May 2024 Newsletter

**Mike Goulian Aviation Pro Tip of the Month – Demystify your "PTAC" Instrument Approach Guidance**

*"Cirrus 99MG four miles from Ayede, turn left heading 080, maintain 2000 till established on the final approach course, cleared RNAV Runway 6 Approach"*

P - Position
T - Turn
A - Altitude
C - Clearance

The above air traffic control instruction in the position, turn, altitude, and clearance (PTAC) format is a typical vector to final approach clearance. As I write this, it seems simple for me to respond with *"left 080, maintain 2000 till established, cleared RNAV Runway 6 approach 9MG".* The ease of reading this back wasn't always the case for me. It reminded me of a waiter asking how my meal was, just as I shoved a big piece of cake in my mouth. I knew it was coming, but I never seemed ready as I attempted to mumble a somewhat coherent reply. In this month's CSIP pro tip, I will hopefully demystify what ATC is trying to get you to do, as well as some tips to help you feel and sound more confident in your response.

**Position** - To help me better understand what ATC wanted me to do with this clearance, I researched the origins of PTAC. With GPS now onboard most airplanes and EFB's like Foreflight, it's hard to not know exactly where you are. So why does ATC start with your position? The closest reason I could find is in a 2020 article "A Different Approach: The crash of TWA flight 514". The article reviews a 1974 airline crash on its approach into Dulles and the confusion between aircrew and ATC when they could descend. In this confusion, the aircrew believed they were east of the blue ridge mountains and therefore could make the final descent into Dulles. In reality, TWA 514 was still west of the ridge and the early descent caused them to slam into the side of the mountain killing all 92 on board. The resultant NTSB investigation and recommendations included *"The system should clearly require controllers to give the pilots specific information regarding their positions relative to the approach fix and a minimum altitude to which the flight could descend before arriving at that fix. Pilots should not be faced with the necessity of choosing from among several courses of action to comply with a clearance."* Another significant change from this crash was the standardized approach plates we use today.

**Turn -** Depending on how you join the approach, you may or may not get a turn. If joining an approach from an arrival, or if already vectored direct to an IAF, you won't get a turn. If being vectored to final, you most certainly will. While being vectored, the approach controller has to get you through a 'gate' and has to have you established no further than one-mile before the final approach fix and will have you joining the final approach course 2-3 miles before that. That final turn will be no more than 30-degrees from present heading to the approach course. If you review your track log post flight, you will see how you were turned onto a base leg and from that base leg, turned to within 30-degrees of final. Once I was able to understand that process, it made anticipating that turn so much easier.

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**Altitude and Clearance -** The next part of the instruction is your altitude and final approach clearance. You will already know what altitude you will receive in the approach clearance because you were previously instructed, or it's charted. The final part of the clearance is that you are "cleared for the approach" and because you are an awesome pilot, you already know what approach you are on!

I hope this clears the PTAC up a bit. If you think about it, you already know 90% of what ATC is going to say. You know where you are, you can get close to guessing which heading you will be assigned, you already know your assigned or charted altitude, and you definitely know which approach you are flying. With some review and understanding of approach plates and a bit practice reciting clearance read backs, you'll sound like a pro in no time.

I've included a few supporting articles below, including the quoted one on the TWA crash. Each of these go into more depth in how and why the approach clearance is delivered the way it is.

As an instrument pilot in the Cirrus - it is important to understand the difference between the two possible clearances you'll receive and how to set up your avionics when on the last leg of your flight prior to getting on the approach course:

1. "You are cleared for the approach" (a clearance which will have you select **APP** mode on your avionics)
2. "Intercept the final approach course" (not a clearance and an indication to keep your avionics on **NAV** mode)

Plan on joining us next month for an in-person discussion on the PTAC and how it applies to the function of the avionics in a Cirrus.

The Origins of PTAC – Analysis of TWA Flight 514 Crash
https://admiralcloudberg.medium.com/a-different-approach-the-crash-of-twa-flight-514-4047166234ee

A great resource for all things ATC
https://laartcc.org/stm/approach-clearances

IFR Magazine Approach Clearance Article
https://www.ifr-magazine.com/technique/approach-clearance/

Beyond Proficient – Elements and Variations of Approach Clearances - AOPA Air Safety Institute
https://www.youtube.com/watch?v=w3E1hUvedeQ

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