CHAPTER – 6

NAVIGATION FLIGHTS

General

1. **Purpose.** Training and commitment.

2. **Types.** The flight may of the following types:

   a. Med Level - 2000 ft to Fl 100

   b. Low Level - 2000 ft and below.

Preparation:

3. **Captain**. Before starting a Navigator sortie the captain must give a clear briefing on the task to be carried out.

4. **Co-Pilot.** Co-Pilot is to preparation the following items for the cross country flight.

   a. **Preparation of Maps.** The preparation should be made as per the methods described in AP – 3456G PART A4 SEC2 CHAPT 1 and PART A5 SEC1 CHAPT 3.

   b. **Route Weather forecast.** Weather expected at department enroute and diversion A/F should be studied thoroughly and following info should be derived from forecast:

      (1) Synoptic Sit.

      (2) The best Level to fly to take advance of the prevailing wind condition.

      (3) The mean wind at 2/3 of height to climb and at the mid height in the descent on track.

      (4) Winds and temps at cruising Levels.

      (5) Icing layer including intensity of icing expected inside clouds.

      (6) Amount of cloud cover enroute plus radar observation.

   c. Total fuel required for the mission including diversion.

   d. Log sheet preparation of aircraft.

5. **Co-Pilot.** Co-Pilot is to indep preparation a log sheet and map with drift lines & time/distance scale for the route and compare it with the nav. He is also to calculate V_1, V_R, V_2 and total fuel required for the flight. He is to obtain fuel required for the flight and check that aircraft is ready for flying.

6. **Load Master.** For commitment flight he is to prepare trim sheet, all up weight and plan the loading of the cargoes passenger to be carried. For training flight carrying of Load Master may be optional at the discretion of squadron commander.

7. **Mission Briefing.** Before the commencement of the mission the navigator will brief all crew about aim of mission, route, alternates, total distance–time fuel, individual leg dist-time-FL, Brg & Distance at TP & check points and WEATHER briefing. The CP will brief about aircraft no, fuel on broad endurance, call sign, ETD, Start up, Taxi, T/O landing emergency procedure and crew detail.

8. **Start Up.** After starting of one Engine navigator should switch on radar and note the time.

9. **Taxi.** Depending on weather and switching on time RDR may be put on after entering the taxi track,.

10. **Line Up.** During back track/Line up Navigator should give departure briefing and CP should mention V_1, V_R, V_2 and Engine failure procedure.

11. **Take Off.** During take off run Navigator should call out speed (V_1, V_R, V_2), put Doppler to operations mode and punch the Clock along with captain.

12. **Engine Operations.**

a. Cruise climb technique will be followed in navigation cross- country when the route is more than 200 NM.

b. During cruise constant IAS is to be maintained by reducing the power.

c. For climb 110-120 kts IAS and for descend 150 kts IAS is to be carry out.

13. **Turning Point Drills and AMSP.** Navigator should show the turning point at least 3 min short of reaching overhead and carryout HAT check. Once visual contact is established the aircraft is to be flown straight to the point and Co-Pilot may handover the control to the instructor and prepare estimates, maps etc. for next leg.

14. After setting course FHARTI checks are to be carried out.

Use of Auto Pilot, Radar and Doppler

15. a. Maximum use of auto pilot may be made during Navigator mission with the discretion of instructor.

b. Normally radar is to be kept in weather mode, it may be change to ground mapping as when required. At proximity of cu and cb cloud radar is to be monitored closed keeping range 20/40 NM.

Descent Phase

16. All efforts should be made to ensure that the aircraft regains the track before the descent. If the new descent path is different from the planned one, route safety height is to be revised.

Air way Flying/ Route Flying

17. While flying on air way/ ATS route, if found to be off track by 10 NM or more, the track is to be regained immediately by tracking out with the help of radio aids/by help of iPad/GTN-750 irrespective of distance to go to the destination/ turning point.

18. **Emergencies**:

a. **Icing**. In case of icing with faulty de – icing system descent to lower altitude is to be made.

b. **U/S Navigator Equipment**. In case of unserviceable standby compass, do not taxi out. In all other cases, asses the situation – discontinue the mission if required.

c. **Unsure of Position**. Unsure of position, read from ground to map. Take help of iPad/GTN-750. Plot the position from VOR, NDB & DME. If doubt exists ask ground radar.

Navigation Flight Abroad

19. **Purpose**. The abroad navigation flights are to be undertaken in the following cases:

a. Training of U/T pilots
b. Commitment flights with passengers.
c. Ferry flights.

20. **Crew Qualification**. The crew detailed must hold at least cat 'C' except the U/Ts (incase of training cross country).

21. **Detachment Commander**. For navigation flights abroad involving carriage of other personnel besides the operating crews, a commander may be detailed in addition to the captain. The captain himself or the squadron commander or a staff captain who is senior and experienced may be detailed as detachment commander.