Pilot's Guide:

Flight Review – A (FR-A)

Version 2.5

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UNITED VIRTUAL

Memorandum

25 September 2017

Fm: Chief Pilot
To: All United Virtual Airlines Pilots

Subj: Introductory Guide for Flight Review – A (FR-A)

1. This introductory guide will take you step-by-step through planning and flying your Flight Review-A (FR-A). With this tutorial flight complete, you will become a full-fledged, permanent UVA pilot.
2. This tutorial is advisory; the primary regulatory guidance for the FR-A is the AFRP & AFRPS documents, which are both available in the Pilot Library. The AFRPS has a time frame for validity; be sure you have the correct edition.
3. For reference, you should also download and print the current FOM document which outlines UVA Standard Operating procedures.
4. In time you will likely study the many resources available on the UVA website in the ever growing Pilot Library.
5. Direct all comments or inquiries regarding this publication to the Chief Pilot.

Enrico Zaffiri

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United Virtual Airlines

Table of Contents

List of Revisions

Ver. 2.5

- Implement changes as per AFRPS 1801, minor changes and edits

Ver. 2.4

- Implement changes as per AFRPS 1701 and FOM v 8.0

Ver. 2.3

- Implement changes as per AFRPS 1602
- Minor changes in wording

Ver. 2.2

- Implement changes in the FR-A recording method as per AFRPS 1601
- Minor changes in wording

Ver. 2.1

- Implement changes in the FR-A routing in accordance with AFRPS 1511
- Implement applicability of recording methods according to sim platform/operating system

Ver. 2.0

- Updated to new format
- Implements changes in recording methods (UVACARS, screenshots, and video recording) in accordance with AFRPS 1505

1.0 Plan Your Flight

1.1 Flight Planning Basics

First off, you must decide what equipment you're going to use for this short flight.

For the FR-A, you have a wide choice of aircraft, including any of the turboprops (T-Level), the regional jets, such as the CRJ-200/700 or the E-135/145 (R-Level), or the narrow body jets like the 737 (the whole family from 300 to 900, excluding series 100 and 200), the A320 family and the E-Jets (N-Level). With the aircraft chosen, you will then flight-plan this little flight.

The route is detailed in the current AFRPS.

It is little more than a simple pattern flight. After taking off from Washington Dulles (KIAD) Runway 19L, you climb on runway heading to 6,000 ft, then turn right to heading 280° for about 10NM, then turn right again to the north on heading 010°. You keep this northerly heading, paralleling your landing runway, until about 20NM north of the field. You can use the AML VOR (the VOR located on the airport) for orientation. Then, you turn right to heading 100° until crossing R-175 inbound AML VOR. Finally, you turn right again on heading 140° to intercept and follow the ILS for Runway 19L.

You will need to set out payload and the fuel requirements. For this simple flight the planning is easy, but, as for every flight, a necessary one.

1.2 Payload

The FR-A requires that you load your aircraft with a reasonable payload, where "reasonable" means not less than 50% of the maximum payload capacity of your airplane. For example, if you use the Boeing 737-800, which has a maximum payload of 44700 lbs., your payload for this short flight must not be less than 22350 lbs. Flying an aircraft "light" makes it more difficult to handle, and in any case is not realistic for airline operations. Also, aircraft have limiting structural weights for both takeoff and landing, your payload and fuel planning must take these limits into account.

1.3 Fuel Planning

The fuel requirement for the FR-A is stipulated as at least 2 hours endurance. Let's use the online UVA Fuel Planner and Dispatch Creator to make things easier. See below for a detailed step-by-step description on how to use it proficiently for the FR-A planning.

1.4 Weather/ATC

Weather, which is generally a significant planning issue, is not a factor for the FR-A. You are required to clear all weather, meaning no winds, unlimited visibility, no clouds, no icing, and

no precipitation. You will not need any wind correction in your fuel planning, nor a takeoff or a landing alternate. Also, since the FR-A requires that you fly offline and without any ATC (including the built-in MSFS ATC if using the MS flight simulators) or any AI traffic, you do not need to take into account any ATC re-routings or delays in your fuel planning.

1.5 Using the UVA Fuel Planner

Login to the Flight Room and click the "Planner" button; this will bring you directly to the UVA online Fuel Planner and Dispatch Creator (FPD). As an example on how to use this powerful tool proficiently, we will use a Boeing 737-800 loaded with 80% of the maximum payload.

We will use flight duration of 2 hours and no wind correction or additional fuel requirements. The planner will automatically add the standard FAA IFR reserve of 45 minutes. We'll have plenty of fuel, but our limiting weights will be automatically checked by the planner. Should we exceed any of these weights, the planner will flash a red caution and we could reduce either our payload or our fuel (by reducing the flight time). Just check that you get a total endurance of not less than 2 hours and you'll be fine.

Using the UVA Planner of course is not mandatory, you may use any advanced flight planning tool, just be sure to properly plan according to the FR-A requirements. For more in-depth analysis of flight planning and airplane performance, you may wish to look at the relevant Pilots' Guides available in the Library.

Once all the data blocks are filled in, our planner data input page should look as shown in Figure 1.

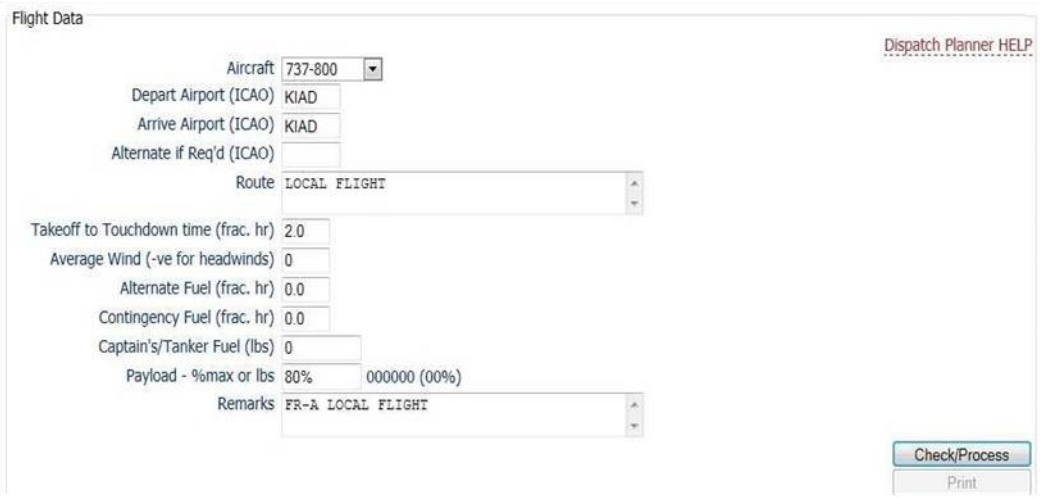

Figure 1 - UVA Planner Data Page

We input the ICAO code for the departure and arrival airport as KIAD, which is Washington-Dulles. The "Route" field can be filled with the "Local Flight" remark, or anything you wish. The flight time ("Takeoff to Touchdown time") has been set to 2.0, which is 2 hours even (use fractional hours, rather than hours : minutes here). All fields for average winds, alternate, contingency and Captain's/Tanker fuel have been left at zero. Payload has been chosen to be 80% of the maximum and the "Remarks" have been filled with a note regarding the FR-A. Now the planner has all the required data. Then selecting "Check/Process" will generate a new page and a complete flight release for your FR-A flight.

If there are no errors, the next page should look like that shown in Figure 2. You should print the dispatch to keep it handy in your virtual cockpit for quick reference before and during the flight.

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04/03/2014 09:01am

Released IFR: KIAD(Z) KIAD(Z)

REMARKS: NONE

ALTNS: LNDG N/R

FLT#	A/C#	AVG W/C	SELCAL
	C/S	P000	N/A

FILED ROUTE:
FP T/B738/Q
LOCAL FLIGHT/0200

	FUEL	TIME	PLAN		STRUCTURAL	
						LIMITS
TAXI	000700					
ENROUTE BURN	011000	0200	OEW	091300		
CONTINGENCY	000000	0000	PYLD	035760		
ALTERNATE	000000	0000	ZFW	127060	MZFW	136000
FAR RESERVE	004125	0045	FOB	015825	MFW	045940
**********						
MINIMUM T/O	015125		TOW	142885	MTOW	173000
**********						
TANKER	000000	0000				
PLANNED FOB	015825	0253				
PLAN ARV FUEL	004125		LGW	131185	MLGW	144000

TAKEOFF - Flaps 5

V1	Vr	V2	Vref30+80
134	136	146	226

LANDING - Flaps 30

Vref+5	Wind	Vref/WC
145	- - -	- - -

Figure 2 - UVA Planner Dispatch Release

There is a lot of information here so let's go through it.

First, the output from the planner says that this is an IFR release, that is, your flight will be flown according to Instrument Flight Rules, it is not a Visual Flight Rules plan. The arrival and departure times are left blank, as this is not a "schedule" flight from the UVA flight database. Remarks are void ("none") and you haven't filed a landing alternate (ALTNS: LNDG N/R), as it is not required. The next line shows your flight number (blank in this case as you are not flying a reserved flight), your airplane registration (it shows C/S, as "codeshare", again because the release doesn't pull data from a schedule reserved flight), the average wind component (we set it to zero) and the SELCAL code (which is not available for this flight).

Then, the release shows the filed route, which is a local flight (as we input on the data page), the airplane type (B738, followed with a Q which is one of the codes for the aircraft equipment) and expected flight duration (0200), that is 2 hrs.

Next, there's a very important set of data, and all calculated out for you.

The fuel calculations show fuel (in pounds – aviation fuel loads are calculated as weight) and time (in hours and minutes) for each stage of the planning: TAXI (for the ground portion of the flight), ENROUTE BURN (the forecast fuel usage from takeoff to landing), CONTINGENCY, ALTERNATE are both zero for this flight (we anticipate no re-routing or holds, and do not need a destination alternate), FAR RESERVE (the legal standard FAR IFR reserve of 45 minutes endurance). The highlighted MINIMUM T/O shows the minimum amount of fuel you should have when lining up on the departure runway. The following line shows any additional fuel to be loaded (zero in this case) and the last line gives the PLANNED FOB (Fuel On Board): this is the fuel you should load your aircraft with, prior to startup.

On the right side there is information regarding the weights: OEW (Operating Empty Weight, the weight of your airplane without any fuel and payload), PYLD (payload, the load you are supposed to carry on this flight, passengers, bags and cargo), ZFW (Zero Fuel Weight, the sum of the OEW and the PYLD, and the maximum allowable ZFW –MZFW- shown as reference), FOB (Fuel on Board and the maximum allowable fuel load as reference).

Then we have a line showing planned arrival fuel, planned landing weight and maximum allowable landing weight (MLW). Note that your actual arrival fuel will be greater than the planned value, as your actual flight will last around 20 to 25 minutes, while we planned 2 hrs. Even with the greater fuel remaining, we will not exceed the MLW.

The next two data blocks are very important: they show the critical speeds for both takeoff and landing. These speeds will be used in the actual flight as critical references.

Here is a brief explanation of these speeds. You will find a much more in-depth analysis of airplane performance in the "Aircraft Performance" Pilots' Guide, found in the Library.

For each weight, runway condition and takeoff/landing flap setting, the following critical speeds are defined:

- **V_1** ("vee-one"): takeoff decision speed. This is the maximum speed at which the pilot may abort a takeoff run, start using the available decelerating systems and stop the airplane within the safe accelerate-stop distance on the runway.
- **V_R** ("vee-r"): rotation speed. This is the speed at which the pilot starts the "rotation" of the airplane, by pulling the nose up toward the proper takeoff attitude.
- **V_2** ("vee-two"): takeoff safety speed. This is the speed at which the airplane can fly with one engine inoperative. It is used as a reference for the appropriate speed during initial climbout.
- **V_{REF}**: landing reference speed, the speed of the airplane for a specified landing configuration (weight & flap setting), to be achieved during final approach, and for the landing.
- **V_{TGT}**: landing target speed. It is the V_{REF} corrected for wind.

The planner performs all these calculations for the typical takeoff and landing flap settings; FOM sections 3.3 and 7.9 also outlines UVA standard settings. If you have a high-end add-on, you may prefer to use the Vspeeds calculated by your aircraft's FMC, or another add-on flight planner. Should you elect to use de-rated thrust takeoff (as per FOM 3.13), you will need to refer to your airplane FMC for correct Vspeeds.

The minimum clean airspeed (the minimum speed at which you can safely fly the airplane with flaps/slats retracted) is calculated by the planner in the Boeing style as the $V_{REF}30$ +80 kts. If using other types, please refer to FOM 3.23 and your airplane AOM for guidance.

The next few lines can be disregarded for this flight. The real world current (METAR) and forecast (TAF) for the departure and arrival airports are not applicable for an FR-A, as you are required to clear the weather.

2.0 Prepare Your Airplane

2.1 Loading Flight Simulator

Now that you have fully planned your flight, you have to prepare your aircraft. Launch Flight Simulator, select the aircraft, move it to an appropriate location at the departure airport gate (any C or D gate at KIAD will be fine) and load the planned fuel and payload. For most models, you can do this with the simulator Payload and Fuel utility. Some high-end add-ons require that you use a specialized utility. For FR-A purposes, you need to start with the plane "cold and dark", engines off, parked at the gate.

2.2 Weather and Traffic

This is the time to adjust the weather: you must clear all clouds, precipitation and winds through the FS weather options. Do not use any weather program, unless you set it to match the required conditions (e.g.: do not use real time weather). Be sure to remove all traffic: air, road and sea and to be offline.

2.3 Cockpit preparation

It is now time to start the video recording. Check your settings so that you'll record a video with acceptable clarity. Ensure that you can pan your virtual camera to capture all the actions you are performing (i.e.: switching ON the beacon or setting the SPD knob on the MCP). Practice your recording before actually doing your FR-A to be familiar with the recorder.

Prepare your cockpit for the flight. You should always follow a checklist, either those provided with your payware add-on, the UVA Generic Checklist or the UVA type-specific checklists. Using the appropriate checklists either as a "Read & Do" or a "Flow" approach, will save you time and ensure that all steps have been correctly followed and sequenced. This is truly critical! In the cockpit preparation, you should include FMC programming (if available) and NAV radio tuning. You may wish to have ready at hand also the UVA FOM Quick Reference Guide.

A word on the FMC programming: if your airplane is an high-end add-on, it will come with a detailed and realistic FMC. Practice with programming it correctly and you will find it a very useful aid in your flights. If properly programmed, the FMC will drive the Flight Directors to ease your attitude control in all phases of flight and will correctly command the autopilot lateral and vertical modes. Become proficient with your FMC and all flights will become very easy.

2.4 Briefings

Brief your flight. This may sound strange, but you should do a complete "before flight" briefing as if you had a virtual first officer beside you. In this way you'll discuss (with yourself) the taxi routing, the takeoff speeds and abort rules, the initial routing (in this case, straight ahead to 6000ft then right turn to 280°), and the fuel requirements. Although it may seem odd, the purpose of doing so, and doing so aloud, is that you will better remember the briefing. This is also the last chance to review your planning and spot any incongruities and prepare yourself for the coming flight. Do the briefing!

3.0 Fly Your Flight

3.1 Pushback, Start, and Taxi

Pushback (either with the built-in option of the simulator or your preferred add-on) from the gate and start your engines in accordance with UVA FOM. Remember to follow your checklists! Per the "Before Start Checklist" you should have your beacon already ON as you start your push. Once you've finished your push back, set the parking brake and wait for your engines to stabilize, select the takeoff flaps and follow the appropriate checklist ("Before Taxi Checklist"). Now, you should be all set to start your taxi to the departure runway (19L). Increase power smoothly to start moving, then reduce it to keep a taxi speed below 30 KIAS on the straight segments and 10 KIAS when turning. Keep braking to a minimum. Follow the taxiway centerline with smooth nose wheel movements.

Check that your MCP settings are per UVA FOM (2.16): runway heading in the HDG window, V2 speed in the SPD window and 6000 ft in the ALT window.

3.2 UVA FOM

Always try to fly according to UVA standard operating procedures, as detailed in the FOM document. You should have become at least familiar with these by now.

3.3 Take-off and Initial Climb

Once you are at the runway holding point, complete the "Before Takeoff Checklist" and carefully line-up with the runway centerline. This is the last chance to check that everything is in order. If everything is OK, it is time to take off! If you airplane is an high-end add-on, it will provide you realistic VNAV/FLCH and LNAV navigation performance. If you have correctly programmed your FMC, it is time now to arm LNAV and VNAV so that they will engage after liftoff and provide the Flight Directors with correct attitude and lateral navigation commands.

Increase power to the takeoff setting (we encourage use of auto-throttle, if available) and start your takeoff roll keeping the airplane on the runway centerline with gentle steering. At V_R, smoothly rotate to the takeoff attitude, initially about 8° nose up, then, as you liftoff, up to 15°. As the vertical speed increases past 1000 fpm ("positive rate"), retract the gear. You should keep the speed between V_2+10 to V_2+25 kts and an attitude not exceeding 17° nose up to 1000 ft above ground elevation (here, about 1300 ft MSL), maintaining runway heading: this initial phase is called "second segment climb". During this segment you should not perform any configuration changes, other than gear retraction.

Passing 1300 ft MSL (1000 ft AFE – this is your acceleration height, AH), gently ease down to reduce your nose up attitude, let the speed increase, and then set the power to the climb setting (again, autothrottle will help). Retract flaps according to the flap retraction schedule.

Keep runway heading. You should be "clean" (flaps retracted) by about 3,000 ft and your speed should not be greater than 250 KIAS. It's time to perform the "After Takeoff Checklist". You will now be climbing on runway heading to 6000 ft. You may use the autopilot to ease the workload. If your FMC has been properly programmed (including AH), the second segment climb and the AH transition to the climb phase will be a piece of cake, as your F/Ds will guide you and, if use it, the autopilot vertical and lateral modes will take care of your airplane.

Remember that you must not use V/S and SPD mode during climb after takeoff.

Autopilot cannot be engaged in command until passing 1200 ft AFE (as per UVA FOM).

3.4 Flying back

At 6,000 ft turn right to a 280° heading and keep it for a little while (as general guidance, maintain 280° until crossing the 235 radial outbound AML VOR). You should have selected AML VOR on the NAV2 radio for guidance as to distance from the airport and direction on the initial climb-out. Now, turn right all the way onto a 010° heading: this will bring you to a course parallel to the runway ("downwind"), west of the airport. When passing the airport on your right side (abeam the airport), you can start to reduce your speed to 210 KIAS.

While on the downwind, it is time to prepare for your approach. Let's take a look at the approach chart for the ILS procedure for Rwy 19L at KIAD in Figure 3, current at the date of this document. You should always use the current chart, available on the FAA website, as mentioned in the AFRPS.

There is a lot of information in the chart, but what we really need is:

- Localizer (LOC) frequency and ident: 110.10 MHz and I-SGC
- Localizer front course: 191°
- ILS Landing minima: Decision Altitude (DA) 502 ft MSL or Decision Height (DH) 200ft AFE and RVR 2400 ft. These are the most common minima for CAT I ILS approaches; see the FOM for more details.
- Final Approach Fix (FAF): DOMSE, 6.3 NM ISGC DME, altitude 1700 ft MSL.
- Missed approach route and profile: climb to 800 ft then left climbing turn to 3000 ft, to the missed approach holding fix.

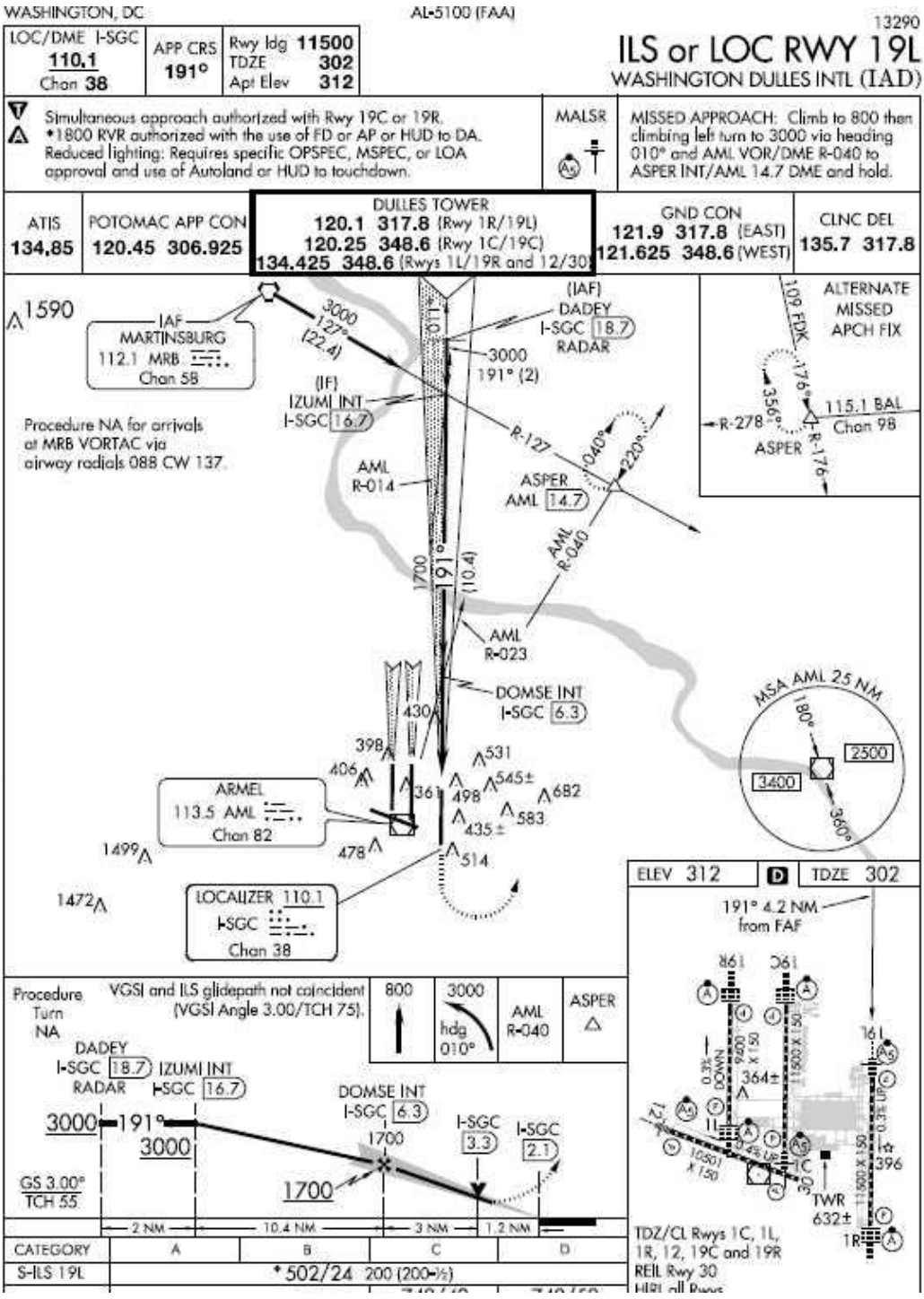

Figure 3 - ILS 19L Instrument Approach Chart

While flying northward it is a good time to tune the NAV1 to the ILS frequency, set the Course indicator to the Localizer front course, and set the DA(H) minimums. Depending on your airplane panel capabilities, you can set the DA on the pressure altimeter and the DH on the radar altimeter. Also, it's time to set your V_{REF}/V_{TGT} (see above, in the Planning section) bugs on the airspeed indicator (again, depending on your airplane, this can be done manually or

through the FMC). With the winds nil, V_{TGT} will be just V_{REF} + 5. Then perform the "Descent Checklist".

3.5 Approach

Before you fly beyond 25NM northwest of the field (as general guidance, when crossing the radial 340 outbound AML VOR), turn right onto a 100° heading, slow to 180 KIAS and select flaps as required (see the FOM, 7.9). Keep the 100° heading until crossing the 175 radial inbound AML VOR. When crossing this radial, turn right onto a heading of 140°. You should be in a correct configuration now for a comfortable intercept of the localizer about 15NM to 12NM north of the airport. You can continue using the autopilot. When you see the localizer deviation bar starting to move from a full left deflection towards the center (localizer alive), engage the APP (approach) mode of the autopilot. If you're flying by hand, smoothly turn right to intercept and follow the localizer. You will maintain 3,000 ft until the glideslope (GS) deviation pointer starts moving down from the upper offset. If you are hand flying, this is the time to smoothly start your descent. If you're on autopilot, it will do that for you. Around 10NM from the airport (you can now refer to the I-SCG DME), slow down and extend the landing gear, while also extending progressively your flaps.

The Final Approach Fix (FAF) is located at DOMSE, 6.3NM as shown by the I-SGC DME. At this point you should be fully configured for landing: gear down and locked, landing flaps, speed at V_{TGT} and fully established on the ILS, on the LOC and on the GS. Crossing the FAF, your altitude should be 1,700 ft MSL.. Should you be high or low on the glideslope or left or right of the localizer, promptly (but smoothly) correct the deviation. If you're more than one dot below the GS, it's better to go-around and re-try the approach.

3.6 Landing

Tracking the ILS on short final, even in calm conditions, is a demanding and exacting job. You can let the autopilot fly the plane until you're close to the DA(H), or you may wish to test your own skills, hand-flying the approach. After passing the FAF (final approach FIX), perform the "Landing Checklist". If your approach is not stabilized, you must go-around.

A stabilized approach consists of:

- No deviation below the GS
- Aircraft is within one dot of both LOC and GS centers
- Aircraft does not exceed two dots on either LOC or GS centers
- Full landing configuration and at V_{TGT} by 1,000 ft AFE
- Sink rate may not be more than 1,000 fpm below 1,000 ft AFE

Note: if deviation is momentary and swiftly corrected, a go-around is not required.

The Decision Height (DH) is the next critical point. As you continue to descend along the glideslope towards the runway, on reaching the DH you have a decision to make. If you can see the runway or the runway environment, and the visibility is at least that required on the plate (here that is ½SM for 19L ILS), and if you can continue and land in normal fashion, then you may continue to descend visually and land. If not, then you must immediately fly a missed approach. With the FR-A weather settings, you will for sure see the runway for many miles before reaching DH.

When at the DA(H), if you decide that you can land and the autopilot is still engaged, you must switch the autopilot off. Then remain lined up visually to the two large rectangles on the runway, 1,000 ft past the threshold. You should land no sooner than that, and no further than 3,000 ft past the threshold, or about 2,000 ft further. If you're using the autothrottle, you can switch it off. If you're using throttle hardware, be sure to manually position it to roughly match the autothrottle thrust demand, to avoid any unwanted power changes when you switch the autothrottle off.

The landing should be smooth, but don't strive for excessive lightness, as you may end up floating and wasting runway or even suffering a tail strike if your nose up attitude becomes extreme. The ideal landing sink rate is no less than 100 fpm, but in all cases less than 500 fpm. Any landing at sink rates 500 fpm or above is considered a catastrophic failure, and the aircraft will require a maintenance check, if not repairs.

After landing, ensure your thrust reversers and speed brakes have deployed. Slow to taxi speed, and exit the runway.

3.7 Taxi to the gate

While taxiing to the gate, perform the "After Landing Checklist". You may choose any gate you wish (any C and D). Stop your plane at the gate and shut down the engines. Perform the "Parking Checklist". It is now time to stop the video recording: ensure to do that when parked at the gate with the engines shut down.

4.0 Submit Your Flight

4.1 Uploading your files

Now that you are safely at your arrival gate, it's time to prepare your submission. You may wish to first review your flight as it was recorded, you might have missed some steps or you might wish to try another time to get a better flight. This is up to you. Once you've decided to submit the flight for review, just follow the detailed instructions in the AFRPS. Upload your video to YouTube.

4.2 Requesting the FR-A review

When you have successfully uploaded your file to youTube, please request your FR-A review from the "Request Flight Review" menu of the "Training" section of the UVA website (you must be logged in). Please follow the instructions in the current AFRPS and the website. Be sure to fill in ALL the required fields in the "Submission Comments" section.

Once submitted, your request will be assigned a checkpilot (this happens roughly once a week). You may expect a review of your FR-A about one week (it might take longer if your assigned checkpilot is busy) after your flight has been assigned.