6. NDB tracking, holds and procedures
b. Tracking from an NDB

Aim	• To learn to use the ADF and RMI for both tracking and position fixing	Airmanship	• Current charts, Instrument ground checks, FREDA, S-I-D	Performance	• To learn to track within 5^{O} & +/- 5kts, +/- 100'

Air Exercise (iii) : Intercepting and holding a specified track from a beacon

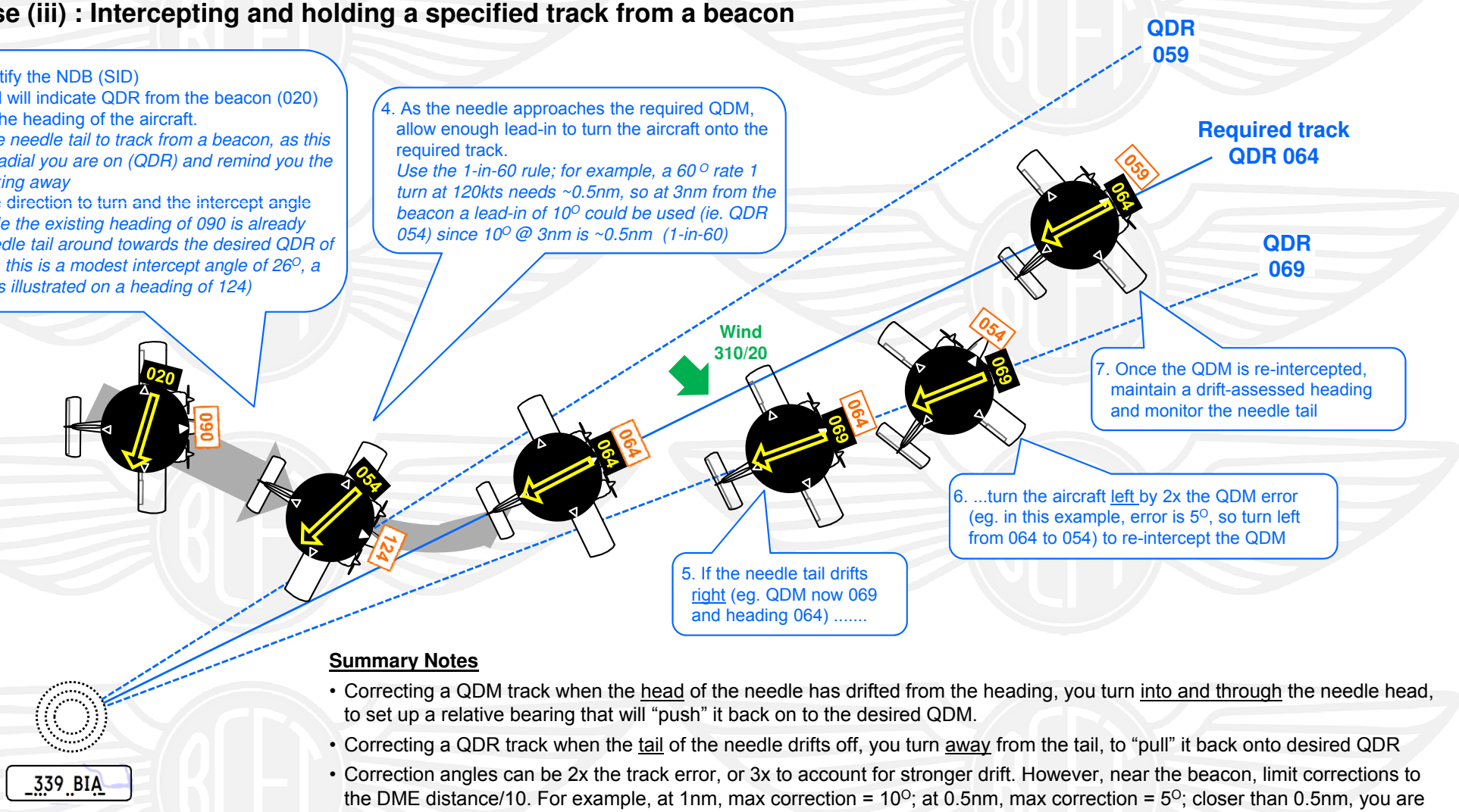
1. Tune and identify the NDB (SID)
2. The needle tail will indicate QDR from the beacon (020) regardless of the heading of the aircraft.
   Always use the needle tail to track from a beacon, as this will show the radial you are on (QDR) and remind you the aircraft is tracking away
3. Determine the direction to turn and the intercept angle
   (in this example the existing heading of 090 is already pulling the needle tail around towards the desired QDR of 064. However, this is a modest intercept angle of 26^{O}, a 60^{O} intercept is illustrated on a heading of 124)

4. As the needle approaches the required QDM, allow enough lead-in to turn the aircraft onto the required track.
   Use the 1-in-60 rule; for example, a 60^{O} rate 1 turn at 120kts needs ~0.5nm, so at 3nm from the beacon a lead-in of 10^{O} could be used (ie. QDR 054) since 10^{O} @ 3nm is ~0.5nm (1-in-60)

5. If the needle tail drifts right (eg. QDM now 069 and heading 064) .....

6. ...turn the aircraft left by 2x the QDM error (eg. in this example, error is 5^{O}, so turn left from 064 to 054) to re-intercept the QDM

7. Once the QDM is re-intercepted, maintain a drift-assessed heading and monitor the needle tail



Summary Notes

- Correcting a QDM track when the head of the needle has drifted from the heading, you turn into and through the needle head, to set up a relative bearing that will "push" it back on to the desired QDM.
- Correcting a QDR track when the tail of the needle drifts off, you turn away from the tail, to "pull" it back onto desired QDR
- Correction angles can be 2x the track error, or 3x to account for stronger drift. However, near the beacon, limit corrections to the DME distance/10. For example, at 1nm, max correction = 10^{O}; at 0.5nm, max correction = 5^{O}; closer than 0.5nm, you are in the cone of confusion, so hold a drift-assessed heading.
- **The closer you are to the beacon, the smaller the correction angle and the larger the lead-in angle**