

## 2. ARRIVING AIRCRAFT

### 2.1 Continuous Descent Approach (CDA)

2.1.1 Pilots are encouraged to plan their descent in a manner that will permit a CDA into all airports in Malaysia. ATC will assist by providing timely descent clearances consistent with separation requirements to achieve CDA.

### 2.2 Standard Arrival Routes

2.2.1 A Standard Arrival Route (STARs) is a designated instrument flight rule (IFR) arrival route linking a significant point, normally on an ATS route, with a point from which a published instrument approach procedure can be commenced.

2.2.2 STARs are designed to:

- a) reduce pilot and controller workload, including air-ground communications;
- b) maximise traffic handling capacity;
- c) minimise conflict with departing traffic; and
- d) satisfy any noise abatement requirements.


2.2.3 STARs are presented in diagrammatic and textual format on a chart which comprises the following elements:

- a) an ARRIVAL route; and, if necessary
- b) a TRANSITION route.

2.2.4 Additional elements on the STAR chart include the following:

- a) *vertical restrictions*, designed to contain aircraft in controlled airspace, to separate aircraft from obstacles and to avoid, to the degree possible, conflict with departing traffic.
- b) *speed restrictions*, that may also be used for the aforesaid purposes, or recommended speeds that may be used to assist jets turning onto base or final. The latter will take the form (Jets≤180kts), meaning an indicated air speed of 180kts or less is recommended for jets to avoid overshooting a turn. Note that arriving aircraft are not restricted to 250kts below 10,000ft-speed restrictions except for arrivals into KLIA (refer to WMKK AD 2 - 16 para 6.5.2, 6.5.3 and 6.5.5).
- c) *Minimum sector altitude (MSA)* within 25NM of the main tracking aid. The MSA provides a minimum of 1,000FT vertical clearance within 5NM of any obstacle.

**Note.** *Tracking in the Kuala Lumpur terminal airspace may involve two VORs depicted on the same chart, in which case the MSA will be shown for both VORs.*

2.2.5 STAR chart drawn to scale will display a scale bar or latitude/longitude grid. A scale bar may also be displayed on a chart that has tracks with *break* symbols, but only if there is no possibility of confusion between what is and what is not drawn to scale (a break symbol  is used to depict a track that would otherwise extend beyond the boundaries of the chart at the scale being used). In other cases charts will be marked "NOT TO SCALE".

2.2.6 Pilots-in-command shall comply with the procedure requirements defined in the STAR text description and also the mandatory procedure requirements defined in the STAR diagram.

#### 2.2.7 Transition and arrival tracking

2.2.7.1 A TRANSITION starts at a fix on the ATS route, and then requires VOR, NDB or RNAV tracking to position an aircraft for the ARRIVAL route. An aircraft may also intercept a TRANSITION at an intermediate point after the start fix.

2.2.7.2 Aircraft may be radar vectored off the STAR for sequencing or other purposes. Such aircraft will subsequently be cleared to resume own navigation to a point along the STAR or to a point from which an instrument approach procedure can be commenced or radar vectored to intercept the final approach track. Whilst under radar vector, terrain clearance is the responsibility of ATC, but pilots are required to maintain an awareness of their situation in case of communications failure. Except when under radar vector, pilots shall adhere to all vertical restrictions shown diagrammatically on the STAR unless the restrictions are specifically cancelled. (read paras 2.2.8.5 and 2.2.9)

2.2.7.3 An ARRIVAL is applicable to one landing direction. The runway, therefore, need not be nominated except at multiple parallel runway airports.

2.2.7.4 Procedure design is based upon an aircraft using a Rate 1 turn or 25° angle of bank, whichever results in a lesser angle of bank, when turning onto base or final. Procedure design is also based upon aircraft using IAS 210kts for base turns and 180kts for final turns, taking into account omni-directional winds to 30kts. Notwithstanding the

speeds used for procedure designs, pilots should use speeds applicable to their aircraft type and operating procedures, and make appropriate compensation for their aircraft speed and wind.

## 2.2.8 STAR clearance

2.2.8.1 STARs shall be issued by ATC in the following order:

- a) ARRIVAL Identifier;
- b) runway (for parallel runway operations only);
- c) TRANSITION identifier;
- d) Assigned level (if applicable).

Example: *"(C/S...) CLEARED VIA KAYELL ONE ARRIVAL SAROX TRANSITION (when ready {if applicable}) descend to seven thousand feet.*

2.2.8.2 On being issued a STAR, a pilot is required to read back:

- a) the ARRIVAL identifier;
- b) specified runway;
- c) a TRANSITION *if it is followed by an alphabetical route identifier*;
- d) an assigned level.

2.2.8.3 A pilot shall request an alternative approach procedure if cleared via a STAR that requires the use of navigation aids not available on board the aircraft.

2.2.8.4 RNAV tracking requires the use of aircraft equipment having the capability of turn anticipation, so that fly-by way points are flown correctly. Pilots-in-command of aircraft not so equipped shall seek an alternative STAR or arrival instruction.

2.2.8.5 Once a STAR clearance has been issued, it remains valid unless ATC cancels it by use of the phrase "Cancel STAR".

## 2.2.9 Vertical restrictions

2.2.9.1 Vertical restrictions are depicted on each TRANSITION and ARRIVAL.

2.2.9.2 Vertical restrictions are referred to a DME, except where the relative angle between the aircraft track and the DME site is excessive, in which case a crossing radial will be used.

2.2.9.3 Under normal circumstances, the initial vertical restriction depicted on the chart is designed to contain the aircraft in controlled airspace, that is, at or above the minimum flight altitude for the applicable ATS route until the aircraft is established inside the TMA. Subsequent vertical restrictions ensure clearance above terrain, clearance above VFR Routes and, in some cases, clearance above departing aircraft.

2.2.9.4 A pilot shall descend to an ATC assigned level, but shall without exception, adhere to vertical restrictions on the cleared TRANSITION unless the restrictions are specifically cancelled. Example of phraseology to cancel level restrictions could be:

*"(callsign) descend to (altitude) altitude restrictions on the STAR cancelled".*

*"(callsign) descend to (altitude), altitude restrictions at (point) cancelled".*

*Note: ATC may clear an arrival to track to an intermediate point along the STAR for track shortening or for traffic resolution. Pilots shall ignore the vertical restrictions of the waypoints that the aircraft will track abeam of, but shall without exception, adhere to the vertical restrictions of the waypoint that the aircraft is tracking to and any subsequent vertical restriction.*

## 2.2.10 STAR identification

2.2.10.1 An ARRIVAL is identified by the following items:

- a) The name of the fix at the start of the ARRIVAL route;
- b) A validity number to identify the current procedure;
- c) the word ARRIVAL.

Example: NIPAR ONE ARRIVAL