EXPECTED APPROACH TIME - EAT

1. Definition

The Expected Approach Time or EAT is the time at which ATC expects that an arriving aircraft, following a delay, will leave the holding fix to complete its approach for a landing.

The actual time of leaving the holding fix will depend upon the approach clearance.

2. Rules

An expected approach time or EAT shall be determined for an arriving aircraft that will be subjected to a delay of 10 minutes or more. The **EAT is estimated** by the ATC and it should be **as precise as possible**. The EAT **shall be transmitted to the aircraft as soon as practicable**, and preferably not later than at the commencement of its initial descent from cruising level.

Whenever an EAT is issued, the pilot **is responsible of taking all actions needed to fly over the IAF at the indicated time**, even though it implies he has to shorten the branches of the holding circuit.

It is very important to arrive on time at the IAF whenever the traffic load is heavy since each delay has a strong impact on all following aircraft.

The holding fix to which an expected approach time relates shall be identified by the pilot. ATC must be sure that the pilot will perform the holding on the appropriate fix.

The ATC shall recalculate and transmit to the aircraft without delay a new revised EAT whenever it differs from that previously transmitted by 5 minutes or more (or lesser period if regulation or specific agreement between ATC permits).

An approach clearance cancels any EAT.

3. Onward clearance time

The Onward clearance time is the time at which an aircraft can expect to leave the fix at which it is being held.

In the event an aircraft is held en-route or at a location or aid other than the initial approach fix, the aircraft shall be given an expected onward clearance time from the holding fix.

4. In case of mandatory approach procedures

When several aircraft arrive almost simultaneously over a given approach sector, the ATC can regulate this traffic by providing radar vectors, thus ensuring proper separation of these aircraft when established on the final approach axis. However, **strict respect of published approach procedures is mandatory in some terminal areas** and **no radar vectoring** can be provided by ATC.

In the case of mandatory approach procedures, the controller may face a situation **where several aircraft arrive simultaneously over the IAF**. In this case, these aircraft cannot begin their approach procedure at the same time.

There are cases, depending on the type of procedures and on the local constraints, where no aircraft is allowed to leave the IAF if the precedent has not landed.

In this problematic case, the controller has to:

- Issue the **approach** procedure **clearance to the first aircraft** arriving at the IAF
- Impose the **published holding circuit at the IAF** on all other aircraft
- Calculate and transmit an **EAT** to all holding aircraft

The problem can get even harder to handle when the sector consists of multiple IAF with several aircraft of different types (turboprop, jets…).

As a general rule, the first aircraft arriving at the IAF will be the first to begin the approach procedure. However, the controller can make a different tactical choice in view of improving the approach sequence.

For example, the ATC may issue the approach clearance to the second aircraft because it is expected to fly faster on the final approach or the route is shorter than the other aircraft's.

In this case, it is very important to calculate the time flown by each aircraft between the IAF and the FAF (Final Approach Fix), the OM (Outer Marker) or more generally 6NM DME. The timing sequence of the landing runway shall also be taken into account.

According to the runway configuration, the **landing time sequence** (the time between two consecutive landings) **may vary between 90 seconds** (in the presence of fast exit taxiways, which is the case in most international airports) **and several minutes** (in the case of a mandatory backtracking followed by a 180° turn at the end of the runway to reach a taxiway).

The landing time sequence may also vary when a slow aircraft is followed by a faster aircraft on the final approach axis.

5. Practical case with unique IAF

Here is a simple example with aircraft of the same category arriving almost simultaneously to the same IAF.

5.1. Entry data

Let us suppose that the concerned TMA (Terminal Manoeuvring Area) is characterized by:

- A unique IAF
- A time of 7 minutes between the IAF and the complete landing (aircraft landed and runway vacated)
- The condition that no aircraft can be cleared to start the approach if the preceding has not completely landed (it is an example and this is not the usual procedure to handle IAF).

Let us suppose that 3 arrivals are expected:

- An A320 estimating the IAF at 10:12
- A B737 estimating the IAF at 10:14
- A C750 estimating the IAF at 10:17

5.2. EAT calculation

The time difference between the estimated arrival of the first and the second aircraft is less than 7 minutes.
The time difference between the estimated arrival of the first and the third aircraft is less than 14 minutes.
This implies that the last two aircraft will have to wait before starting the approach procedure.

The A320 is **cleared to start the approach procedure before reaching the IAF** (because it is the first aircraft and no preceding traffic is approaching).

Let us suppose that the A320 leaves the IAF with a delay of 1 minute, at 10:13. Therefore, the A320 is supposed to complete its landing at 10:20.

When the B737 arrives at the IAF, the controller shall issue an EAT at 10:20. This is because the B737 cannot start the approach procedure before the A320 has vacated the runway.

If the approach clearance is not issued, the pilot must hold at the IAF. Nevertheless, the ATC shall provide a first EAT estimation together with a holding clearance.

The controller must assign the B737 to a holding circuit depending on the separation requirements with respect to the A320 during the whole approach procedure. In particular, if the lateral separation is not met, the altitude of the circuit imposed to the B737 must be at least 1000ft higher than the altitude at which the A320 is flying during the initial approach procedure.

As soon as the C750 reaches the IAF, the controller shall issue an EAT at 10:27. In order to ensure the vertical separation between the B737 and the C750, the ATC must stack them on the circuit one over the other. The C750 will be cleared to an altitude 1000ft or 2000ft higher than the B737.

As a consequence:

- The B737 will arrive with a 6 min delay
- The C750 will arrive with a 10 min delay

If the pilots of the three aircraft comply correctly with the published procedures and the EAT provided by the ATC, the B737 will start the approach from the IAF at the same time when the A320 is vacating the runway. The controller has to issue the approach clearance to the B737 before it reaches the IAF. Depending on the progression of the A320 approach, the ATC shall clear the B737 to the published altitude corresponding to the approach start at the IAF.

The controller shall not authorize the descent of the B737 too early because the A320 may still be obliged to go around. This clearly depends on the go around procedure and a possible conflict with the hold circuit. A very deep study of the procedure charts is needed to assess the best strategy.

In any case, the controller is not allowed to authorize the descent of an aircraft to an altitude which is assigned to a holding aircraft.

If the sequence progresses as expected, the C750 will be able to start the approach 7 minutes later. Then, the ATC may clear to a lower altitude as a function of the B737 evolution.

This simple example shows how important it is for a controller to make a correct estimation of the minimum time between two successive approaches; this time has not to be underestimated nor overestimated and the pilot shall be asked to respect precisely the EAT which has been given to him.

If the B737 reaches the IAF later than the expected time, let's say at 10:22, the EAT of the C750 has to be updated to 10:29, leading to a total holding time of 12 min instead of 10 min.