Communication!

- Ability to sequence and separate aircraft is achieved by *communication* between pilot and ATC (ATC and ATC)
  - Written and Verbal
- Miss-communication could lead to accident
- English is International Standard
  - International Civil Aviation Organization (ICAO)
Radio Communication

• Simplex (two-way communication on one frequency)
• Radio Frequencies assigned International agreements
  – High Frequency
    » Long-range communication (follow curvature of earth)
    » Used by Oceanic ARTCCs
  – Very High Frequency
    » Civil aircraft
  – Ultra High Frequency
    » Military aircraft

Assigning Frequencies

• Federal Communications Commission (FCC) assigns frequencies in U.S. (VHF)
• See table pg 172
Standard Phraseology for Verbal Communications

- ICAO and FAA standards
- Message format
  1. Identification of aircraft/controller being contacted
     - United seven-one-two-four
     - Cessna niner-eight-five-five-six
  2. Identification of controller/aircraft initiating comm.
     - Tower
  3. Content of message
     - See next page
  4. Termination

Clearances

<table>
<thead>
<tr>
<th>Clearance</th>
<th>Instructions</th>
</tr>
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<tbody>
<tr>
<td>United Seven-Twelve Runway two-four cleared</td>
<td>United Flight Number 712, takeoff using runway</td>
</tr>
<tr>
<td>for takeoff</td>
<td>24</td>
</tr>
<tr>
<td>Beech eight-delta-mike, after departure, turn</td>
<td>… takeoff from runway 10, turn left after takeoff,</td>
</tr>
<tr>
<td>left, and proceed direct to the Boiler VOR,</td>
<td>and fly direct to the BOILER VOR (pick a radial</td>
</tr>
<tr>
<td>runway one zero, cleared for takeoff</td>
<td>and fly down the radial)</td>
</tr>
</tbody>
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Homework (1/3)

1. Explain each of the following Departure Clearances
   1. Delta one-niner, after departure turn right heading one-two-zero, runway three cleared for takeoff
   2. United one-two-seven, turn right heading three-five-zero
   3. American five-three-six, fly heading one-one-zero
   4. United six-seven-eleven, turn right heading one-five-zero, join Victor ninety-seven
   5. King Air seven-seven, fly runway heading, intercept radial three-two-zero Boler VOR

Homework (2/3)

1. Explain each of the following Arrival Clearances
   1. Queen Air seven-tango, cleared for approach
   2. King Air pappa-uniform, cleared for ILS runway one-zero approach
   3. America nine-twenty-one, cleared to land runway niner
Homework (3/3)

2 Explain each of the Enroute and Arrival Clearances

1. Sport zero-two-romeo, maintain three thousand
2. Eastern six-fifty-seven, climb and maintain nine thousand
3. Clipper six ninety, descend and maintain flightlevel-three five-zero
4. Beech-eight-deleita-mike, cleared to Chicago Midway airport via direct KNOX, then as filed
5. United seven-seven, unable routing requested, cleared to Chicago O’Hare Airport, via direct Boiler, victor-seven Chicago Heights, direct
6. King Air four-pappa-alpha, report crossing Danville one-two-seven radial, three-six mile fix
7. United seven-seven, hold northwest of the Boiler VOR on the three-two-three radial, expect further clearance at one-two—five zulu