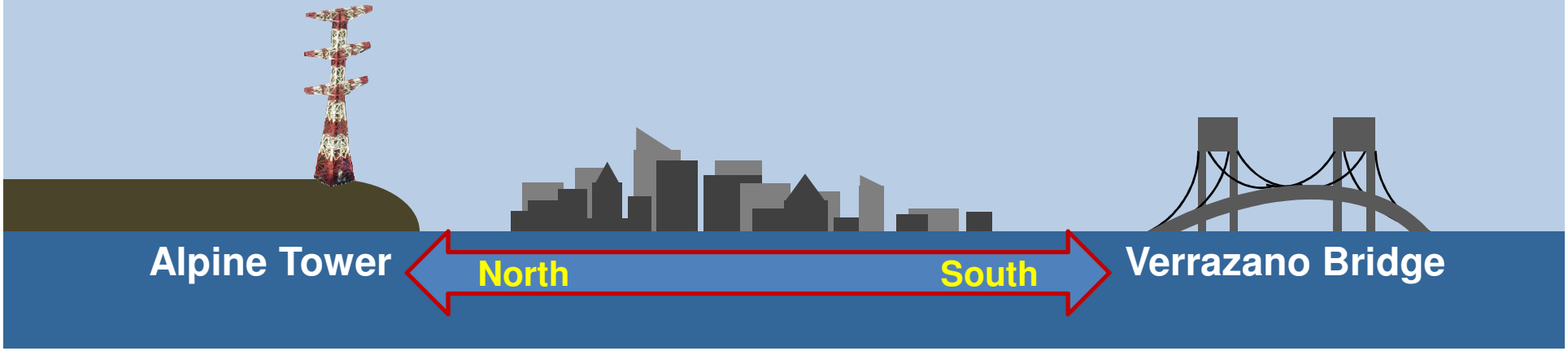
"Skyline Route"



VFR Transition Route. . .ATC Clearance Required

On initial contact:

- **Position**
- **Altitude**
- **Route name**
- **Direction**



VFR Transition Route…ATC Clearance Required

On initial contact:

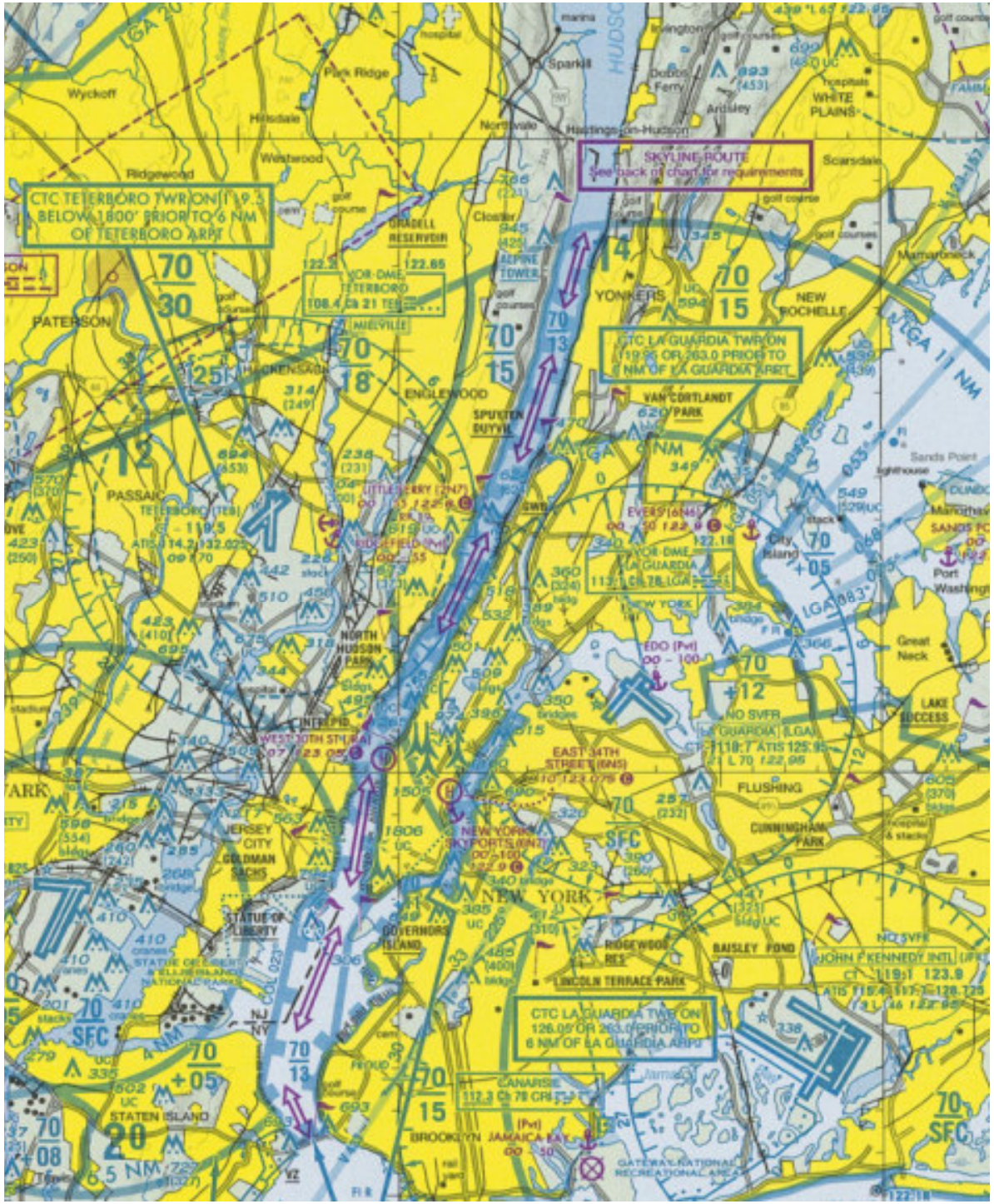
- **Position**
- **Altitude**
- **Route name**
- **Direction**

Don't Forget Your Class B Clearance!

New NY TAC:

- **Depicts VFR Transition Route (“Skyline Route”)**

- **SFRA**



Charts

NY TAC inset:

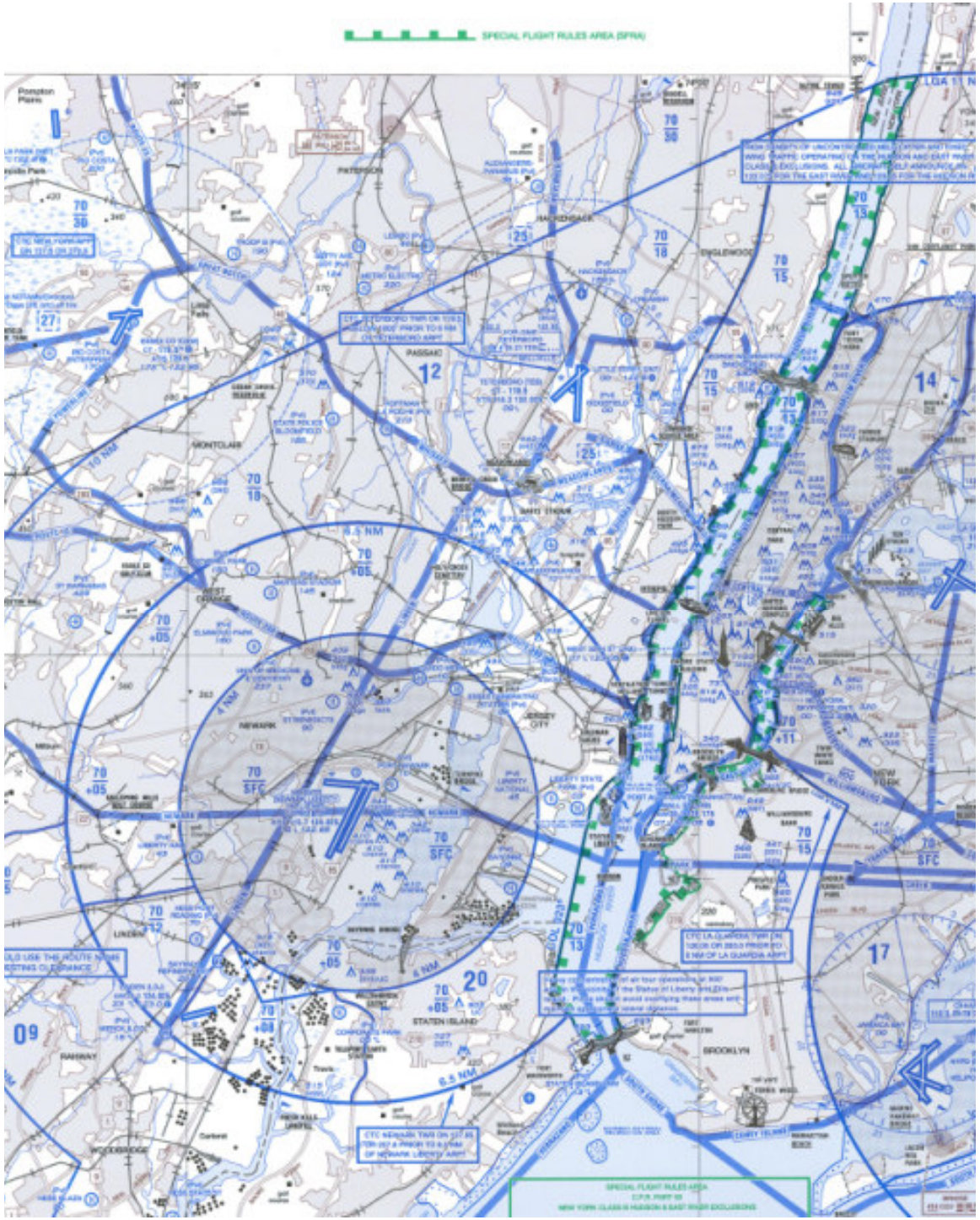
- **Statue of Liberty/Ellis Island**
- **SFRA**

Replaced in Feb 2010:

- **Two new insets**
  - **SFRA**
  - **VFR Transition Route**

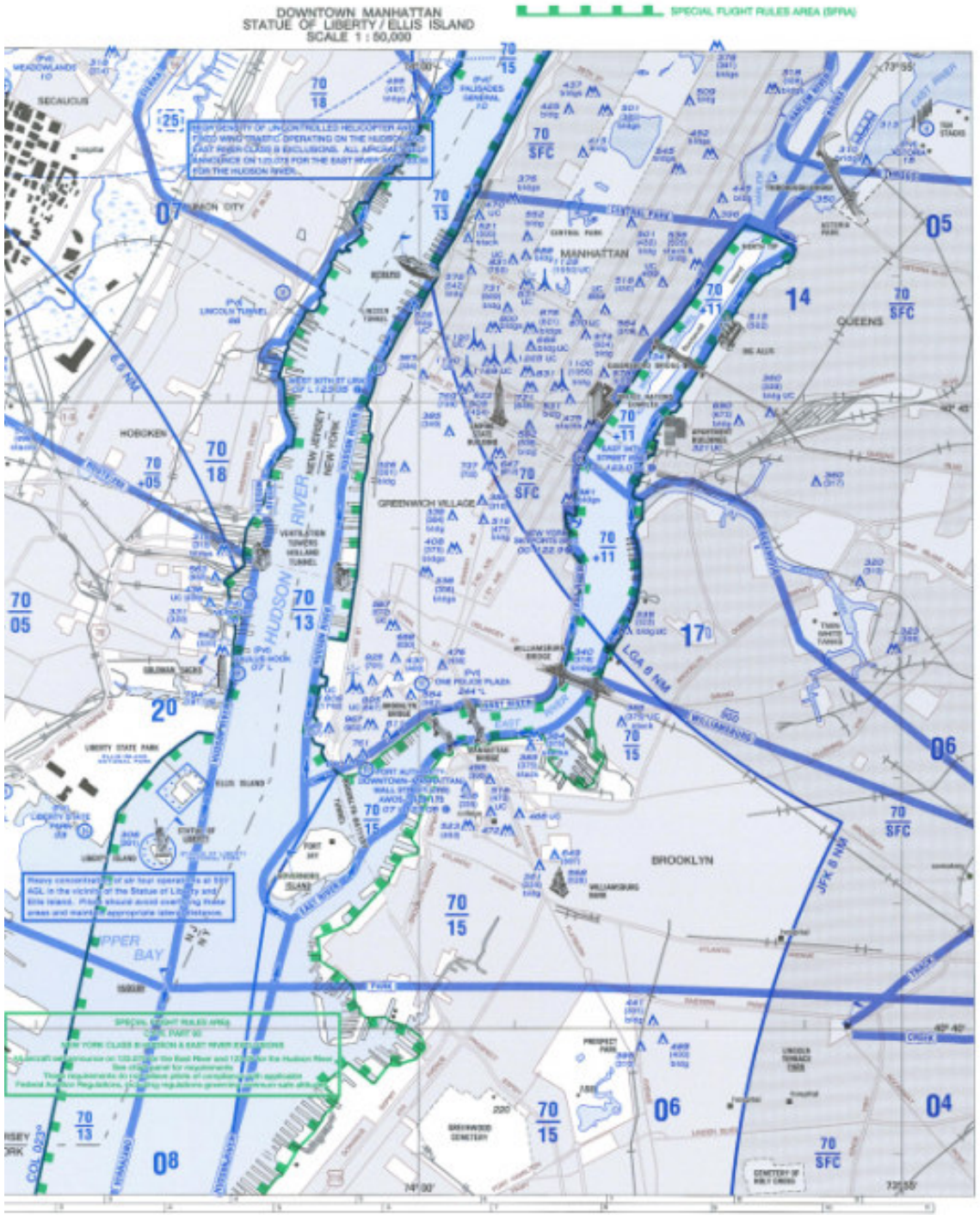
Helicopter Route Chart:

- **Entire SFRA**



NY Helicopter Route Chart Inset:

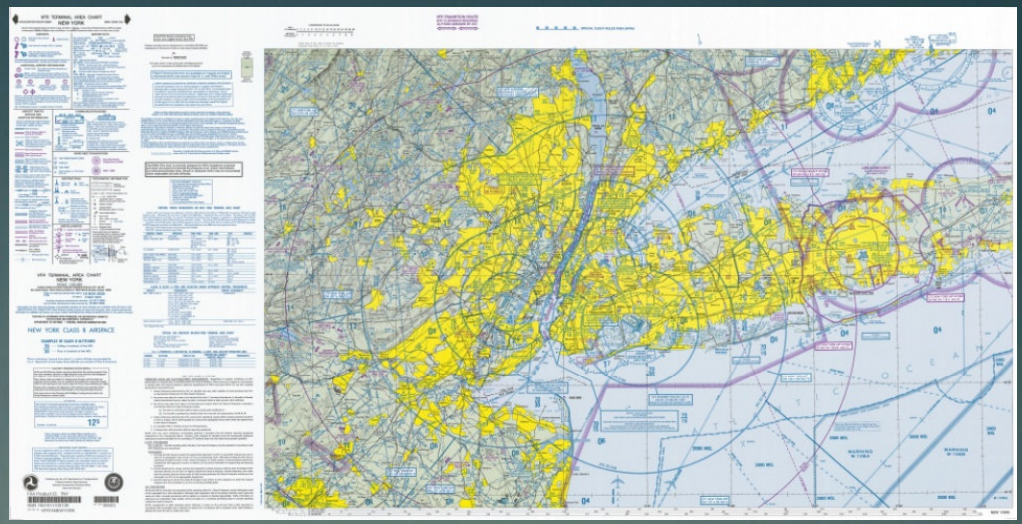
- **Statue of Liberty/Ellis Island**
- **SFRA**



What's changing?

When?

- **Now:**
  - **Front of NY TAC**
  - **Sectional**
  - **Helicopter Route**



- **Back of NY TAC:**
  - **Feb. 11, 2010 – Online only (naco.faa.gov)**
  - **May 6, 2010 – In print**

What's changing?

Chart requirements:

- Current NY TAC
- Or NY Helicopter Route Chart
- Must be in the aircraft
- Must be familiar

What's changing?

Training:

- CTAF phraseology training
- On back of TAC in Feb.
- Online training 11/19 – FAASTeam Web site

What's changing?

TEB VFR departure procedures

Formerly for Class B service…

- **TEB handoff to EWR after takeoff**
- **Usually assigned 1,100'**

What's changing?

TEB VFR departure procedures

- **Non-Corridor departures**
  - **ATC coordinates your departure before takeoff**
  - **Approves Class B entry**
  - **Corridor without clearance? Only one way:**
    - **Direct to GW Bridge.**

Midair Statistics

1997-2006:

- **110 GA midairs**
- **ALL in VMC!**
- **91% in daylight!**

Midair Statistics

Most often…

- **Day VMC**
- **Within five miles of airport**
- **High traffic density**
- **10 a.m. – 5 p.m.**
- **Weekends**
- **Summer**
- **Less than 2% after sunset**

Midair Statistics

Most often…

- Day VMC
- Within five miles of airport
- High traffic density
- 10 a.m. – 5 p.m.
- Weekends
- Summer
- Less than 2% after sunset

Hudson midair…

- ✓ Day VMC
- ✓ Close to heli pad
- ✓ High traffic density
- ✓ 11:53am
- ✓ Weekend
- ✓ Summer

Midair Statistics

- **96% occur at or below 3,000 feet**
- **40% occur at or below 500 feet**

Midair Statistics

- **62% within five miles of an airport**

Midair Statistics

- **51% occur in the pattern**

Midair Statistics

- **47% when overtaking another aircraft**

Midair Statistics

- **39% side impacts**

Midair Statistics

- **27% CFI on board**

Proficiency

First time corridor ops…

- **Proper ground training**
- **“Check out” flights.**

Planning Ahead

Sort it out on the ground…

- **Route**
- **Alternatives**
  - **Know all options?**
- **Program GPS**
- **Radio setup / frequencies**

AIR SAFETY AOPA FOUNDATION

Planning Ahead

Be ready for disruptions…

- **Route diversion**
- **Don’t get expected clearance**
- **In-flight emergency**
- **Radio / GPS failure**

Planning Ahead

Know who, when, and where to call

- **ATC**
- **CTAF**

Planning Ahead

Flight following options:

- ***Yes***
- ***No***
- ***Maybe***

See and Avoid

Scanning

- **10-15 degree chunks**
  - **Eyes focus 10-15 degree chunks**
- **10 degrees above/below horizon**
- **Side-to-side or front-to-side**
- **Check for overtaking aircraft**

See and Avoid

Blossom Effect

- **Two aircraft on collision course appear motionless**
- **Small, stationary speck until too late**
- **If not too late, maneuver out of the way!**

AIR SAFETY AOPA FOUNDATION

See and Avoid

Blind spots

- **High/low wing considerations**

See and Avoid

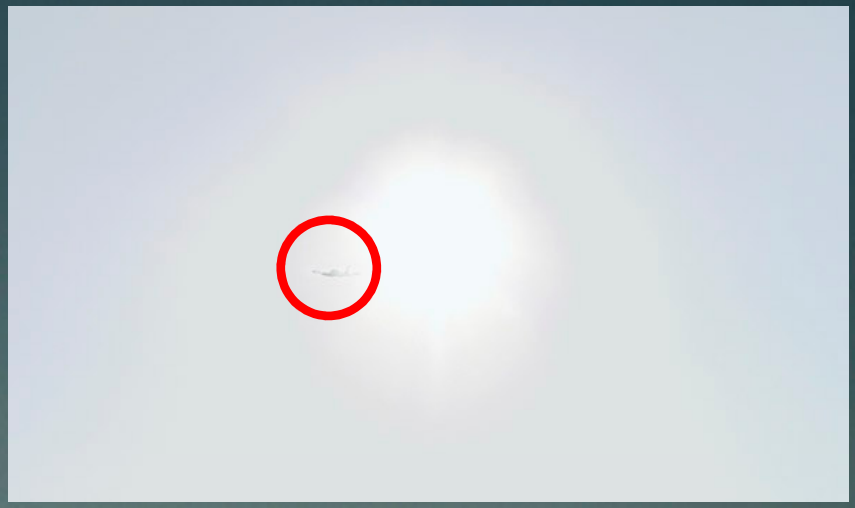
Blind spots

- **Door posts**
- **Wing struts**
- **Passengers**
- **Dirty windshield**

See and Avoid

Blind spots

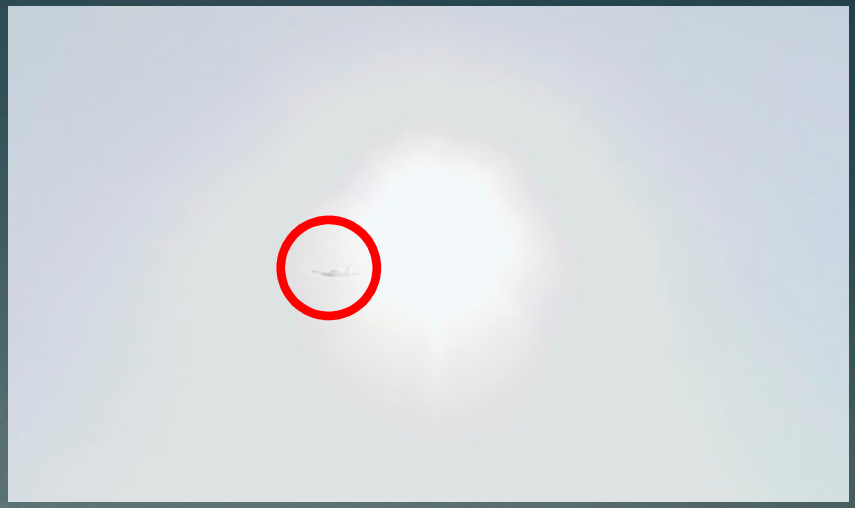
- **Sun in your eyes**



See and Avoid

Blind spots

- **Sun in your eyes**



Sunglasses…

- **Preferably amber lens**

Mitigating Distractions

CRM/SRM

- **More in-plane distractions than in years past**
- **Not enough "eyes outside"**

Mitigating Distractions

CRM/SRM

- **GPS (use only what you need)**
- **Frequencies on standby**
- **Charts in order**

Mitigating Distractions

Sterile cockpit

- **Especially during ground movement**
- **First and last 10 minutes of flight**

Mitigating Distractions

- **Autopilot**

Mitigating Distractions

What to do if something changes…

- **Where's my out?**
- **Talk to ATC!**

Best Practices

Communication

- **Listen first**
- **Be quick, clear, and concise**
- **Not your whole life story**

Best Practices

New ASF course on communication…

Best Practices

Climb and descent

- **S-turns**
- **Lower nose (climb)**

75% of traffic pattern midairs occur during approach and landing!

Technology

TIS

- Traffic
- Excessive in dense areas
  - Distraction
- Hudson midair:
  - Both aircraft had it

Technology

TCAS

- Traffic
- Excessive in dense areas
  - Distraction
- RAs don't see airspace or terrain—avoiding one conflict could lead to another

Technology

Keep your eyes outside!

AIR SAFETY AOPA FOUNDATION

In Summary. . .

"...from tragedy we draw knowledge to improve the safety of us all."*

**Plaque at the entrance to the NTSB's Training Center*

In Summary. . .

- **NEW** corridor procedures / requirements
- Talk to ATC
- Fly the safest route, not the prettiest
- Be prepared for disruptions, emergencies, last-minute changes
- Keep your eyes outside!

ASF Resources

www.asf.org/collisionavoidance

SAFETY ADVISOR

Operations and Proficiency No. 4

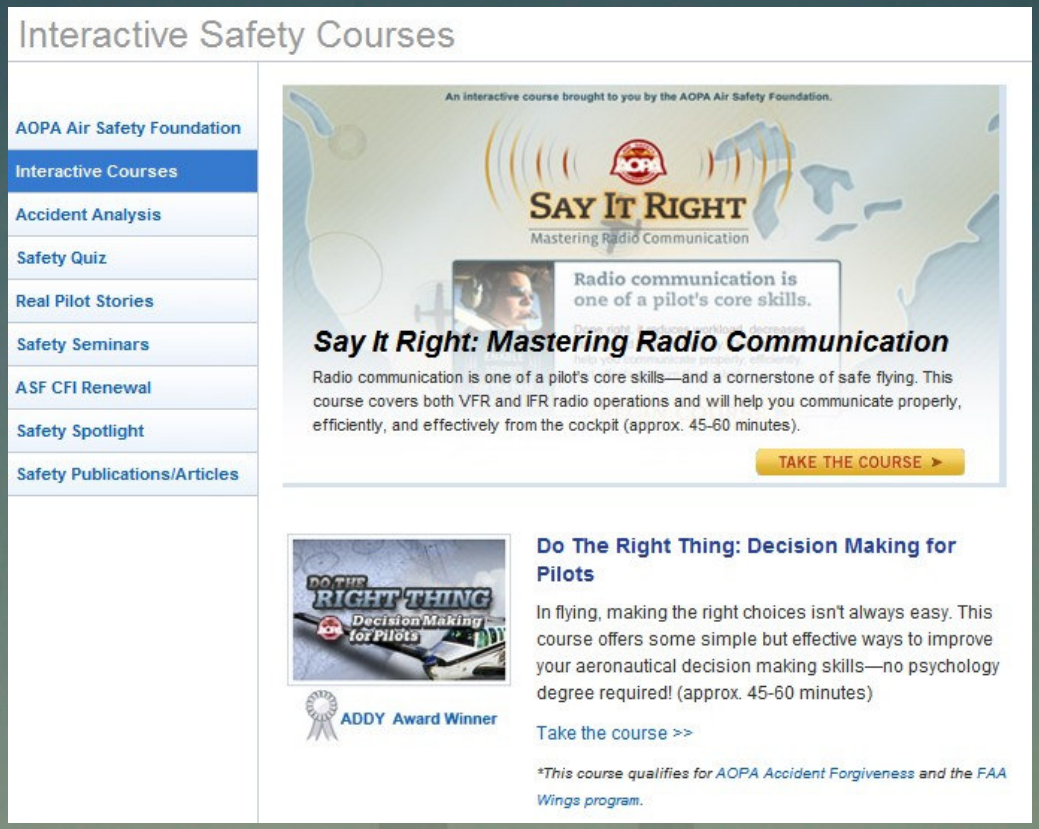
Collision Avoidance
Strategies and Tactics

Maintaining Separation

Despite improvements in the general aviation (GA) safety record in recent years, the number of midair collisions (MACs) shows no corresponding decline. MACs continue to occur about thirteen times a year on average, often resulting in multiple fatalities. On the ground, collisions caused by runway incursions are still a concern for GA. Instead of waiting until after takeoff to begin their collision avoidance scan, pilots can avoid a runway incursion by increasing their vigilance immediately after engine start.

ASF Resources

www.asf.org/courses



ASF Resources

NEW! www.asf.org/hudson

Operating Safely in the Hudson Corridor

The August 2009 midair collision over the Hudson was a rare tragedy, but it points to an issue that deserves attention—flying safely in crowded skies. The AOPA Air Safety Foundation developed several resources dedicated to best practices for operating in the Hudson River area while offering proven strategies for steering clear of other aircraft.

Resources

***Tight Spots: Collision Avoidance in the Hudson Corridor* Presentation**

As a result, on Sept. 15, 2009, AOPA Air Safety Foundation President Bruce Landsberg presented "Tight Spots: Collision Avoidance in the Hudson Corridor," sponsored by AOPA, the AOPA Air Safety Foundation, and the FAA. More than 350 pilots attended the seminar, held in a hotel ballroom near Newark Liberty International Airport, not far from the accident site. Another 200 watched a live Internet feed of the seminar.

View the PowerPoint slides in pdf format>>> (30MB).

***Collision Avoidance* Kneeboard**

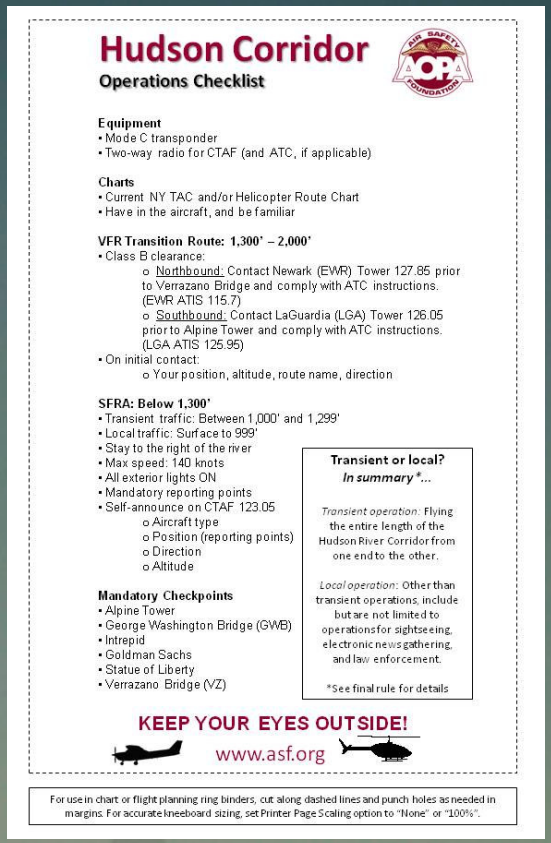
Your kneeboard style guide for Hudson corridor procedures--ready to download and print.

ASF Resources

Available www.asf.org/hudson

Hudson River Ops

Kneeboard checklist



Hudson Corridor

Operations Checklist

Equipment
- Mode C transponder
- Two-way radio for CTAF (and ATC, if applicable)

Charts
- Current NY TAC and/or Helicopter Route Chart
- Have in the aircraft, and be familiar

VFR Transition Route: 1,300' – 2,000'
- Class B clearance:
  - o Northbound: Contact Newark (EWR) Tower 127.85 prior to Verrazano Bridge and comply with ATC instructions. (EWR ATIS 115.7)
  - o Southbound: Contact LaGuardia (LGA) Tower 126.05 prior to Alpine Tower and comply with ATC instructions. (LGA ATIS 125.95)
- On initial contact:
  - o Your position, altitude, route name, direction

SFRA: Below 1,300'
- Transient traffic: Between 1,000' and 1,299'
- Local traffic: Surface to 999'
- Stay to the right of the river
- Max speed: 140 knots
- All exterior lights ON
- Mandatory reporting points
- Self-announce on CTAF 123.05
  - o Aircraft type
  - o Position (reporting points)
  - o Direction
  - o Altitude

Mandatory Checkpoints
- Alpine Tower
- George Washington Bridge (GWB)
- Intrepid
- Goldman Sachs
- Statue of Liberty
- Verrazano Bridge (VZ)

Transient or local?
In summary*...

Transient operation: Flying the entire length of the Hudson River Corridor from one end to the other.

Local operation: Other than transient operations, include but are not limited to operations for sightseeing, electronic news gathering, and law enforcement.

*See final rule for details

KEEP YOUR EYES OUTSIDE!

www.asf.org

For use in chart or flight planning ring binders, cut along dashed lines and punch holes as needed in margins. For accurate kneeboard sizing, set Printer Page Scaling option to "None" or "100%".

Thank you!

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