LNAV/VNAV Systems

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Overview

- LNAV (lateral navigation)
- VNAV (vertical navigation)
- LNAV/VNAV
- Safety
- The future of flight navigation
LNAV (lateral navigation)

- Linear guidance
- Angular guidance
- GPS non-precision approach
- Approach minimums higher when using LNAV alone
- Descend incrementally instead of using glideslope
- Lower DH (decision height) when dealing with obstacles
VNAV (vertical navigation)

- Autopilot function directing vertical movement
- Basic component of VNAV is a vertical course deviation indicator (CDI)
- Provides vertical guidance to specified waypoint
- Allows pilot to plan and check a route, monitor function when autopilot or FMS are flying
LNAV/VNAV

- Developed to describe situations which FMS avionics used for certain approaches
- Similar to non-precision approach
- Uses vertical glideslope
- Lower approach minimums than LNAV alone
- LNAV/VNAV has a vertical alert limit of 50-100ft
Safety

- Non-precision approaches flown easier
- Flight-path prediction information offsets workload increase
- Improved in general aviation aircraft with LNAV/VNAV
- Vertical errors hard to notice using only map view
- Terrain awareness and loss of altitude serious safety problems
The future of flight navigation

- FAA wants less instrument approaches lacking vertical path guidance
- LNAV/VNAV appearing in business, and general aviation aircraft
- Vertical navigation capability are planned for the next generation of GPS Wide Area Augmentation System (WAAS)
Summary

- LNAV (lateral navigation)
- VNAV (vertical navigation)
- What is LNAV/VNAV
- Safety
- The future of flight navigation
References

- http://www.b737.org.uk/images/pfd_nd_nps.jpg