BOEING 737-800
TECHNICAL REVIEW - CHAPTER 15

WARNING SYSTEMS

WARNING PRIORITY : 1) Actual windshear   2) EGPWS   3) Predictive windshear   4) TCAS

EGPWS

The EGPWS contain a worldwide database of terrain and runways of 1060m (3500ft) or longer.

Look ahead terrain alerts based on the terrain database :

"CAUTION TERRAIN" : caution (40-60 seconds from projected impact)
"TERRAIN TERRAIN PULL UP" : hard warning (20-30 seconds from projected impact)
"TOO LOW TERRAIN" : alert issued when descending below a safe radio altitude while far from a runway

Radio altitude alerts based on radio altitude closure rate and baro altitude / glideslope / airspeed data :

"PULL UP" :   hard warning (follows sink rate alert if excessive descent rate continues
"TERRAIN" :   caution (excessive terrain closure rate)
"DONT SINK" :   caution (excessive altitude loss after takeoff or go around)
"GLIDESLOPE" :   caution (deviation below glideslope, volume and repetition increases with deviation)
"SINK RATE" :   caution (excessive descent rate)
"TOO LOW FLAPS" / "TOO LOW GEAR" : caution (unsafe terrain clearance at low airspeed and gear/flaps down)

Any hard warning "PULL UP" alert should prompt the crew to execute the terrain escape maneuver.

WINDSHEAR WARNING

Predictive windshear alerts are based on the weather radar.
The weather radar starts scanning below 2300ft RA, the system starts issuing alerts below 1200ft RA.
On the ground the weather radar start scanning when the thrust levers are advanced for takeoff.

"MONITOR RADAR DISPLAY" :   caution (aircraft is within 3nm of windshear)
"WINDSHEAR AHEAD" :   hard warning (aircraft is within 1.5 nm of windshear, or within 3nm on ground)

Below 1500ft RA ,the EGPWS issues alerts when it detects excessive windshear at the aircraft current position.
Hard warning two tone siren followed by "WINDSHEAR WINDSHEAR"

TRAFFIC COLLISION AVOIDANCE SYSTEM

Traffic advisory : "TRAFFIC TRAFFIC" indicated by an amber circle, 40s from the point of closest approach
Resolution advisory : "CLIMB/DESCENT/[...]" indicated by a red square, 25s from the point of closest approch
Other indications : Proximate traffic, indicated by a white diamond, traffic within 6nm and 1200ft

TCAS Inhibits :
"INCREASE DESCEND" commands are inhibited below 1500ft RA
"DESCEND" commands are inhibited below 1100ft RA
All resolution advisories are inhibited below 1000ft RA, all aural traffic advisories are inhibited below 500ft RA.
All TCAS alerts are inhibited by EGPWS or Windshear alerts.

LANDING GEAR CONFIGURATION WARNING

The following configuration will activate the landing gear horn :

- Landing gear not down and locked, flaps 1°-10°, thrust levers below 20° (34° OEI), altitude below 800ft RA
    -> Horn can be silenced (except below 200ft RA)
- Landing gear not down and locked, flaps 15°-25°, thrust levers below 20° (34° OEI), altitude below 800ft RA
    -> Horn cannot be silenced
- Landing gear not down and locked, flaps 30°-40 °, regardless of altitude and thrust lever position
    -> Horn cannot be silenced

TAKEOFF CONFIGURATION WARNING

The following configuration will activate the intermitent takeoff config warning :
- Flaps not in takeoff range (1° - 25°) or LE / TE flaps in skew, assymetry, uncommanded position
- Speedbrake lever not DOWN or spoiler control valve not closed
- Parking brake is set
- Stabilizer trim not in takeoff range