

## **Arizona Type Ratings Profiles**

Before we start flight training, a few words on “Profiles”. In order to provide the student with an efficient method by which to demonstrate maneuvers outlined in the ATP – Type Rating Practical Test Standard, we have provided you with the following profiles. The purpose of these profiles is to share with you knowledge gained during years of experience instructing and administering flight checks in the Citation family of aircraft. Profiles are NOT regulatory, nor do they appear in the Practical Test Standards. Profiles are designed to make life easier for the applicant. They are written to keep flight time and expense to a minimum while still meeting the regulatory requirements of the practical test. Though not regulatory, it is strongly suggested that you learn these profiles thoroughly, especially if you are new to the aircraft. Knowing procedures, configuration changes, power settings and target airspeeds will dramatically reduce your mental workload and should help you to receive the best value possible for your time and training dollar.

As you peruse these suggestions, you will notice that we frequently mention “fuel flow” as an index by which power is set during approaches and maneuvering. Currently, this is not the most common method of energy management taught by schools in the business. Consequently, our decision to hold onto this “old school” teaching method probably merits some explanation. There are N1 power settings in the abbreviated checklist and the performance charts in the AFM which define “limiting” power settings that provide maximum performance, such as at takeoff, climb and cruise. These power settings are primarily a function of temperature and altitude and as a result, they vary significantly and must be monitored by the crew and adjusted accordingly as the airplane climbs. During approaches and maneuvers, we are not interested in

maximum performance. What most students new to the aircraft need is a “go to” power setting that they can use for approaches that will not stall the aircraft, not get them too fast and will allow the extension of flaps and gear when appropriate. Ideally, this power setting should work for approaches at sea level airports as well as high altitude airports. If possible, this power setting should also work in all of the Citations that this type rating is good for. A great “go to” power setting for the legacy Citation family is 450 pounds per side fuel flow. It’s good for level flight while either clean or configured to flaps “approach” while being vectored and is also useful on the typical 3° glideslope when fully configured. This power setting provides 170 to 180 kts clean and will stabilize you at 120 kts or so on a 3 degree glide slope when configured to land. It also works well from sea level to approach segments well above 10,000 ft. “Significant” wind and turbulence however may dictate some adjustment of these suggested power settings. As always, the pilot is the responsible party and will still need to monitor airspeed and adjust power as necessary.

# Arizona Type Ratings Citation Maneuvers Guide

## STEEP TURNS

1. Enter maneuver at 200 Kts. Power required is approximately 550 lbs per side fuel flow.
2. Bank aircraft 45 degrees. As you pass 30 degrees of bank, pitch up 2 to 3 degrees. Little if any power increase will be required to maintain 200 Kts.
3. Roll out on assigned heading. Lead roll out by 10 to 15 degrees. Passing 30 degrees bank, pitch down 2 to 3 degrees to maintain altitude. Maintain 200 Kts. Roll immediately into the opposite direction steep turn.

## STALLS

**Note:** There may be a stall recovery procedure defined in the EMERGENCY/ABNORMAL Checklist of your Citation. That procedure addresses actual and "unintentional" stalls. The following procedures are suggested for the intentional demonstration of an "EMINENT" stall to the first indication, usually .85 AOA or stick shaker activation, not full stalls. Should an actual stall occur, follow the published procedure, which will generally suggest significantly lowering the nose and subsequent altitude loss to ensure recovery.

## STALLS, CRUISE CONFIGURATION (Frequently Coupled)

1. Compute Vref and set Airspeed bug accordingly.
2. Maintain assigned altitude and set power to no more than 200 lbs per side fuel flow, or flight idle if desired.

3. As airspeed bleeds off, the autopilot will continuously trim the nose up to maintain altitude. Consequently, be aware that the aircraft may be in a nose-high trim state at recovery.
4. At first indication of a stall, .85 AOA or Stick Shaker activation, disconnect the autopilot, advance thrust levers to max power and call "MAX POWER, FLAPS FIFTEEN". If the aircraft is equipped with a STICK SHAKER, the autopilot "should" disconnect automatically.
5. Feel free to lower the nose slightly, sacrificing a modest amount of altitude to get the wing flying again. Selecting flaps to 15 degrees (Takeoff & Approach) will significantly increase lift very quickly. Lowering the nose dramatically will frequently invite a secondary stall.
6. Maintain assigned heading. As airspeed increases, return to your target altitude.
7. At  $V_{ref}+10$  Kts, call "FLAPS UP, AFTER TAKEOFF CHECKLIST".

### **STALL: APPROACH CONFIGURATION, TURNING**

1. Compute  $V_{ref}$  and set Airspeed bug accordingly.
2. Maintain assigned altitude and set power to no more than 200 lbs per side fuel flow, flight idle if desired.
3. After airspeed drops below flap extension speed, call "FLAPS FIFTEEN". Be prepared for a little balloon in altitude with flap extension.
4. As airspeed bleeds off, trim nose up to maintain altitude. Stop trimming at 140 Kts.
5. When instructed, execute a 20 degree bank turn while holding altitude with back pressure.
6. At first indication of stall, .85 AOA or Stick Shaker, **level the wings**, advance thrust levers to max power, and call, "MAX POWER, FLAPS FIFTEEN". (Flaps should already be in the approach configuration)

7. Sacrifice altitude as necessary to accelerate. Maintain assigned heading as directed and return to target altitude.

## **STALL: LANDING CONFIGURATION**

1. Compute Vref and set Airspeed bug.
2. Maintain assigned altitude and heading. Set no more than 400 lbs per side fuel flow.
3. Below initial flap speed, call, "FLAPS FIFTEEN". Again, a little balloon in altitude may occur.
4. Below gear speed, call "GEAR DOWN, LANDING CHECK".
5. As airspeed bleeds off, trim nose up to maintain altitude.
6. After 3 Green gear lights, call "FLAPS to LAND".
7. Maintain assigned heading and altitude, stop trimming at 140 kts.
8. At first indication of a stall, .85 AOA or Stick Shaker, advance thrust levers to max power and call, "MAX POWER". Feel free to sacrifice altitude as required to avoid an actual stall.
9. Patiently wait for airspeed to increase to Vref **MINIMUM** before beginning the clean up. Then call "FLAPS APPROACH".
10. Once flaps are retracted to 15 degrees, call "GEAR UP". (Retracting gear before flaps are at approach setting will result in the gear warning horn you cannot silence).
11. Maintain heading and return to target altitude as the aircraft recovers.
12. At Vref + 10 Kts. **MINIMUM**, call "FLAPS UP".

## **EMERGENCY DESCENT**

1. If due to decompression or smoke in the cabin, Oxygen masks DON and 100%.
2. Thrust levers to IDLE.
3. Speedbrakes EXTEND (Extend Landing Gear only if specified in the approved checklist).
4. If desired, initiate moderate bank to prevent negative airframe loading.
5. Establish Nose Down attitude of 20 degrees.
6. Ignitors "ON" if conditions warrant.
7. Allow airspeed to increase to Vmo or Mmo (minus a few) to 14,000 feet MSL or MEA as required.
8. Clean up and proceed to nearest suitable airport.

## **UNUSUAL ATTITUDE RECOVERY**

1. Nose high, decaying airspeed:  
Confirm attitude with multiple ADIs. Add power as Required and create significant bank (not to exceed 60 degrees), Nose will tend to fall to the horizon due to bank. Level the wings after nose falls to the horizon
2. Nose low, accelerating:  
Power IDLE, speedbrakes EXTEND, level wings **FIRST** and then gently pull nose to horizon.

## **APPROACHES**

### **ILS APPROACH, ALL ENGINES OPERATING**

1. Set approximately 450 lbs per side fuel flow. This will result in approximately 170 kts clean. Use 400 lbs per side for Williams powered Citation.
2. Once inbound, at glide slope intercept altitude and you observe Glide Slope needle come alive, call "FLAPS FIFTEEN".
3. One dot prior to intercepting GLIDE SLOPE, call "GEAR DOWN, LANDING CHECKLIST". Speed at this point should typically be 150 kts or so.
4. At Glide Slope Intercept, call "FLAPS LAND".
5. Airspeed should gradually decrease from 150 kts at the top of descent to Vref plus 10 to 15 kts on a 3 degree glide slope at 450 lbs fuel flow.
6. Adjust power on short final as required to cross the threshold at target airspeed.
7. If you are on speed, power is normally reduced to idle at the threshold and a shallow flare of only 5 degrees or so is required to touchdown smoothly without floating.

### **ILS, ONE ENGINE INOPERATIVE**

1. Perform the "Engine Failure During Approach" Checklist.
2. Essentially same procedure as Two Engine ILS EXCEPT:
  - Maintain Vref+ 10Kts **minimum** and FLAPS FIFTEEN until 100' to 150' AGL and landing assured. Adjust power on operating engine coming down the glide slope as required to prevent acceleration.

- If desired, use FLAPS DOWN to cross threshold at 50' AGL and at Vref as in normal landing if desired. If landing is made with FLAPS FIFTEEN, maintain Vref + 10 kts.

## **NON-PRECISION APPROACH**

1. Intercept Final Approach Course inbound at 150 Kts **minimum**. Call "FLAPS FIFTEEN" within 5 miles of Final Approach Fix. (no less than 2 miles)
2. Crossing Final Approach Fix call, "GEAR DOWN, LANDING CHECKLIST".
3. Descend at 130 KIAS to and maintain MDA until MAP or field is in sight and in position to land. Remember to power back up at level-off to prevent further deceleration.
4. If circling, we suggest maintaining 120 to 140 kts. during circle.
5. If landing is to be made, call "FLAPS DOWN" when intercepting a glidepath appropriate for a normal landing. Descend from the MDA only when intercepting a normal landing glide path.

## **NO FLAP APPROACH, NON-PRECISION**

1. Call for "Abnormal Landing, No Flap" Checklist.
2. Set Airspeed bugs per your abnormal checklist, typically Vref + 20 kts (New BUG SPEED) on 500 Series Citations and Vref + 15 kts on 550 & 560 Series Citations.
3. Maintain 150 kts minimum to Final Approach Fix, then Call "GEAR DOWN, LANDING CHECK" no later than FAF, earlier if desired.
4. Approach angle should be NORMAL. A flat approach will usually result in a longer landing roll. Most pilots will consume between two and three times the normal runway during a no flap landing.



## **GO AROUND OR MISSED APPROACH**

1. Press TOGA button, apply or call for "MAX POWER". Rotate to the command bars, typically 7.5 degree attitude if one engine inoperative (Typically 10 degrees if two engine.) Call "FLAPS FIFTEEN".
2. After Positive rate of climb, call "GEAR UP".
3. At Ref + 10 (& 400 feet AGL minimum if single engine, Call "FLAPS UP, AFTER TAKEOFF CHECKLIST". Climb at Venr (one engine) or 200 KIAS if both engines are operating).
4. Call for Engine Failure or Fire Checklist if appropriate.