



SIMPLIFIED PROCEDURAL APPROACH

(WARSAW FIR, VATSIM)

Procedures are described using Kraków-Balice (EPKK) as example, but can be applied to any other controlled airport without working approach position.

What is procedural control?

Main difference between procedural and radar control (which is standard on Vatsim) is that ATC cannot rely on what he sees on radar. Procedural controllers either don't have radar, or their radar is not precise enough to be used for air traffic control.

No radar means, that:

- ➔ **ATC actions have to be based on pilot's reports** about his position and speed.
- ➔ **Controller cannot issue vectors** (specific heading for pilot), as he doesn't know precisely where the pilot is.
- ➔ No vectoring usually requires that the **pilot performs full approach procedure according to charts**.
- ➔ **No radar separation** (separation based on horizontal and vertical distance between planes with the use of radar) **is allowed**.
- ➔ During procedural control **usually only airways are used**, without shortcuts.

When does procedural control begin and end?

When handing off to tower, radar controller says: „Radar service terminated”. This marks the start of procedural control. Of course, at initial contact Tower will not say „radar contact”.

During departures, procedural control is in force until pilot hears „radar contact” or „identified”, after hand-off to radar.

Required pilot's abilities

Pilot flying under procedural control should have good knowledge of NAV, ADF and DME receivers' use. He should be able to report his position in relation to VOR or NDB, because ATC relies on position reported by pilot. Few degrees or miles of inaccuracy changes the situation altogether. Pilot must also be able to perform at least one procedural approach (described below), apart from visual approach, which can be unavailable due to weather. And of course approach charts are a must. If pilot is not sure if he's capable of this, then should not use airports with procedural control (information about procedural control will be included in ATIS).

RULES FOR PILOTS:

1. **INITIAL CONTACT:** At initial contact with controller using procedural control, we state not only our callsign, but also precise position (in relation to navigation point), passing and target flight level, and last assigned navigation point.

P: „LOT1234 with You at JED direct KRW, passing FL120 for FL60”

P: „WEA567 with You 15nm inbound KRW, level at 5000 ft”.

2. **REPORTING:** During procedural control, we report crossing:

→ **each compulsory reporting point** marked on charts, even without ATC prompt:

P: „LOT1234, passing BALOS”

→ **reporting points on request**, after ATC request:

C: „WEA657, report passing SKAVI”

P: „Passing SKAVI, WEA657”

→ **other positions in relation to navigation point** on ATC request:

C: „PLC890, report 10nm inbound KRW”

P: „10nm inbound KRW, PLC890”

→ **flight levels** on ATC request:

C: „SSA321, descend and maintain FL60, report passing FL90”

P: „Passing FL90, continuing down to FL60, SSA321”

→ **specific approach positions** on ATC request:

C: „LOT456, cleared for procedural ILS approach rwy 25, report KRW outbound”

P: (after crossing KRW) „KRW outbound, LOT456”

C: „WEA765, cleared for visual approach rwy 25, report on left downwind”

P: (after entering downwind leg) „Left downwind, WEA765”

3. **REPORTING ESTIMATED TIME:** On ATC request, pilot reports estimated time of arrival at specified navigation point (ETA):

C: „PLC987, cleared direct KRW, when do You expect KRW?” or „report ETA at KRW”

P: „Direct KRW, we expect KRW at 45, PLC987”

Pilot states minutes only, without hour. In the example above, 45 can mean 20:45.

ATTENTION ! During procedural control ETA times are very important as they allow controller to use time separation. That means they should not be stated at a guess, but according to FMC (pilot should make sure FMC uses correct speed and altitude) or calculations based on current distance and speed. Even 2-3 minutes error can lead to potentially dangerous situation.

4. **VECTERING IS NOT ALLOWED:** Pilot can't ask ATC for heading, because controller is not allowed to issue vectors.

PROCEDURAL APPROACHES:

Because ATC can't use vectoring, approaches during procedural control differ greatly from approaches with radar control.

PROCEDURAL APPROACH (ILS, VOR or NDB) – Pilot is directed to Initial Approach Fix (IAF), and after clearance for procedural approach (i.e. ILS) performs full approach procedure according to chart. In practice, in Poland, apart from Warsaw, these are approaches with racetrack, which means that before entering final pilot has to perform something similar to hold over navigation aid (usually NDB), a few miles from threshold. But remember – this is not holding! Principles of performing racetrack are described on approach charts, it can be based on different navigation aid, use different headings, times and max. speeds than holding (for example, in Krakow racetrack and holding use same headings, but different times between turns – 1.5 mins for racetrack and 1 min for holding). During procedural approach pilot should follow precisely every heading, radial and altitude marked on approach chart. ATC can ask to extend outbound leg if other plane is on approach – in this case we fly heading opposite to approach direction until ATC clears for turn to approach heading).

***EPKK example:** Pilot is directed by Tower to KRW (IAF) and is cleared to descend to 3500ft (initial approach altitude according to chart) and before crossing it is cleared for procedural ILS approach rwy 25. Over KRW he enters racetrack – 255 inbound track to KRW, right turns, 1.5 mins leg. Entrance should be performed like in holding – direct, parallel or teardrop. After entering outbound leg from KRW (075 – usually ATC asks to report that moment) pilot initiates descend (without controller's prompt,*

because he's already cleared for approach) to 2270 ft. After 1,5 mins he turns right 180 degrees (standard rate turn, 3 degrees per second) and intercepts localizer. 2270 ft is maintained until intercepting glide slope, when pilot reports established, and after receiving clearance, lands.

STRAIGHT-IN APPROACH (ILS): If pilot approaches ILS at an angle of no more than 30 degrees, he can be cleared for straight-in approach, which means intercepting localizer and glideslope without performing racetrack:

***EPKK example:** Straight-in ILS approach can be used for east arrivals only. Tower directs pilot to KRW and gives descent instructions to intercept glide slope from below (usually 3500 ft); pilot is also requested to report specified distance from KRW (usually 10nm). After reporting, pilot is issued approach clearance, which he performs same way as with vectoring – maintaining heading to KRW until intercepting localizer, and maintaining current altitude until intercepting glide slope.*

VISUAL APPROACH: Can be performed only under VMC conditions (at least 3nm – 5km visibility, clouds base not below 1400ft – 450m above terrain). Tower directs pilot to navigation aid near airport, clears for descent to 3000-3500ft and asks to report airport in sight. After reporting airport in sight, ATC gives approach clearance. Pilot enters left or right traffic pattern depending on heading, initiates descent with visual contact with ground and reports final, which should be longer than for VFR traffic – at least 2-3nm.

Partial visual approach is also possible before pilot can see the airport, if he has ground in sight. If ATC is sure that's the case (he can ask whether pilot has visual contact with ground), he can approve further descent with visual contact with ground. Pilot is responsible for further descent, while the controller directs him to the point where he can see the airport.

***EPKK example:** Tower directs pilot to KRW and clears for descent to 3500 ft (sometimes lower). When pilot has airport in sight, he's cleared for visual approach to rwy 25. It means he should enter traffic pattern – if he's arriving from north (Warsaw from example) it will be right base, arriving from west (Katowice) it should be right or left downwind (depending which one is closer, unless ATC gives instructions), arriving from south (Slovakia) it should be left base, and for east arrivals (Rzeszow) – final. At the right moment pilot turns final and reports final to ATC.*

In practice, if weather is poor, decision about type of approach is often made in the last possible moment. ATC directs pilot to KRW and waits if he reports airport in sight. If he does, then is cleared for visual approach (if he agrees of course), allowing to save time and fuel needed for racetrack. If pilot doesn't have airport in sight, he's cleared for procedural ILS approach.

RULES FOR CONTROLLERS:

1. Procedural approach is authorized only for controllers holding STU+ rating and above.
2. Procedural approach is not compulsory for any airport – if TWR controller doesn't want to use procedural control, CTR controller gives vectors until pilot is established on the approach, and when CTR position is not manned pilot contacts with TWR on final. But, if TWR controller decides to use procedural approach, it is assumed that he does not have radar, and procedural approach must be applied to all pilots. Pilot not able to perform procedure should be directed to other airport.
3. Procedural approach can be used at every TWR position in Poland, apart from EPWA_TWR, EPKK_TWR and EPKT_TWR if EPKK_APP is online, and EPGD_TWR when EPGD_APP is online.
4. Procedural approach can be used only for these airports for which there is at least one approach procedure chart available at www.pl-vacc.org (ILS, NDB etc.).
5. Information about procedural approach in use must be included in controller's ATIS.
6. When TWR controller uses procedural approach, CTR controller should:
 - a) after initiating descent for a plane that will be under procedural control - inform pilot about this fact (for example „expect procedural ILS approach for rwy 25”), and if pilot doesn't agree to perform procedure, direct him to different airport
 - b) while handing off inform pilot that radar service is terminated
7. Handing-off aircrafts between CTR and TWR:
 - a) Usually, pilot approaching the airport should contact TWR, and pilot leaving the airport should contact CTR, at the border of airport's controlled area (which will be later called „CTR area” to distinguish from CTR position). Hand-off should be initiated early enough to allow contact before reaching this border, and considering communication delays in VATSIM network.
 - b) If airport does not have CTR area, or if controller doesn't know its parameters, it is assumed that it has shape of a circle with 10nm radius, reaching to FL65.
 - c) Hand-off can be made earlier, if plane is clear of any traffic that could potentially conflict with it and if both sides agree for earlier handoff. Hand-offs are not allowed 30nm and further from borders of CTR area, and 8000ft and higher above CTR area.

8. If CTR position is not manned, arriving pilot should be asked to contact before reaching CTR area, and departing pilot should be instructed to resume own navigation before leaving CTR area. Communicating with pilots controller should not use words „CTR area”, because most pilots don’t know its parameters. Instead, navigation aids or distance from the airport should be used (for example „contact me passing 15nm inbound EPKK”)
9. TWR controller performing procedural control may not issue:
 - vectors (instructions to fly specific heading)
 - clearance to any approach apart from procedural approaches published at www.pl-vacc.org, visual approach and straight-in ILS approach.
10. TWR controller performing procedural control may, for greater realism, turn off display for planes from GND to FL60 or above. If he doesn’t do that, he’s still not allowed to rely on it – pilot should be requested to make position, speed and altitude reports.
11. TWR controller performing procedural control should secure at least one of separation types described below:
 - VERTICAL SEPARATION – at least 1000ft vertically (according to local barometric pressure). Vertical separation should be maintained at least 5 mins before and 5 mins after estimated time of crossing or max closing of tracks of two planes, unless, based on pilots’ reports, ATC is sure that crossing or max closing already took place.
 - HORIZONTAL SEPARATION:
 - a) BASED ON TIME – at least 10 mins between two planes crossing same navigation point; if both are flying on the same track and first is faster by at least 20kts, separation can be shortened to 5 mins. Both planes must be flying same track, or their tracks must cross at an angle of less than 90 degrees.
 - b) BASED ON DME DISTANCES – difference between DME distances reported by pilots should be not less than 20 nm; if both planes are flying on the same track and first is faster by at least 20kts, separation can be shortened to 10 nm. Both planes must be flying same track, or their tracks must cross at an angle of less than 90 degrees.
 - c) BASED ON RNAV DISTANCES – if distances between points other than VOR/DME are used (NDB, intersection etc.), difference must be at least 30nm.
 - SEPARATION ON APPROACH – next plane can be cleared for approach only after the preceding has cleared the runway
 - SEPARATION BETWEEN DEPARTURES – departures should be separated by 5 mins; if first plane is faster by at least 40 kts, separation can be shortened to 2 mins; if angle between planes’ tracks immediately after departure is greater than 45 degrees, separation can be shortened to 1 min.
12. Other separation principles, based on real world IL-4444 instructions are allowed depending on controller’s knowledge.