

# Table of Contents

## Chapter 1. Air Navigation

### Section 1. Navigation Aids

<b>Paragraph</b>	<b>Page</b>
1-1-1. General . . . . .	1-1-1
1-1-2. Nondirectional Radio Beacon (NDB) . . . . .	1-1-1
1-1-3. VHF Omni-directional Range (VOR) . . . . .	1-1-1
1-1-4. VOR Receiver Check . . . . .	1-1-3
1-1-5. Tactical Air Navigation (TACAN) . . . . .	1-1-4
1-1-6. VHF Omni-directional Range/Tactical Air Navigation (VORTAC) . . . . .	1-1-4
1-1-7. Distance Measuring Equipment (DME) . . . . .	1-1-5
1-1-8. Navigational Aid (NAVAID) Service Volumes . . . . .	1-1-5
1-1-9. Instrument Landing System (ILS) . . . . .	1-1-8
1-1-10. Simplified Directional Facility (SDF) . . . . .	1-1-13
1-1-11. NAVAID Identifier Removal During Maintenance . . . . .	1-1-15
1-1-12. NAVAIDs with Voice . . . . .	1-1-15
1-1-13. User Reports Requested on NAVAID or Global Navigation Satellite System (GNSS) Performance or Interference . . . . .	1-1-15
1-1-14. LORAN . . . . .	1-1-16
1-1-15. Inertial Reference Unit (IRU), Inertial Navigation System (INS), and Attitude Heading Reference System (AHRS) . . . . .	1-1-16
1-1-16. Doppler Radar . . . . .	1-1-16
1-1-17. Global Positioning System (GPS) . . . . .	1-1-16
1-1-18. Wide Area Augmentation System (WAAS) . . . . .	1-1-29
1-1-19. Ground Based Augmentation System (GBAS) Landing System (GLS) . . . . .	1-1-34
1-1-20. Precision Approach Systems other than ILS and GLS . . . . .	1-1-35

### Section 2. Performance-Based Navigation (PBN) and Area Navigation (RNAV)

1-2-1. General . . . . .	1-2-1
1-2-2. Required Navigation Performance (RNP) . . . . .	1-2-4
1-2-3. Use of Suitable Area Navigation (RNAV) Systems on Conventional Procedures and Routes . . . . .	1-2-7
1-2-4. Pilots and Air Traffic Controllers Recognizing Interference or Spoofing . . . . .	1-2-9

## Chapter 2. Aeronautical Lighting and Other Airport Visual Aids

### Section 1. Airport Lighting Aids

2-1-1. Approach Light Systems (ALS) . . . . .	2-1-1
2-1-2. Visual Glideslope Indicators . . . . .	2-1-1
2-1-3. Runway End Identifier Lights (REIL) . . . . .	2-1-6
2-1-4. Runway Edge Light Systems . . . . .	2-1-6
2-1-5. In-runway Lighting . . . . .	2-1-6
2-1-6. Runway Status Light (RWSL) System . . . . .	2-1-7
2-1-7. Stand-Alone Final Approach Runway Occupancy Signal (FAROS) . . . . .	2-1-10
2-1-8. Control of Lighting Systems . . . . .	2-1-11