"The best thing for being sad…is to learn something. That's the only thing that never fails."

Merlin

from "The Once and Future King"

WELCOME TO FLIGHT SCHOOL

The magic of flight has inspired generations of dreamers since the beginning of time. Becoming a pilot can open opportunities and experiences that will fill a lifetime. It is not only a demonstration of skill, but a never-ending pursuit of knowledge and improvement, through a vibrant and present community.

This series of lectures is designed to provide an introductory guidance to each lesson as well as a review guide. It cannot be complete – as no education path truly is. It is a student's responsibility to always seek further knowledge, clarification, and – hopefully – become *the master*.

Welcome to this amazing journey. Welcome to flight school.

Tizi

Stage 1 Lesson 1

- Introduction to Flight & High-Altitude Maneuvers -

FAMILIARIZATION

Tiziano Bernard, CFI

Mission Objectives

- Understand the concept of “Visual Flight Rules” (VFR).
- Familiarize ourselves with our aircraft make and model.
- Determine if we’re physiologically safe to fly.
- Determine if all proper documents are in the airplane.
- Setup and calculate proper Weight & Balance.
- Understand the purpose and use of a checklist.
- Familiarize ourselves with KSAV radio processes.
- Complete U.S. Citizenship or TSA Verification Endorsement.

VISUAL FLIGHT RULES (VFR)

“Cherokee 73N, roger. Maneuver approved. Maintain VFR”

Look outside!

- VFR is a “flight regime” under which the pilot is responsible for separation from other aircraft (“see and avoid”).
- Governed by a specific set of regulations.
- Weather conditions must be sufficient to guarantee good visuals with terrain and traffic.
- Private pilot certificate only applies to privileges, not VFR or IFR.

DEFINITIONS

	Ceiling	Visibility	
VFR	> 3,000 ft	> 5 SM	VFR
Marginal VFR - MVFR	1,000 ft – 3,000 ft	3 – 5 SM	
IFR	1,000 ft – 500 ft	1 – 3 SM	IFR
Low IFR - LIFR	< 500 ft	< 1 SM	

Garmin Pilot Map Overlay

VFR

MVFR

IFR

LIFR

AIRCRAFT MAKE & MODEL

“You always study and become familiar with the airplane you’re about to fly.”

Piper PA-28-180 “Cherokee”

- Manufacturer: **PIPER**
- Model ID: **PA-28-180**
  - **PA-28:** Model *Family*: “Cherokee”
  - **-180:** Specific Model: “Cherokee 180”
  other examples…
  - -161: “Warrior”
  - -140: “Cherokee 140"
- Year: **1968**
- Category: **Airplane**
- Class: **Single-Engine Land (SEL)**

N7773N Engine

- Lycoming O-360-A4A
  - Opposing 360 cu. in. (5.9L) engine
  - 180hp at 2700 rpm
- **H** – Horizontally opposed
- **A** – Air cooled
- **N** – Naturally aspirated
- **D** – Direct drive

PERSONAL HEALTH

"Am I safe to fly?”

Are YOU safe?

- Safety can be described as a **layered** approach.
  - *Examples of layers: airplane maintenance status, pilot health, pilot proficiency, presence of air traffic control, familiar airport, etc.*
- Pilot "health" is the first layer of safety.
- Pilots are responsible for guaranteeing personal health.
  - e.g., if a doctor says you're ok, but you still don't feel good, you should not fly.
- Personal health involves multiple factors:
  - **Physiology**: Is your physical health acceptable?
  - **Psychological**: Is your emotional health acceptable?
- The gravity of these factors is a personal subjective measure which relies on the maturity and professionalism of the pilot.

I'll make sure that I.M.S.A.F.E.

- **I** – Illness: Are you ill? Have you been ill? Could symptoms be present during flight? Are there remnant symptoms?
- **M** – Medicine: Are you taking medicine? Is it allowed by the FAA? Read attentively the linked file for drugs, intervals, and dosages.
- **S** – Stress: Do you have a job performance review coming up? Do you have work or family problems?
- **A** – Alcohol: Are you intoxicated? BAC limit is 0.04. "8 hours bottle to throttle"
- **F** – Fatigue: Are you tired?
  - Acute: Are you just really tired? Long day at work? Difficult week?
  - Chronic: Do you need a lifestyle change? Should you be talking to a psychologist?
- **E** – Emotions: Are you emotionally stable? Has a loved one just passed away? Are you going through a divorce?
  - Eating: "E" is often referred to as "eating", which can be summarized as physiological needs, like eating, going to the bathroom, etc.

Part 91.17

Maturity and Professionalism

Determining whether these factors may affect your flight relies on the maturity and professionalism of the pilot.

Maturity and Professionalism

- There exist Federal Aviation Regulations (FARs) that dictate professionalism and maturity:
- **14 CFR 61.153 Eligibility requirements: General**
  To be eligible for an airline transport pilot certificate, a person must
  (c) be of **good moral character**

Part 61.153

- **14 CFR 91.13 Careless or reckless operation**.
  (a) ***Aircraft operations for the purpose of air navigation.*** No person may operate an aircraft in a **careless or reckless manner** so as to endanger the life or property of another.

Part 91.13

- (b) ***Aircraft operations other than for the purpose of air navigation.*** No person may operate an aircraft, other than for the purpose of air navigation, on any part of the surface of an airport used by aircraft for air commerce (including areas used by those aircraft for receiving or discharging persons or cargo), in a **careless or reckless manner** so as to endanger the life or property of another.

BE A PROFESSIONAL. BE MATURE. BE SAFE.

PERSONAL & AIRCRAFT DOCUMENTS

“License and Registration, please!”

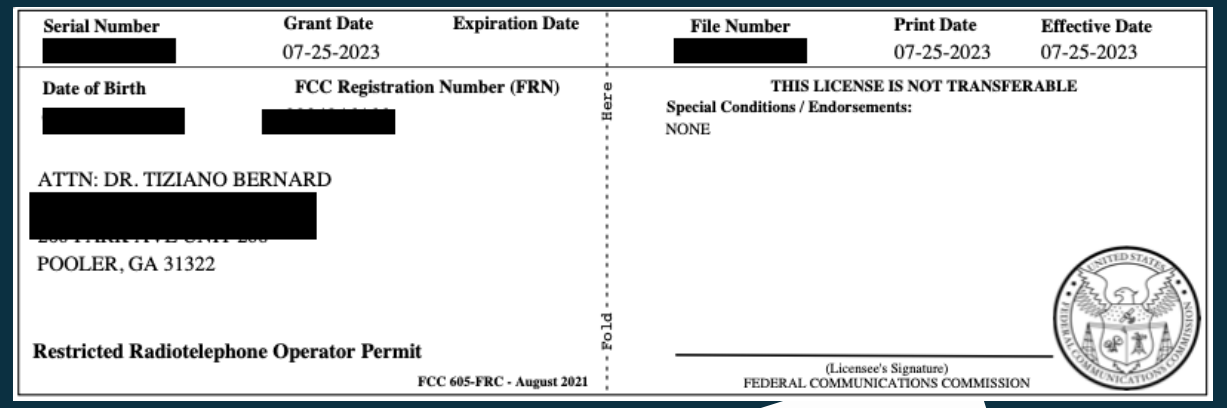
To act as Pilot in Command (PIC)

- **Pilot Certificate**
  - To solo as student, you need a Student Pilot Certificate
  - Pilot certificate does NOT expire.
  - Certificate, not a License.
- **Photo ID**
  - Government issued photo ID (DL, passport, etc.).
- **Medical Certificate**
  - Appropriate class for the operation being conducted.

**All must be valid*

Aircraft Documents

- **A** – Airworthiness Certificate
  - Does not expire
  - Airplane must be properly maintained
- **R** – Registration
  - Must be renewed every 7 years
- **R** – Radio License
  - Only required for international flights. See FCC.
- **O** – Pilot **O**perating Handbook
  - You need either a physical or digital copy. See school website.
- **W** – Weight & Balance
  - Must calculate it before flight and verify you're within limits



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[redacted]	07-25-2023		[redacted]	07-25-2023	07-25-2023

Date of Birth: [redacted]

FCC Registration Number (FRN): [redacted]

ATTN: DR. TIZIANO BERNARD
[redacted]
POOLER, GA 31322

Restricted Radiotelephone Operator Permit

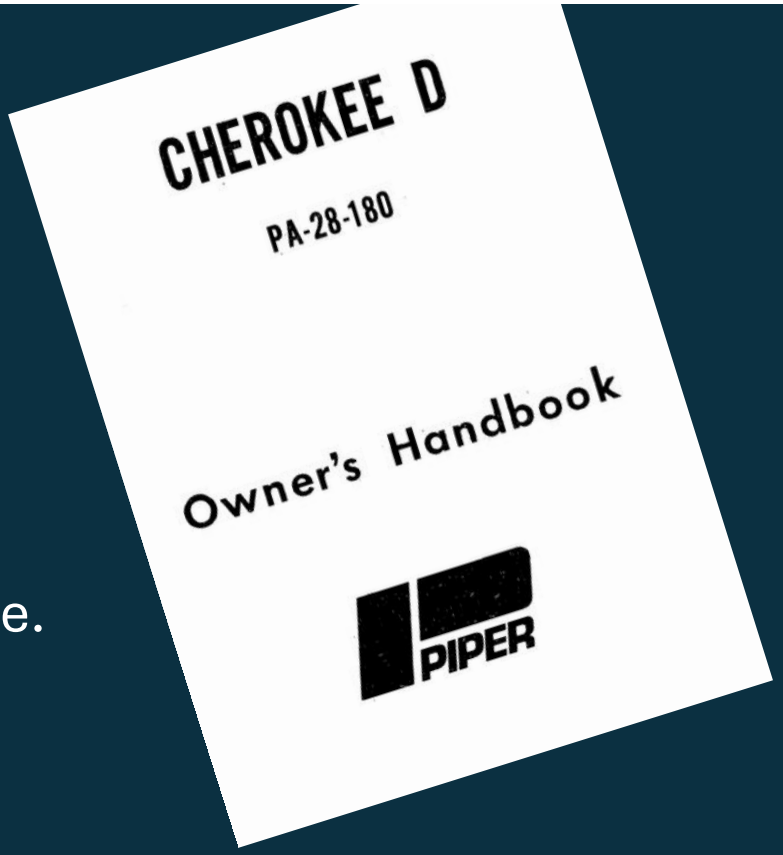
FCC 605-FRC - August 2021

Fold Here

THIS LICENSE IS NOT TRANSFERABLE

Special Conditions / Endorsements:
NONE

(Licensee's Signature)
FEDERAL COMMUNICATIONS COMMISSION

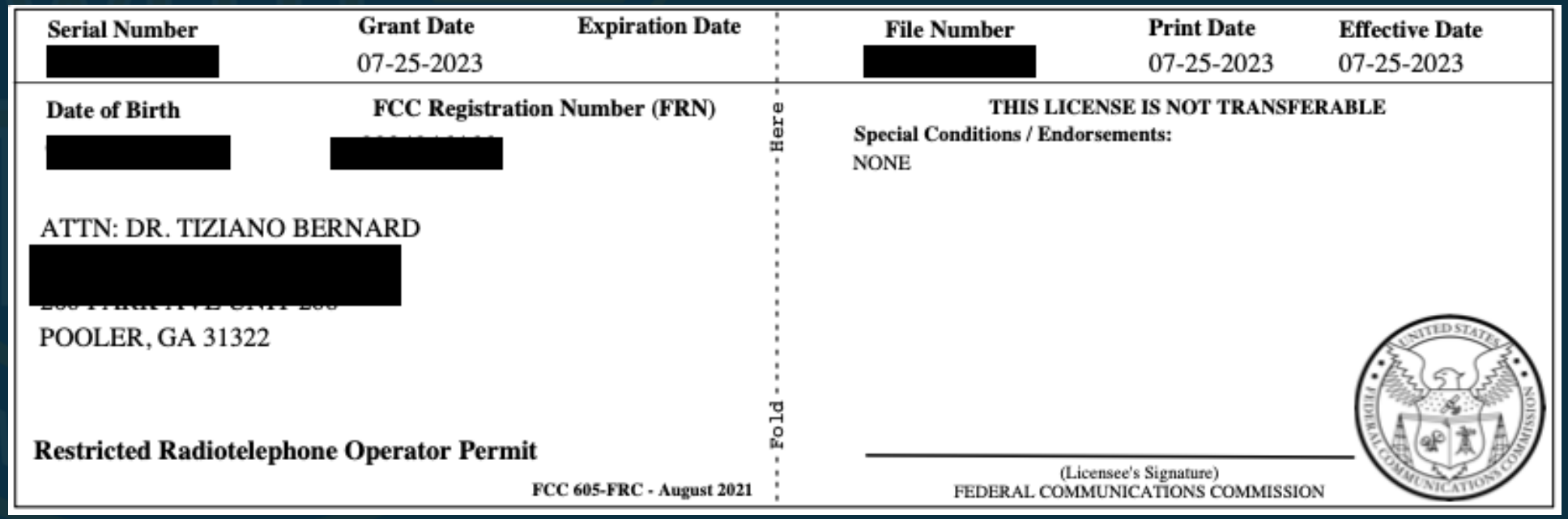


Airworthiness Certificate & Registration (14 CFR 91.203)

- (a) Except as provided in § 91.715, no person may operate a civil aircraft unless it has within it the following:
- (1) **An appropriate and current airworthiness certificate**. Each U.S. airworthiness certificate used to comply with this subparagraph (except a special flight permit, a copy of the applicable operations specifications issued under § 21.197(c) of this chapter, [...]
- (2) **An effective U.S. registration certificate** issued to its owner or, for operation within the United States, the second copy of the Aircraft registration Application as provided for in § 47.31(c), a Certificate of Aircraft registration as provided in part 48, or a registration certification issued under the laws of a foreign country.

Radio License

- See FCC website.
- See AOPA guide.



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[redacted]

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FCC 605-FRC - August 2021

Fold Here

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Special Conditions / Endorsements:

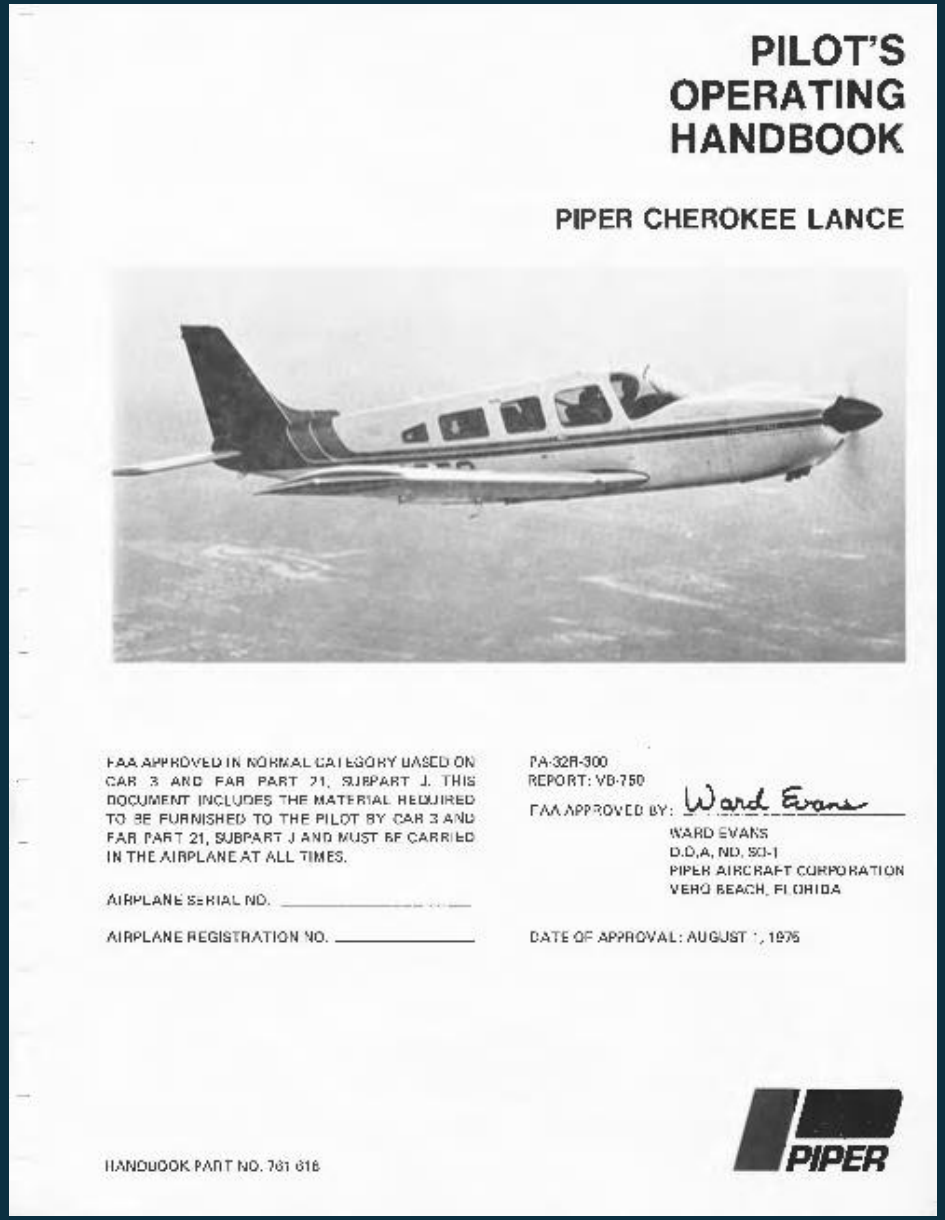
NONE

(Licensee's Signature)

FEDERAL COMMUNICATIONS COMMISSION

Operating Handbook (14 CFR 91.9)

- (b) No person may operate a U.S.-registered civil aircraft -
- (1) For which an Airplane or Rotorcraft **Flight Manual** is required by § 21.5 of this chapter unless there **is available in the aircraft a current, approved Airplane or Rotorcraft Flight Manual** or the manual provided for in § 121.141(b); and [...]



PILOT'S OPERATING HANDBOOK

PIPER CHEROKEE LANCE

FAA APPROVED IN NORMAL CATEGORY BASED ON CAR 3 AND FAR PART 21, SUBPART J. THIS DOCUMENT INCLUDES THE MATERIAL REQUIRED TO BE FURNISHED TO THE PILOT BY CAR 3 AND FAR PART 21, SUBPART J AND MUST BE CARRIED IN THE AIRPLANE AT ALL TIMES.

AIRPLANE SERIAL NO. _____

AIRPLANE REGISTRATION NO. _____

PA-32R-300
REPORT: VB-750

FAA APPROVED BY: Ward Evans

WARD EVANS
D.D.A, ND, SCI-1
PIPER AIRCRAFT CORPORATION
VERO BEACH, FLORIDA

DATE OF APPROVAL: AUGUST [illegible], 1975

HANDBOOK PART NO. 761 618

PIPER

Weight & Balance (14 CFR 91.103)

- Each pilot in command shall, before beginning a flight, become familiar with all available information concerning that flight. This information must include—
- (2) For civil aircraft other than those specified in paragraph (b)(1) of this section, other reliable information appropriate to the aircraft, relating to aircraft performance under expected values of airport elevation and runway slope, **aircraft gross weight**, and wind and temperature.

Technicality: There is no explicit rule stating that weight and balance calculations needs to be done prior to flight. However, not doing so and being obviously "heavy" may fall under careless or reckless behavior.

Ramp Inspections

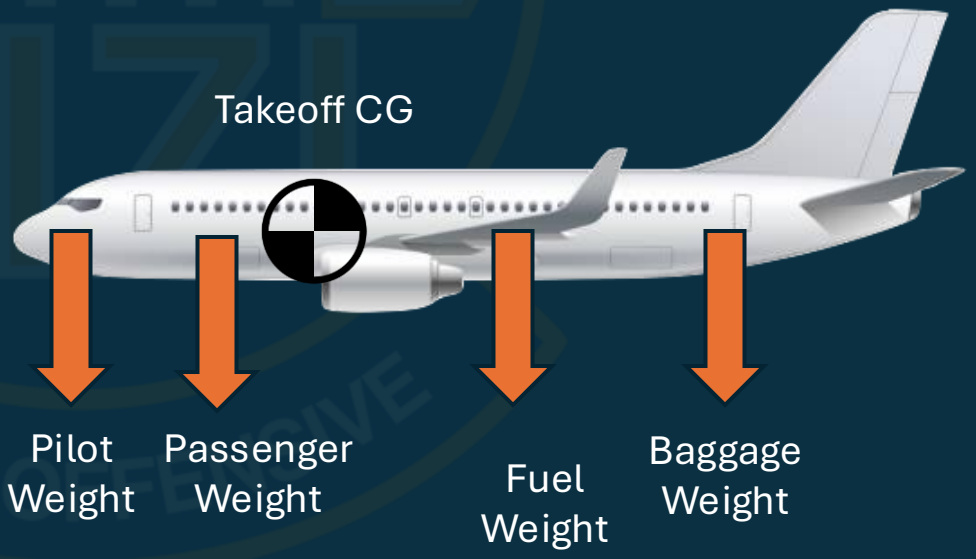
- Ramp inspections for part 91 operations are governed by Order 8900.1.
  If link is inop, see FlyWithTizi.com's Library.
- Ramp inspections for part 141 flight schools are governed by Order 8900.692.
- Follow AOPA guidance. A ramp check is a normal thing, don't assume there is something wrong.

WEIGHT & BALANCE (W&B)

“Why aren’t we climbing??”

It’s all about Moments

- Weight and balance is all about determining:
  - Location of the Center of Gravity (CG)
  - Aircraft Weight (specifically takeoff and landing weights)



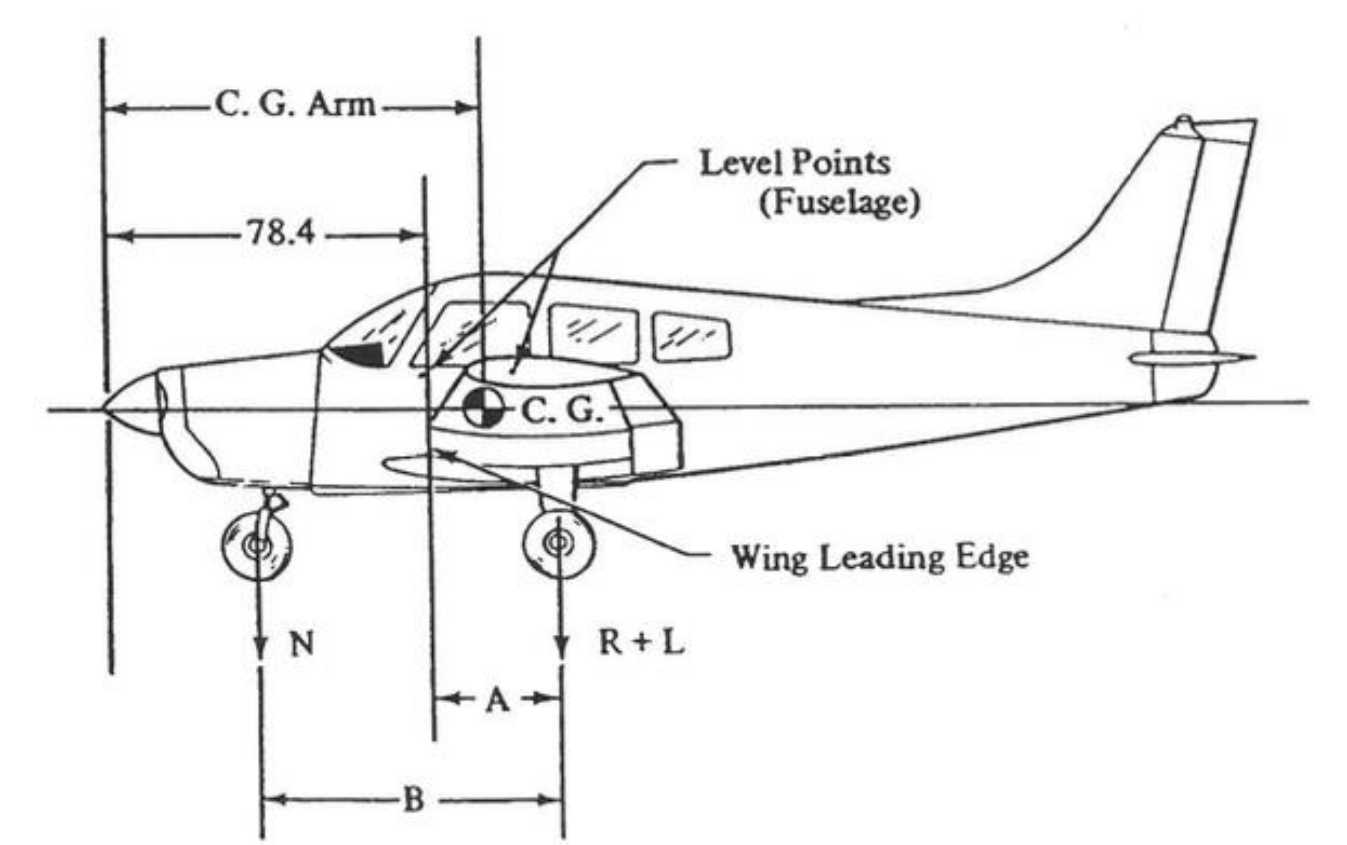
Wight X Distance = Moment

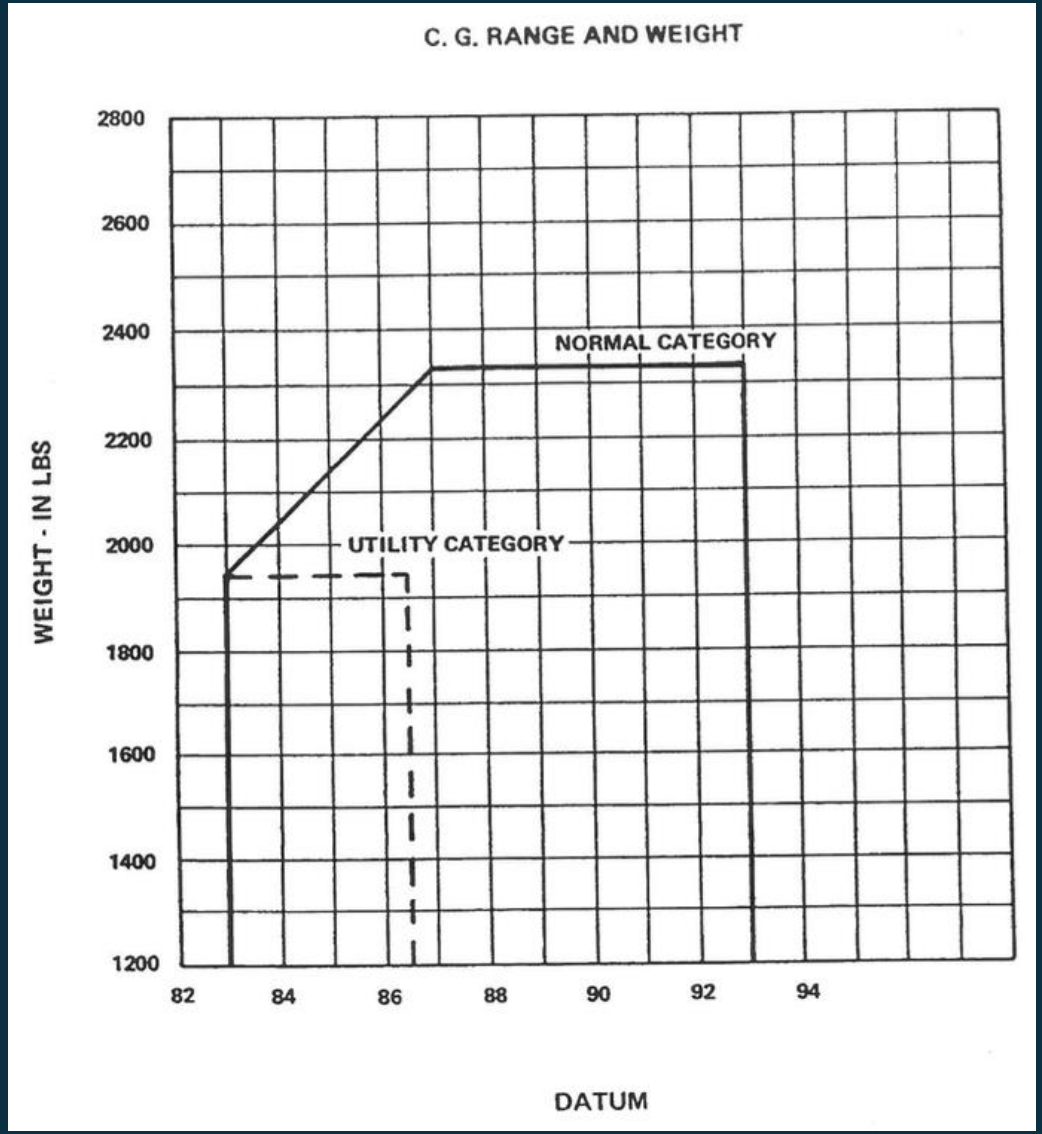
CG = Total Moment / Total Weight

Takeoff and Landing Considerations

- Airplane weight, and therefore Moments and CG change with time.
- As you fly you burn fuel.
- It’s important to calculate what your landing weight and CG could be.
- It is possible to start within limits and then lighten up outside of limits.

Manual (Paper) Calculations





These numbers come from the official W&B data which must be in the airplane. Every airplane is slightly different (extra screws, equipment, etc.)

Manual (Paper) Calculations

	Weight (Lbs)	Arm Aft Datum (Inches)	Moment (In-Lbs)
Licensed Empty Weight			
Oil (8 quarts)	15	27.5	413
Pilot and Front Passenger	340	80.5	27370
Passengers, Aft* (Rear Seat)	340	118.1	40154
Fuel (48 Gal. Maximum)		95.0	
Baggage*		142.8	
Total Loaded Airplane			

1 You add these

From Piper – physical stations

2 Multiply Weight x Arm for each row

Total "arm" is the airplane's CG.

3 Add all the above weights

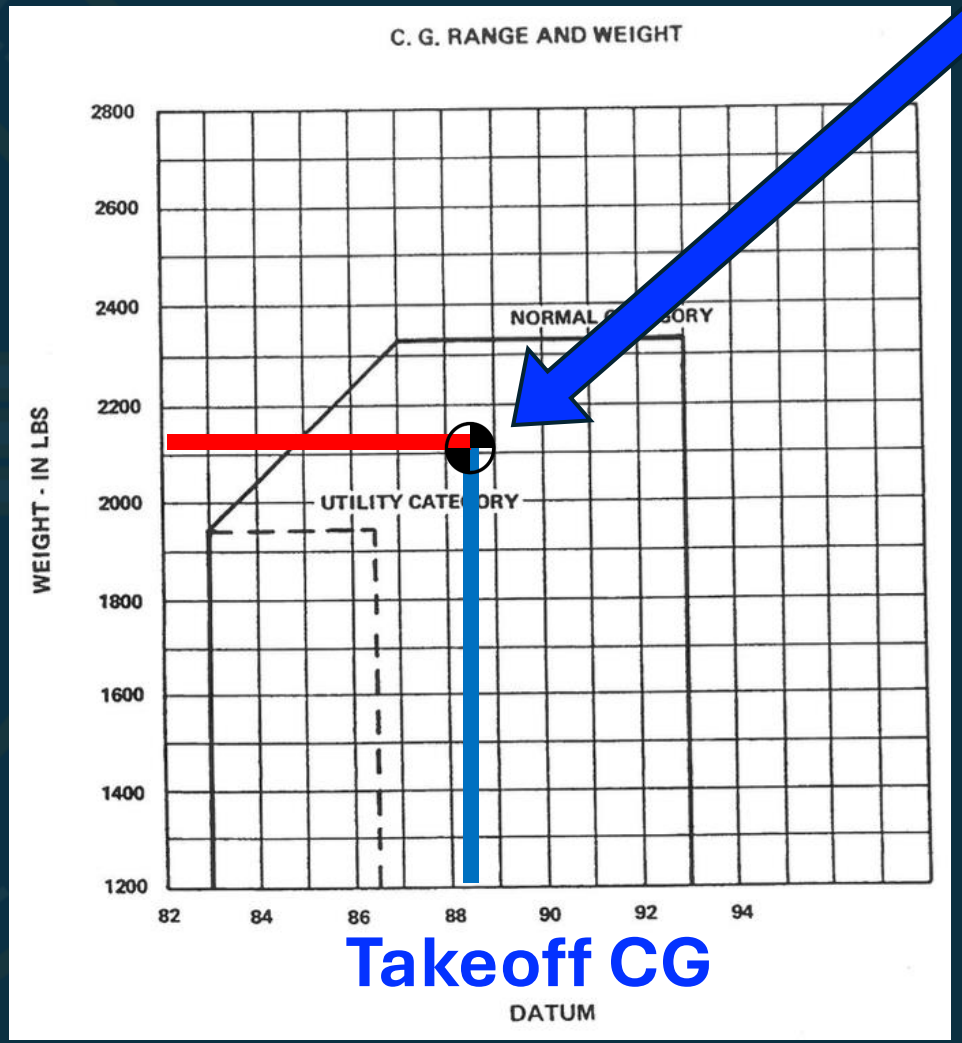
Moments / Weight

4 Add all the above moments

5

Verify Limits

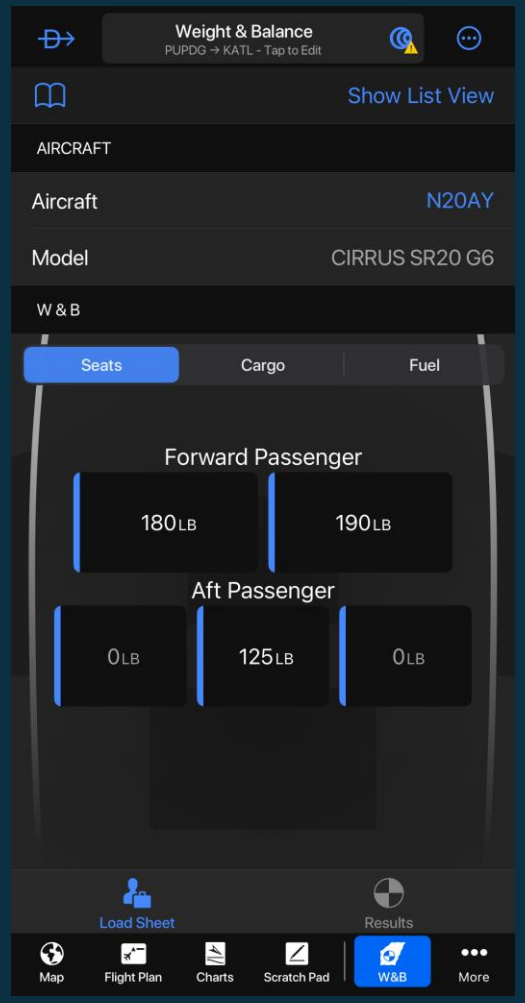
Takeoff Weight

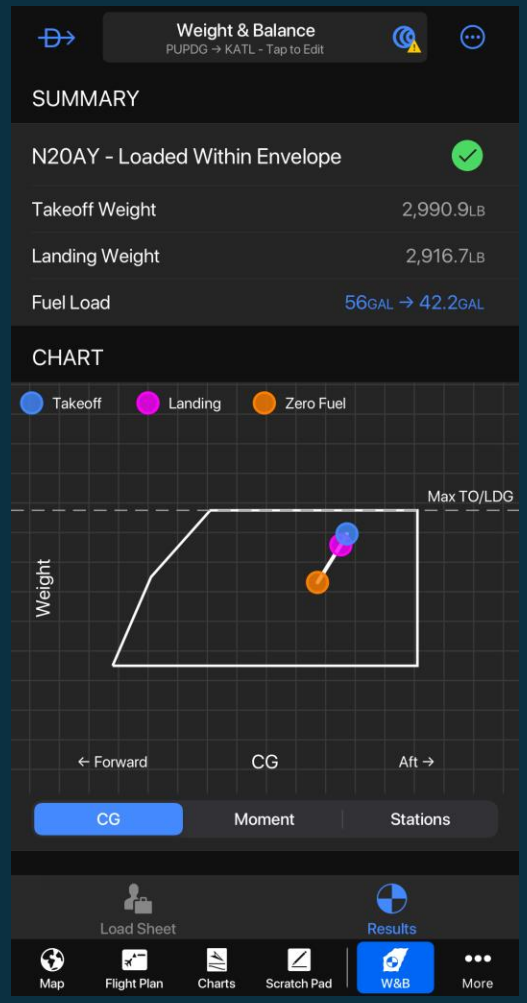


Airplane CG and Weight is within limits.

Digital W&B with Electronic Flight Bag (EFB)

- You are more than welcome to use your EFB.
- Faster and easier.
- **Must configure airplane!**
- ForeFlight
- Garmin Pilot
- Etc.
- Ask your CFI for a pre-built profile.





CHECKLISTS

FAA area of emphasis!!

Check.... list

- Checklist is not a to-do list.
- Designed to make sure you didn't forget anything.
- Helps you operate the aircraft
- Divided by phase of flight, emergency event, etc.
- Should always be readily available and used.
- Download Tizi's N7773N's checklist.

TAKEOFF

Selected Runway .....VERIFY
Throttle ..... FULL POWER
Engine Instruments ..... GREEN
Airspeed .....ALIVE
Rotate..... 55 kts
Climb ..... 74 kts (Vy)
Flaps .....RETRACT
END

CLIMB (1,000 ft)

Throttle ..... AS REQUIRED
Airspeed ..... 85 kts
Landing Light .....OFF
Engine Instruments ..... GREEN
Mixture..... LEAN ABOVE 3000 ft MSL
END

SAVANNAH RADIO OPS

“Uhhh... Savannah Tower... Uhhhhhh... Ready... Uhhhhhh...”

Frequencies to know

- ATIS : **123.75**
- Clearance Delivery : **119.55**
- Ground : **121.9**
- Tower : **125.97**
- Departure/Approach : **125.3** or **120.4**
- Guard : **121.5**
  - Per the AIM, all pilots should monitor 121.5 when able.

AIM 6-2-4 (d)

CLEARANCE (119.55)

- Required to depart an airport in class Bravo or Charlie airspace.
- Class B or C airport is congested, with airplanes coming in and out.
- ATC needs to be aware what your intentions are so they can prepare.
- Pilot must request VFR to “somewhere” (can be another airport or a training area).
- This is also called “Flight Following” where ATC follows you while you fly.

Clearance will provide you with:

1. ALTITUDE LIMIT

“Maintain VFR at or below 3,000”

2. DEPARTURE FREQUENCY
3. TRANSPONDER CODE

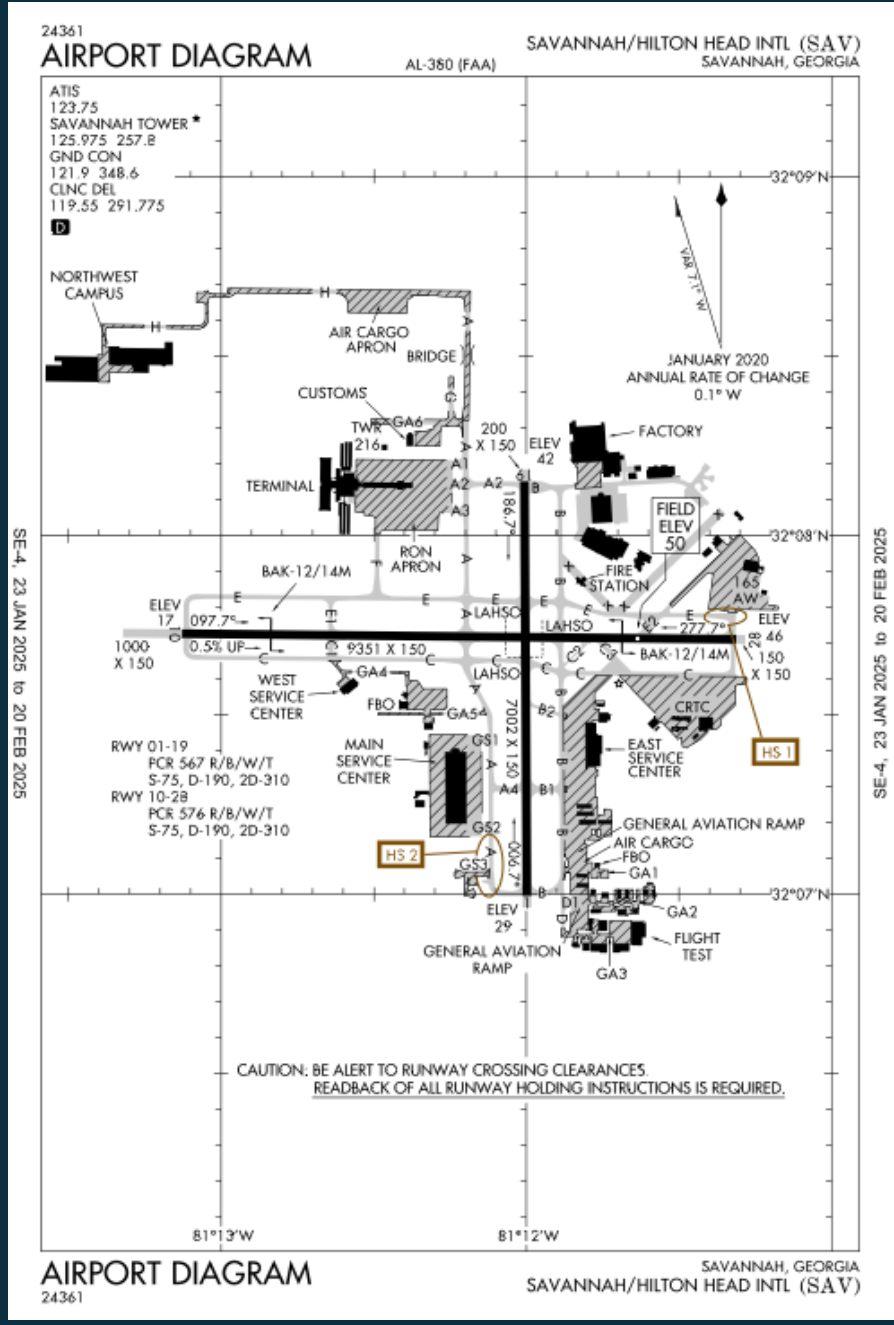
- Departure frequency is the freq you will contact after takeoff, when instructed by tower. It is provided by clearance so that you can have it ready and there is no need for tower to give you a frequency during a critical phase of flight.
- *“Cherokee 73N, maintain VFR at or below 3,000 until advised by departure on 120.4, squawk 5452”*
- Pilot is required to read back the clearance.

ATIS (123.75)

- Automatic Terminal Information System
- Weather & Useful airport information
- Highlights to note:
  - Identifier
  - Winds
  - Altimeter Setting
  - Runways in Use

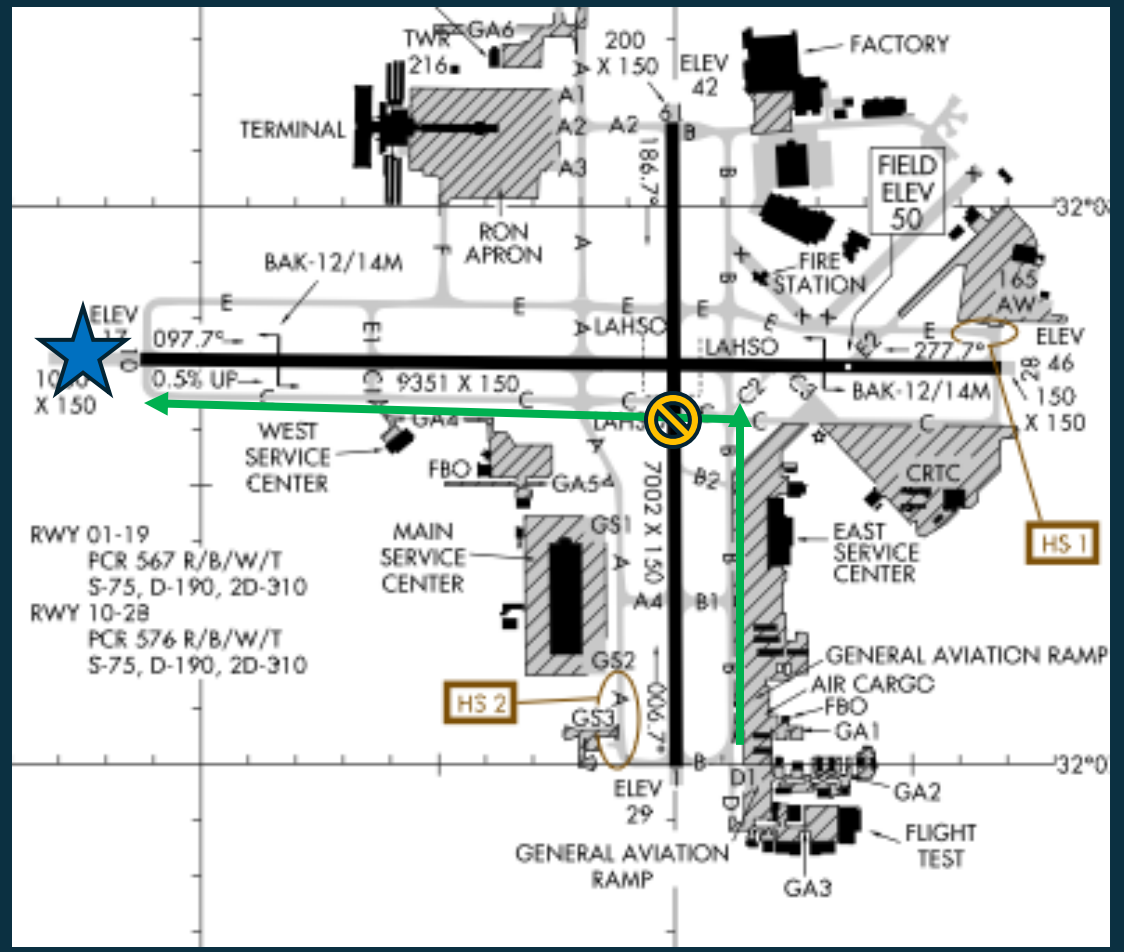
GROUND (121.9)

- ATC controller for ground movement.
- Applies to non-movement area.
- Almost universal across the US.
  - ATC may say “contact ground on .9”
- In order to taxi, you need to report the ATIS information (identifier)
- The airport diagram has detailed taxiways and runways.



GROUND (121.9)

- *“Savannah Ground, Cherokee 73N at Savannah Aviation, ready to taxi with information Tango”*
- All taxi instructions are in the format of
  - **Destination**
  - **Route**
  - **Special Instructions**
- *“Cherokee 73N, runway 10, taxi via Bravo-Charlie, Hold short runway 19 at Charlie”.*
- Pilot must readback taxi instructions, especially hold short instructions.

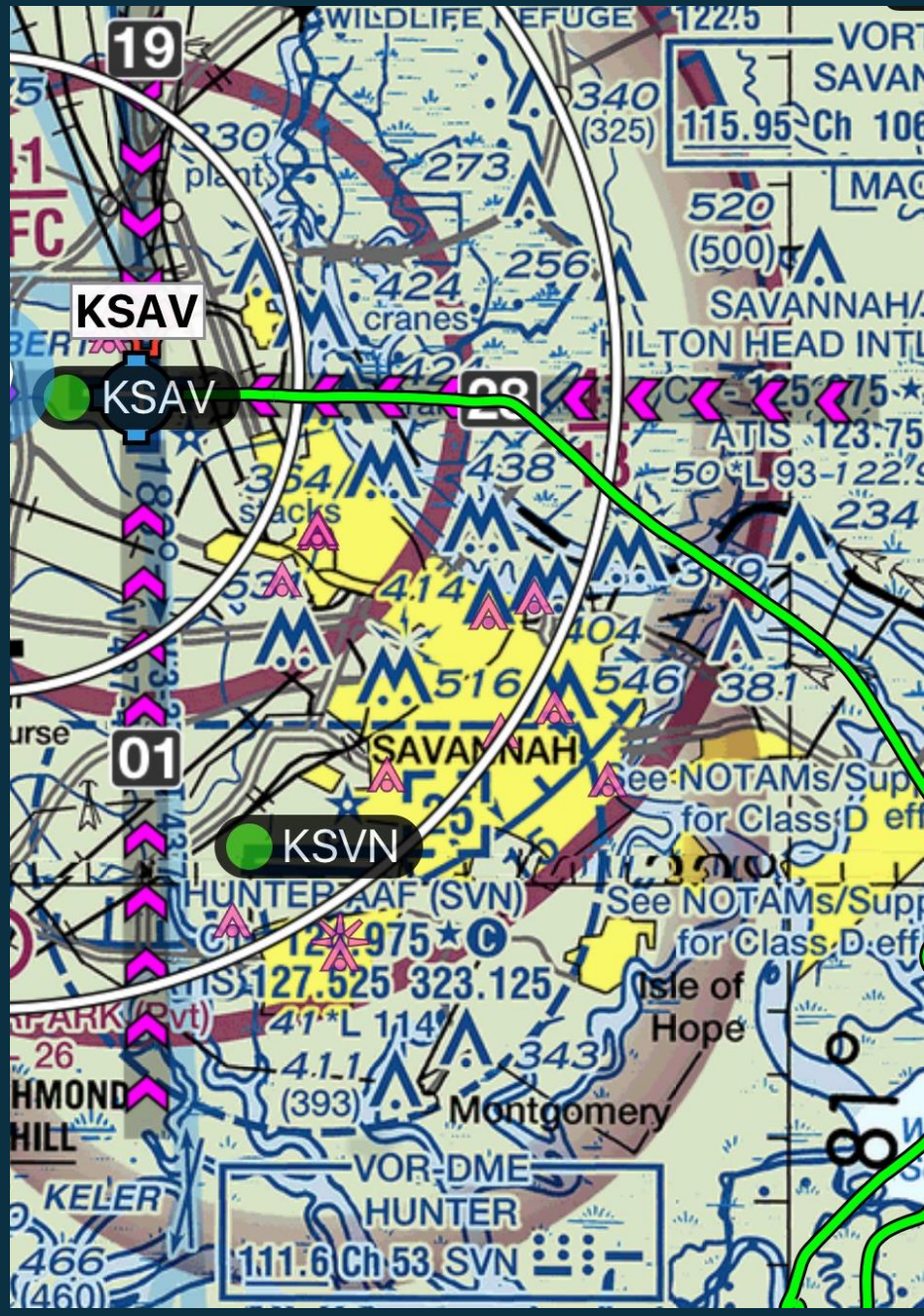


TOWER (125.97)

- Tuned upon reaching runway hold short line.
- Will provide takeoff clearance and immediate departure heading.
- After takeoff, will advise when the pilot needs to contact departure.
- *“Savannah Tower, Cherokee 73N holding short of runway 10 on Charlie, ready for departure”*
- *“Cherokee 73N, after departure turn right heading 120. Runway 10, cleared for takeoff”.*
- Pilot must readback instructions.
- *“Cherokee 73N, contact departure”.*

DEPARTURE (120.4/125.3)

- Pilot needs to check in with departure by providing altitude. If heading is weird, pilot can also add heading.
- *“Departure, 73N climbing through 1,200”*
- Departure confirms radar contact and provides vectors (headings) to leave the Charlie airspace.
- When released from vectors, ATC will say “ VFR altitude your discretion, resume own navigation” .

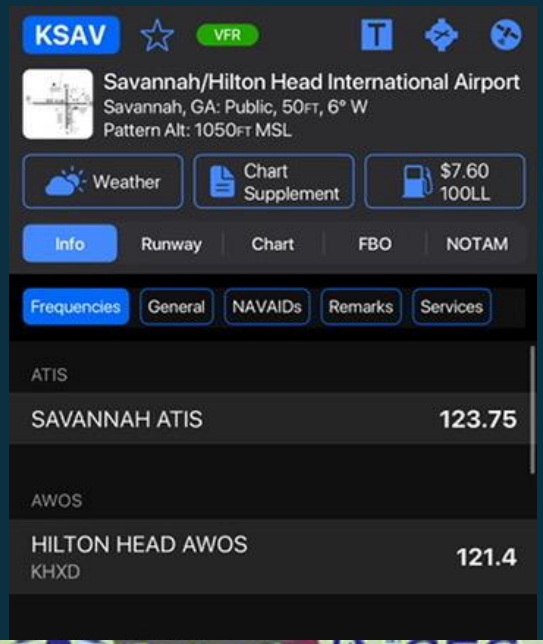


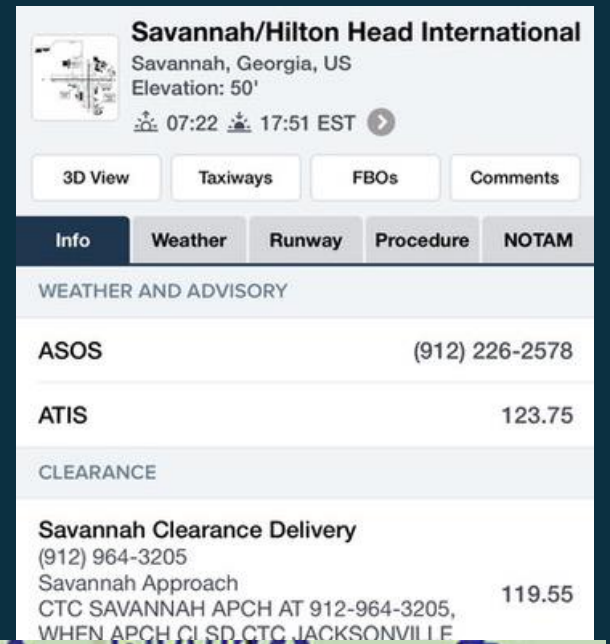
aaaaand backwards...

- Returning inbound, the process is reversed, with the exception of clearance delivery.
- *ATIS*
- *APPROACH*
- *TOWER*
- *GROUND*

Where to find them

- Primary frequencies are charted (ATIS, Tower, CTAF, Approach)
- Electronic Flight Bag
- Airport Diagram
- Clearance delivery will specify which departure frequency you need.





U.S. CITIZENSHIP

TO BE COMPLETED BY FAA FLIGHT INSTRUCTOR UPON INITIAL TRAINING.

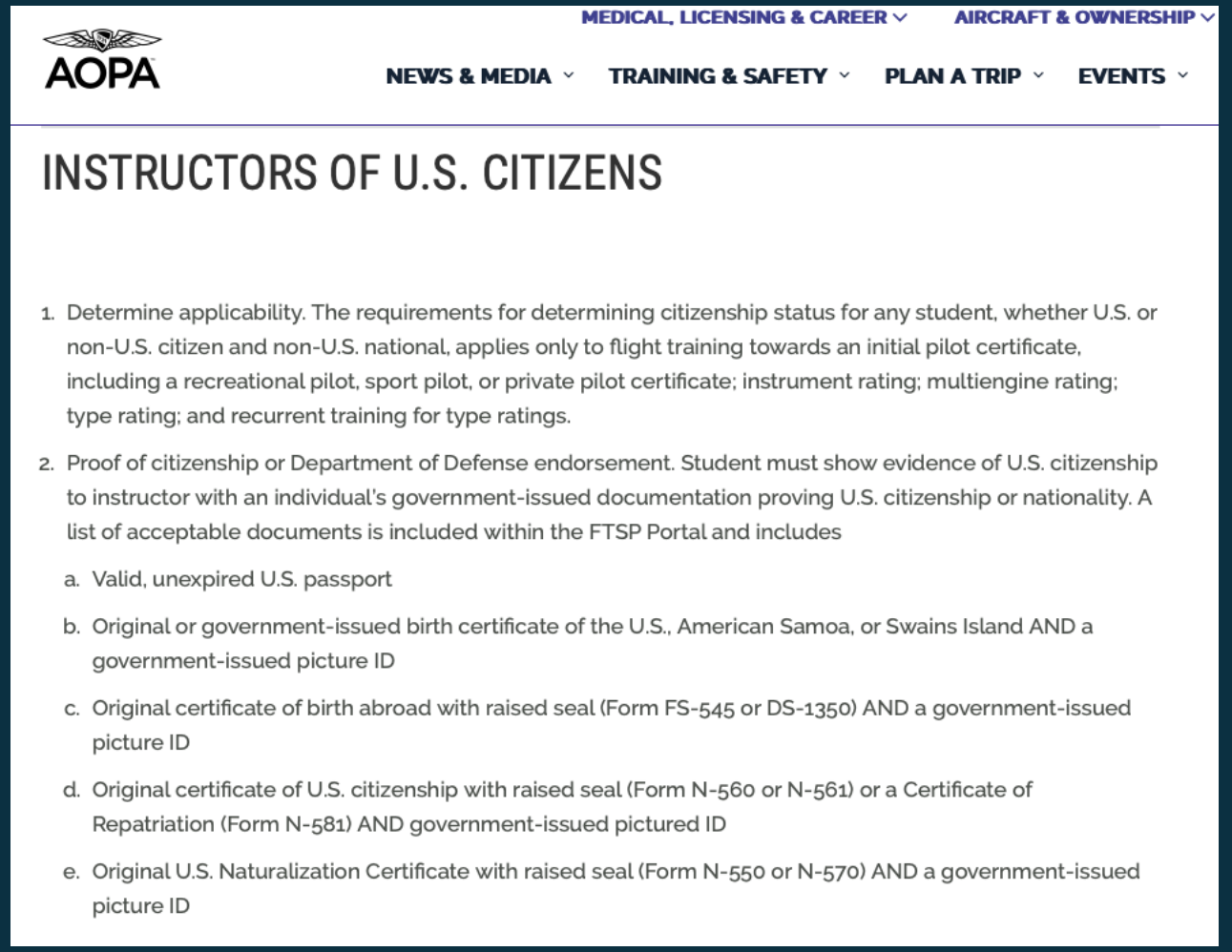
Logbook Endorsement

I certify that
[FIRST NAME, MIDDLE INITIAL, LAST NAME,]

has presented me a
[TYPE OF DOCUMENT AND CONTROL NUMBER]

establishing that
[HE OR SHE]

is a U.S. citizen or national in accordance with 49 CFR 1552.3(h).



MEDICAL, LICENSING & CAREER AIRCRAFT & OWNERSHIP

AOPA

NEWS & MEDIA TRAINING & SAFETY PLAN A TRIP EVENTS

INSTRUCTORS OF U.S. CITIZENS

1. Determine applicability. The requirements for determining citizenship status for any student, whether U.S. or non-U.S. citizen and non-U.S. national, applies only to flight training towards an initial pilot certificate, including a recreational pilot, sport pilot, or private pilot certificate; instrument rating; multiengine rating; type rating; and recurrent training for type ratings.
2. Proof of citizenship or Department of Defense endorsement. Student must show evidence of U.S. citizenship to instructor with an individual's government-issued documentation proving U.S. citizenship or nationality. A list of acceptable documents is included within the FTSP Portal and includes
   a. Valid, unexpired U.S. passport
   b. Original or government-issued birth certificate of the U.S., American Samoa, or Swains Island AND a government-issued picture ID
   c. Original certificate of birth abroad with raised seal (Form FS-545 or DS-1350) AND a government-issued picture ID
   d. Original certificate of U.S. citizenship with raised seal (Form N-560 or N-561) or a Certificate of Repatriation (Form N-581) AND government-issued pictured ID
   e. Original U.S. Naturalization Certificate with raised seal (Form N-550 or N-570) AND a government-issued picture ID

ACRONYM SUMMARY

Memorize these!

Summary of Acronyms

1. HAND
2. IMSAFE
3. ARROW

Documents from your instructor

- Ask your instructor for the following documents:
    1. Pilot Operating Handbook (PDF)
    2. Checklist, if applicable (PDF or Printed)
    3. Airplane Profile in Electronic Flight Bag
        - Performance
        - Weight & Balance
    4. Maneuver Checklist

INTRODUCTION TO FLIGHT

See the lesson plans on FlyWithTizi.com