IFR Navigation and Flight Planning

In Addition to the VFR Navigation and Flight Planning Lesson

Slides with * are also in VFR slides

From airport to airport

Our plan is to get from here to there…without hitting anything along the way

IFR Phases

Departure

En route

Arrival

Approach

§ 91.103 Preflight action *

Each pilot in command shall, before beginning a flight, become familiar with all available information concerning that flight. This information must include—

(a) For a flight under IFR or a flight not in the vicinity of an airport, weather reports and forecasts, fuel requirements, alternatives available if the planned flight cannot be completed, and any known traffic delays of which the pilot in command has been advised by ATC;

§ 91.103 Preflight action *

(b) For any flight, runway lengths at airports of intended use, and the following takeoff and landing distance information:

(1) For civil aircraft for which an approved Airplane or Rotorcraft Flight Manual containing takeoff and landing distance data is required, the takeoff and landing distance data contained therein; and

(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.

§ 91.103 Preflight action – NW KRAFT

N - NOTAMs

W - Weather reports and forecasts

K - Known traffic delays

R - Runway length of intended use

A - Alternatives

F - Fuel Requirements

T - Takeoff and landing performance data

§ 91.169 1-2-3 Forecast Rule

- For +/- **1** hour, if less than **2**000 feet and/or **3** SM visibility then you need an alternate
- Alternate must have VFR, 600/2 for precision, or 800/2 for non-precision
- If there are no approaches at alternate you must be able to land VFR
- When you **arrive** at the alternate, the minimums can be approach minimums

Alternate Airports

Does your chosen alternate have non-standard alternate requirements that can be complied with?

Look for the black triangle around a letter A

Is your airplane equipped with a WAAS GPS?

Yes = You may plan your flight to airports with only RNAV approaches at BOTH the destination AND the alternate

No = You may plan your flight to airports with only RNAV approaches at EITHER the destination OR the alternate, but not both

§ 91.173 When MUST you file a flight plan

- When operating in Class A airspace
- In Class E airspace when IMC exists
- Must be filed PRIOR to entering controlled airspace in IMC

§ 91.167 Fuel requirements

(a) No person may operate a civil aircraft in IFR conditions unless it carries enough fuel (considering weather reports and forecasts and weather conditions) to—

(1) Complete the flight to the first airport of intended landing;

(2) Except as provided in paragraph (b) of this section, fly from that airport to the alternate airport; and

(3) Fly after that for 45 minutes at normal cruising speed or, for helicopters, fly after that for 30 minutes at normal cruising speed.

AIM 5-3-3 Required Reporting

- Any un-forecasted weather conditions (§ 91.183)
- When vacating any previously assigned altitude for a newly assigned altitude
- When unable to climb/descend at a rate of at least 500 feet per minute
- A change in the average true airspeed by 10 knots or varies by 5% (whichever is greater) from the flight plan
- Any loss of or anomalies in navigation equipment
- Reaching a holding fix or a point to where you were previously cleared
- Any information relating to the safety of flight

Airways *

Are there any airways that are established that you could use?

If you fly them correctly you will not have to worry about terrain or communications.

Be aware there might be more traffic to be cautious of.

Stay above the MEA whenever possible…at least above the MOCA.

There are now more GPS airways being established but most airways were made using VORs.

Using VORs adds another layer of safety in case there is a GPS issue.

Altitudes

IFR east – 5000, 7000, 9000

IFR west – 4000, 6000, 8000

OROCA *

The Off Route Obstruction Clearance Altitude (OROCA) is represented in thousands and hundreds of feet above mean sea level.

The OROCA represents the highest possible elevation including both terrain and other vertical obstructions (towers, trees, etc.) bounded by the ticked lines of latitude and longitude.

OROCA is computed just as the Maximum Elevation Figure (MEF) found on Visual charts except that it provides an additional vertical buffer of 1,000 feet in designated non-mountainous areas and a 2,000 foot vertical buffer in designated mountainous areas within the United States.

OROCA *

Unlike a MEF, when determining an OROCA the area 4 NM around each quadrant is analyzed for obstructions.

OROCA does not provide for NAVAID signal coverage, communication coverage and would not be consistent with altitudes assigned by Air Traffic Control. OROCAs can be found over all land masses and open water areas containing man-made obstructions (such as oil rigs).

OROCAs are shown in every 30 x 30 minute quadrant on Area Charts, every one degree by one.

It is a good value to determinate obstacle clearance whenever the pilot has to, or would like to divert from the airway, e.g. during an emergency descent or when flying direct to a point away from an airway.

Approaches *

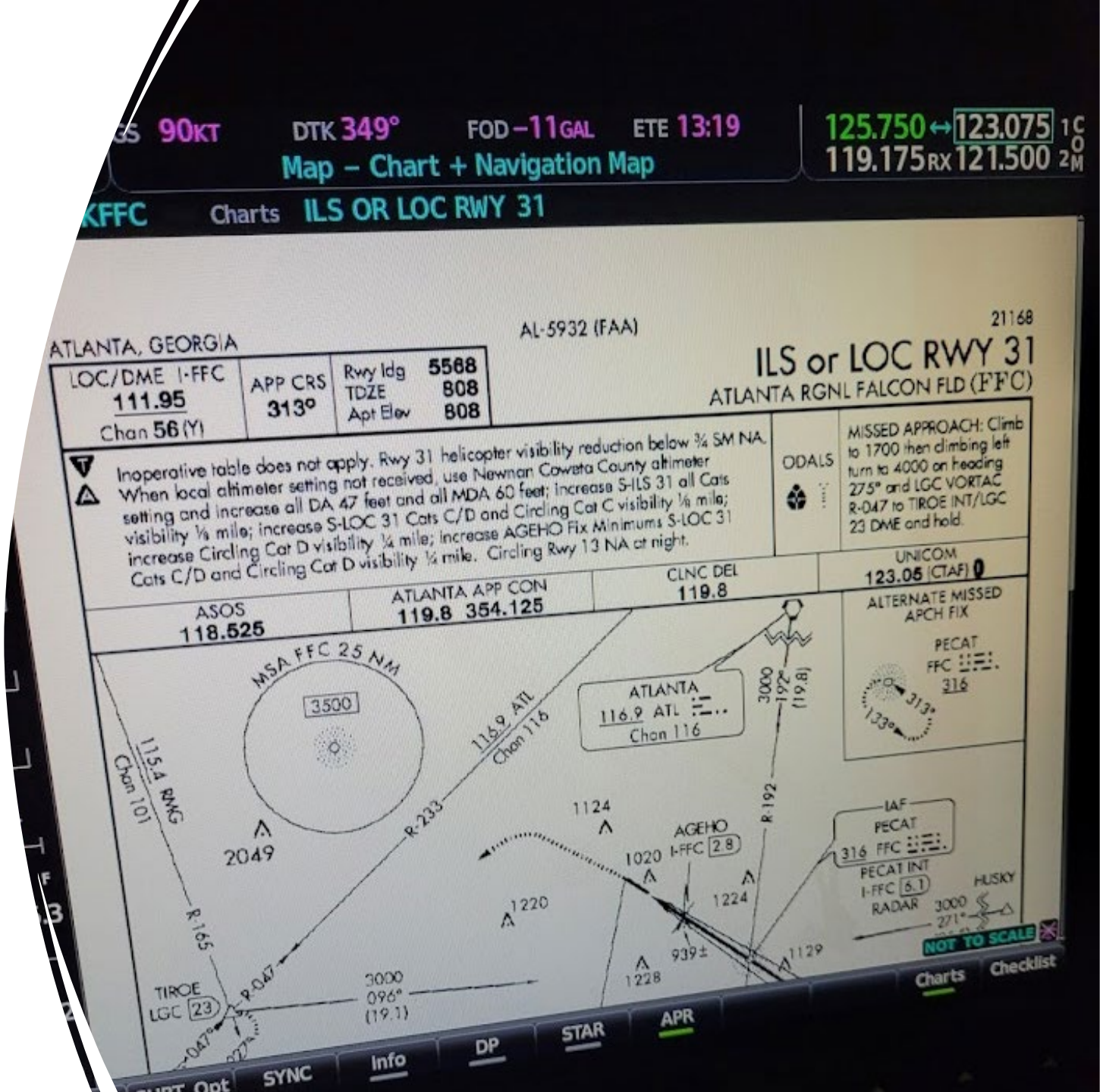
Review all the approaches for the airport you are going to especially if you have never been there before. The approaches safely lead you from the enroute environment to the airport. You can incorporate one of the initial fixes into your route plan. I strongly suggest printing the approach in case something happens to your tablet in flight.

Remember that the approaches have all the necessary info for that airport that you will need including, runway numbers, runway lengths, elevation for touchdown zones, coordinates, and frequencies.

But what if the approach I choose does not make sense because the winds do not favor it? You can either come up with a plan to approach from the other side or do a circle to land.

Good idea to file to a fix that is included in the approach. That will give ATC info on your thoughts.

Approaches


90KT DTK 349° FOD –11GAL ETE 13:19
Map – Chart + Navigation Map
125.750 123.075
119.175 RX 121.500
KFFC Charts ILS OR LOC RWY 31
ATLANTA, GEORGIA
AL-5932 (FAA)
21168
ILS or LOC RWY 31
ATLANTA RGNL FALCON FLD (FFC)
LOC/DME I-FFC
111.95
Chan 56 (Y)
APP CRS
313°
Rwy Idg 5568
TDZE 808
Apt Elev 808
Inoperative table does not apply. Rwy 31 helicopter visibility reduction below ¾ SM NA. When local altimeter setting not received, use Newnan Coweta County altimeter setting and increase all DA 47 feet and all MDA 60 feet; increase S-ILS 31 all Cats visibility ⅛ mile; increase S-LOC 31 Cats C/D and Circling Cat C visibility ⅛ mile; increase Circling Cat D visibility ¼ mile; increase AGEHO Fix Minimums S-LOC 31 Cats C/D and Circling Cat D visibility ¼ mile. Circling Rwy 13 NA at night.
ODALS
MISSED APPROACH: Climb to 1700 then climbing left turn to 4000 on heading 275° and LGC VORTAC R-047 to TIROE INT/LGC 23 DME and hold.
ASOS
118.525
ATLANTA APP CON
119.8 354.125
CLNC DEL
119.8
UNICOM
123.05 (CTAF)
ALTERNATE MISSED APCH FIX
PECAT
FFC
316
MSA FFC 25 NM
3500
2049
115.4 RNG
Chan 101
116.9 ATL
Chan 116
ATLANTA
116.9 ATL
Chan 116
R-233
R-165
R-047
R-192
3000
192°
(19.8)
1124
AGEHO
1020 I-FFC 2.8
1224
1220
939±
1228
1129
IAF
PECAT
316 FFC
PECAT INT
I-FFC 6.1
RADAR
HUSKY
3000
271°
TIROE
LGC 23
3000
096°
(19.1)
NOT TO SCALE
Charts
Checklist
SYNC
Info
DP
STAR
APR

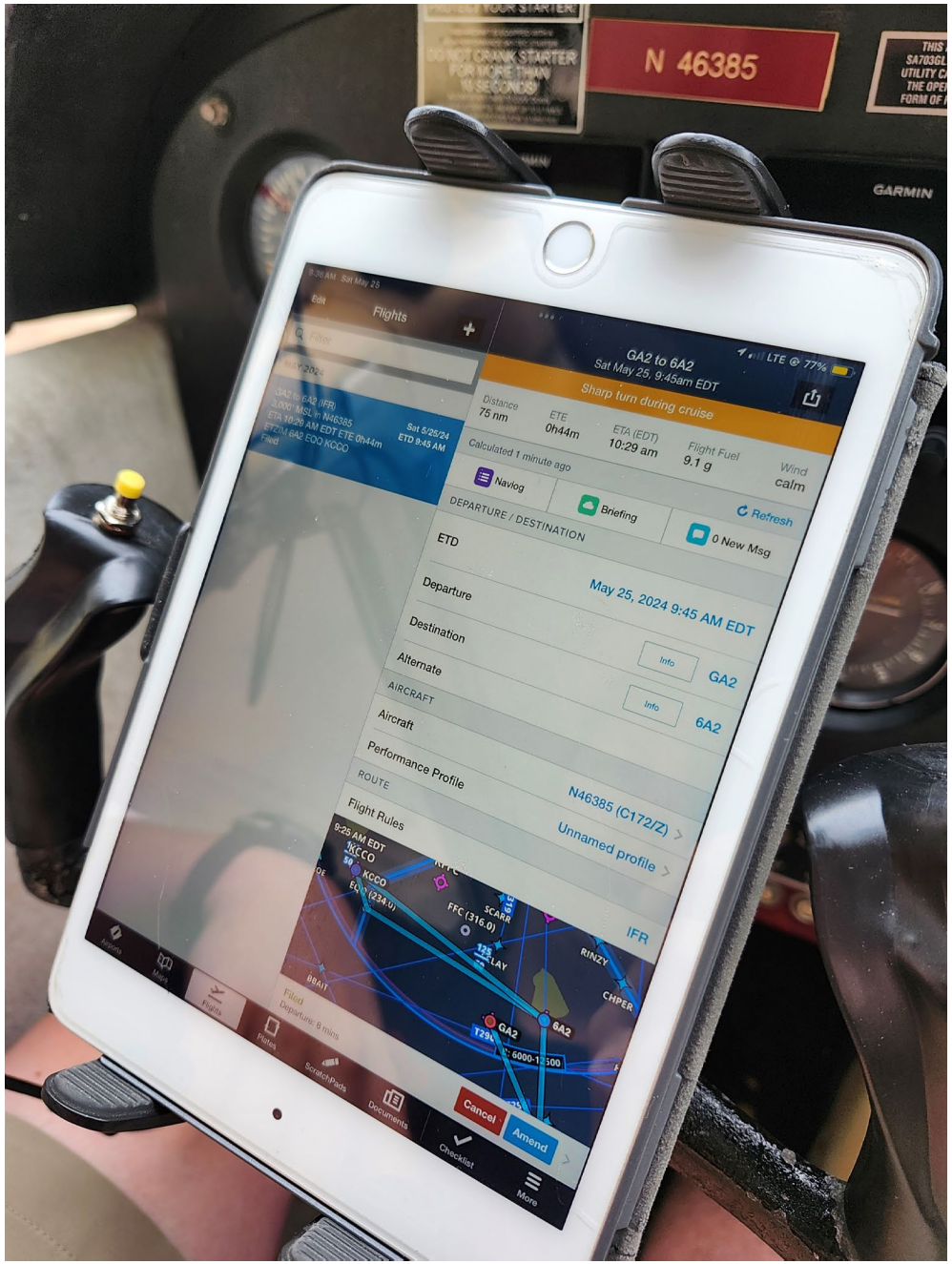
* File

You can electronically file the plan before you leave for the airport or at the airport during pre-flight.

ForeFlight is the easiest method.

You do not have to call 1-800-WXBRIEF anymore, but you can if you wish or do not have internet.

* File


N 46385
GARMIN
Flights
GA2 to 6A2
Sat May 25, 9:45am EDT
Sharp turn during cruise
Distance
75 nm
ETE
0h44m
ETA (EDT)
10:29 am
Flight Fuel
9.1 g
Wind
calm
Calculated 1 minute ago
Navlog
Briefing
Refresh
0 New Msg
DEPARTURE / DESTINATION
ETD
Departure
May 25, 2024 9:45 AM EDT
Destination
GA2
Alternate
AIRCRAFT
6A2
Aircraft
Performance Profile
N46385 (C172/Z)
ROUTE
Flight Rules
Unnamed profile
IFR
KCCO
FFC (316.0)
SCARR
RINZY
CHPER
BBAIT
GA2
6A2
Cancel
Amend
Checklist
More

Plane Requirements

§ 91.409 Inspections.

Annual inspections

100 Hour inspections if used for hire or instruction

§ 91.411 Altimeter system and altitude reporting equipment tests and inspections.

Static Pressure System and Altimeter tests required for IFR flight

Required every 24 calendar months

§ 91.413 ATC transponder tests and inspections.

Transponder tests and inspections required

Required every 24 calendar months

Plane Requirements

§ 91.207 Emergency locator transmitters.

Inspection requirements

Every 12 calendar months

The batteries must be replaced (or recharged)

When the transmitter has been in use more than 1 cumulative hour

When 50% of their useful life has expired

Plane Requirements

VOR Check within 30 days

Date

Place

Bearing error

Signature

Plane Requirements

VFR Day (+ VFR Night) + GRABCARD

Generator/Alternator

Radios (appropriate for flight)

Altimeter (sensitive/adjustable)

Ball (Turn coordinator)

Clock (second hand sweep or digital)

Attitude indicator

Rate of turn

Directional gyro

The Pilots

Remember IMSAVE and PAVE

Pilot in command (PIC), Aircraft, environment, External pressures

When using CRM, one pilot should be briefing & monitoring while the other is hands on & checking the call outs

Be prepared for the unexpected…you have the plan but be ready to adjust

Football coaches come up with weekly game plans…some scripts the first 10 plays…but then start adjusted

Just because the ILS minimums are 200 feet doesn't mean they should be yours…it is ok if your personal minimum is 400 feet

You might have different personal mins for different airports like somewhere in Florida vs Utah

See other lessons

- AROW
- Task A 3ab - Hypoxia Hyperventilation (oxygen rules)
- Task C - Visual Scanning and Collision Avoidance
- VFR Minimums
- Task K - National Airspace System
- Task G - Navigation and Flight Planning (most applies)
- Minimum IFR Altitudes
- IFR Enroute Low Altitude Charts
- Instrument Approaches
- The Pilots

Any questions I can answer or follow up later on?