Unit IV(A) - Departure Procedures

1- Control Transfer of Departing Aircraft

Aircraft are deemed to be the control of the Approach controller once the aircraft is airborne, however the previous module mentioned that an aircraft on a heading assigned to them by Tower cannot be changed until that aircraft has left the Tower Control Area. It was also mentioned that one of the responsibilities of Tower is to furnish the initial radar separation between departing aircraft. In addition, Tower is to ensure separation between any aircraft conducting a missed approach from any preceding departure. If a situation arises where separation may be compromised between aircraft handed off from Tower.

2- SIDs

Most and if not all SIDs in Croatia are SIDs that will take the aircraft right to their first fix. However not all SIDs carry their own initial altitude.

3- Radar Identification

On initial contact with each aircraft that has departed the controller must:

inform the aircraft if, and when they are being provided with radar service and
verify the aircraft's Mode C readout

4- Altitude Readout Validation

The altitude readout displayed for an aircraft on its data tag on radar must be validated before the information can be used as a means to provide vertical separation. The altitude readout may be considered valid if it does not differ from the aircraft's reported altitude by more than 200 feet. If a pilot fails to state their current altitude on initial contact with the controller they should be asked "report your passing altitude".

5- Speed Restrictions
All aircraft must remain at 250kts or below under FL100. However, departing aircraft are an exception to this rule and may violate it only if they are in the act of departing.

6- Separation

The Departure controller must provide separation between, that satisfies one of the following:

Lateral Separation – 5 miles, however wake turbulence separation must also be provided

Vertical Separation – 1,000 feet

7- Overview

The main function of Departure is to attempt to permit aircraft to climb continuously toward their cruise altitude, while guiding them on course and avoiding traffic. In general, the Departure controller will use radar separation to keep departures away from each other and vertical separation to keep departures separated from arrivals. You should use the same strategy as well when aircraft are on arrival - radar separation (distance) to keep arrivals apart from arrivals and vertical separation (altitude) to keep arrivals apart from departures.

8- Issuing Vectors to an Aircraft

The definition of a vector is: a heading issued to an aircraft for the purpose of providing directional guidance by means of radar. Therefore in order to issue a heading, the aircraft must first be radar identified. To vector an aircraft is defined as: to issue headings to an aircraft for the purpose of providing navigational guidance by means of radar. Thus you vector an aircraft by issuing radar vectors (makes sense). There are three methods to vector an aircraft. They are to specify:

The heading to be flown:
"*Croatia 425 fly heading 330*"

The direction of the turn and the heading to be flown after completion of the turn: "*Croatia 425 turn left heading 330*"

The direction of the turn and the number of degrees to turn: "*Croatia 425 turn left 10 degrees*"

9- Altitude Assignment

The most you can assign an aircraft departing is the highest limit of your airspace usually FL130. It is not ok to clear an aircraft higher than this as CTR may have an aircraft at FL140 in the opposite direction.

10- Exchanging Traffic Information

Because vertical separation is the method used to keep departures and arrivals apart, often aircraft will be separated by the minimum required separation of 1,000 feet. When two aircraft will be separated by the minimum separation and the targets are likely to merge a controller is obligated to exchange traffic information to each pilot. Traffic information based on radar identified aircraft should always be in the following format: *Position*, *Distance*, *Direction*, *Type* and *Altitude*. Position of traffic should be given in terms of the 12 hour clock in relation to the aircraft so a pilot will be able to find their traffic easily. Example phraseologies:

Position:	Traffic 3 o'clock, traffic 12 o'clock
Distance:	3 miles, 5 miles
Direction:	Southwest bound, Opposite Direction, Eastbound
Type:	Airbus 320, Boeing 767
Altitude:	Level at 8000, climbing to 7000, in descent to 8000, 1000 feet
	below or above

Example: CTN505 traffic 5 nm northbound company A320 at 5000ft.

It is important to use the standard format each time traffic information is issued as pilots expect the information to be given in this format to aid them in ascertaining their traffic visually.

11- Hand-offs to Centre

One of the requirements of Arrival is to provide separation between successive aircraft to the Centre controller that are on the same route of flight. Arrival must handoff aircraft to Centre with separation either constant or increasing. It is not permissible for Arrival to handoff aircraft in a manner that will result in a loss of separation between aircraft, such as a faster aircraft behind a slower one. Arrival must provide the following to the Centre controller:

a- Vertical separation between jets and props on the same airway
b- A prop or a jet flying the same airway may be offset on a parallel track, but this
may require co-ordination between controllers.

Part b is to be interpreted as jets are to be handed off above props along the same airway.

12- Spacing Techniques

Generally vectoring is used to *create* initial spacing and speed control used to *maintain* it. It would be difficult to try and fully explain the details of spacing techniques here because one must see how a traffic situation unfolds while using them. Nonetheless some basics can be mentioned.

Speed Control

Speed control is a method used to maintain or slowly build extra spacing between aircraft of similar types. It is not as dependable as vectoring because of variables such as wind speed at different altitudes and aircraft performance. The most straightforward way that speed control is used is to restrict the airspeed of the first aircraft, second aircraft, or both so that one does not catch up to the other.

With the above complications possible it should be apparent that speed control is not to be used to create spacing exclusively. Speed control applied once spacing has been achieved with vectoring works well. One must have a good knowledge of the performance for different types of aircraft in order to use speed control on departure.