

CHAPTER 1**Definitions**

Introduction	1-1
Terms	1-1

CHAPTER 2**The Operator and the Air Operations Certificate**

Introduction	2-1
Certification	2-1
Operator	2-1
General Rules for Certification	2-1
Conditions to be Met for Issue	2-2
Variation and Validity of an AOC	2-2
Quality System	2-2
Responsibilities	2-2
Operator Responsibilities	2-2
Familiarity with Rules and Regulations	2-3
Responsibilities for Flight Operations	2-3
Operator Responsibilities	2-3
Concerning Passengers	2-3
Carriage of Passengers and Cargo	2-4
Special Considerations for Special Passenger Categories	2-4
Persons on the Flight Deck	2-4
Safety Concerns	2-4
Documents	2-5
Flight Documents	2-5
Documentation to be Kept on the Ground	2-6
Preservation of Documents	2-6
Commercial Practices and Associated Rules	2-6
Leasing	2-6
Leasing of Aeroplanes between JAA Operators	2-7
Leasing of Aeroplanes between a JAA Operator and Any Body Other Than a JAA Operator	2-7
Leasing of Aeroplanes at Short Notice	2-8
Aeroplane Maintenance	2-8

CHAPTER 3**Flights Operations**

The Operations Manual (OM)	3-1
Introduction	3-1
Content	3-1
Acceptability	3-1
Usability	3-2
Procedures	3-3
Taxiing of Aircraft	3-3
Minimum Equipment List (MEL)	3-3
Master MEL (MMEL)	3-3
Flight Preparation	3-4
Documentation	3-4
Operational Flight Planning	3-4
Passenger Briefings	3-5
Passenger Seat Belts	3-5
Smoking on Board Aeroplanes	3-5
Refuelling with Passengers on Board	3-5
Oxygen Supply	3-5
Aeroplane Flight Crew	3-6
General	3-6

CHAPTER 3 (continued)

Commander/Pilot in Command	3-6
Duties	3-7
Co-pilot.....	3-7
Cruise Relief Crew	3-7
Flight Engineer (System Panel Operator)	3-7
Flight Navigator	3-7
Pilot Proficiency Checks.....	3-8
Line Checks	3-8
Emergency and Safety Equipment.....	3-8
Training and Checking	3-8
Duty Stations.....	3-8
Flight Operations Officer/Flight Dispatcher (FOPSO/FDO)	3-9
In-Flight Operational Instructions	3-9
Journey Log	3-9

CHAPTER 4**Operational Planning**

Introduction	4-1
Alternate Aerodromes	4-1
Take-Off Alternate.....	4-1
Destination Alternate.....	4-2
All Aeroplanes	4-2
Propeller-Driven Aeroplanes	4-2
Aeroplanes equipped with Turbo-jet Engines.....	4-3
Weather Conditions.....	4-4
VMC	4-4
VMC JAR OPS Criteria	4-5
Selection of the Route	4-5
Criteria	4-5
Adequate Aerodromes	4-5
ETOPS.....	4-6
Performance Class A	4-6
Performance Class B or C	4-6
Ditching Considerations	4-7
Landing Requirements	4-7
Performance Class A	4-7
Performance Class B and C.....	4-7
Minimum Time Routes	4-7
Commander's Considerations	4-8
Filing the ATS Flight Plan (FPL).....	4-8
Flights Subject to Air Traffic Flow Management (ATFM).....	4-9
Flights into Oceanic Airspace.....	4-9

CHAPTER 5

The Aeroplane

Introduction	5-1
Basic Requirements	5-1
Internal Doors and Curtains	5-1
First Aid Kits	5-2
Hand-Held Fire Extinguishers	5-2
Break-in Markings	5-3
Cockpit Voice Recorders (CVRs).....	5-3
Data Recorded.....	5-4
CVRs – Operation, Construction and Installation.....	5-4
Flight Data Recorders (FDRs).....	5-5
Parameters Recorded	5-5
Data Link Communications	5-5
Recording Duration	5-5
Construction and Installation.....	5-6
Operation of FDRS	5-6
Combination Recorders	5-6
Flight Recorder Records	5-6
Equipment for Compliance with Flight Rules.....	5-6
Controlled VFR Flights	5-6
Compliance with IFR	5-7
Standby Horizon	5-7
Night Operations	5-8
Flights Over Water	5-8
Long Range Flights	5-8
Remote Areas	5-8
Weather Radar.....	5-9
Radiation Monitoring Indicator	5-9
Machmeter	5-9
Ground Proximity Warning System (GPWS).....	5-9
Communications Equipment	5-10
Internal Communications	5-10
Audio Selector Panel (ASP).....	5-10
Navigation Equipment	5-11
Instrument Procedures.....	5-11
Installation.....	5-11
Electrical Circuit Fusing	5-11
Windshield Wipers	5-11
Emergency and Survival Equipment	5-11
Performance and Operating Limitations.....	5-12
Factors Affecting Aeroplane Performance	5-12
Mass Limitations	5-12
Take-Off.....	5-12
Enroute — One Power-Unit Inoperative.....	5-13
Enroute — Two Power-Units Inoperative.....	5-13
Landing	5-13
Aeroplane Performance Operating Limitations	5-13

CHAPTER 6**Operating the Aeroplane**

Introduction	6-1
Performance Considerations – Enroute	6-1
Performance Class A – One Engine Inoperative	6-1
Compliance	6-2
Performance Class A – Aeroplanes with Three or More Engines, Two Engines Inoperative	6-3
Performance Class B – Multi-Engine Aeroplanes	6-4
Performance Class B – Single-Engine Aeroplanes	6-4
Performance Class C – All Engines Operating	6-4
Performance Class C – One Engine Inoperative	6-4
Performance Class C – Aeroplanes with Three or More Engines, Two Engines Inoperative	6-5
Selection of Cruising Speed and Altitude	6-5
Endurance	6-5
Maximum Range	6-5
Shortest Time	6-6

CHAPTER 7**Aerodrome Operating Minima
and Low Visibility Operations**

Introduction	7-1
Aircraft Categorisation	7-1
Terminology	7-2
Take-Off Minima	7-3
General	7-3
Visual Reference	7-3
Required RVR/Visibility	7-3
Non-Precision Approach System Minima	7-5
Minimum Descent Height	7-5
Visual Reference	7-5
Required RVR	7-6
Night Operations	7-7
Precision Approach - Category I Operations	7-7
General	7-7
Decision Height	7-7
Visual Reference	7-8
Required RVR	7-8
Single Pilot Operations	7-8
Night Operations	7-8
Precision Approach - Category II Operations	7-9
General	7-9
Decision Height	7-9
Visual Reference	7-9
Required RVR	7-10
Precision Approach - Category III Operations	7-10
General	7-10
Category IIIA Operations	7-10
Category IIIB Operations	7-10
Category IIIC Operations	7-10
Decision Height	7-10
No Decision Height Operations	7-11
Visual Reference	7-11
Required RVR	7-11
Circling	7-12
Visual Approach	7-12
Conversion of Reported Meteorological Visibility to RVR	7-12
Low Visibility Operations	7-12
General Operating Rules	7-12
LV Take-off	7-12

CHAPTER 7 (continued)

Aerodrome Considerations	7-13
Operating Procedures	7-13
Minimum Equipment	7-13
Commencement and Continuation of Approach	7-13
Controlling RVR	7-13
Special VFR	7-14

CHAPTER 8**Special Operational Procedures and Hazards**

Introduction	8-1
Ice and Other Contaminants	8-1
Icing	8-1
Ice Removal	8-2
De-Icing on the Ground	8-2
De-Icing/Anti-Icing Fluids	8-3
Holdover Times	8-3
Fire and Smoke	8-3
Fire	8-3
Carburettor Fire	8-3
Engine Fire	8-4
Hand Fire Extinguishers	8-4
Class of Fires	8-5
Fire Detection	8-5
Brake Overheat	8-6
Crash Axes and Crowbars	8-6
Smoke	8-6
Smoke in the Cargo Compartment	8-6
Security Requirements	8-6
Training Programmes	8-6
Aeroplane Search Procedure Checklist	8-7
Reporting Acts of Unlawful Interference	8-7
Aeroplane Search Procedure Checklist	8-7
Flight Crew Compartment Security	8-7
Weapons	8-7
Unlawful Interference – Annex 2	8-7
Procedures If the Aircraft Is Unable To Notify an ATS Unit	8-8
Annex 14 - Isolated Aircraft Parking Position	8-8
Fuel Jettisoning System	8-8
Fuel Jettisoning Procedures	8-9
Pressurisation Failure	8-10
Windshear and Microburst Definitions and the Meteorological Background	8-12
Low Altitude Windshear	8-12
Meteorological Features	8-12
Thunderstorms	8-12
Frontal Passage	8-13
Inversions	8-13
Turbulent Boundary Layer	8-13
Topographical Windshear	8-13
The Effects of Windshear on an Aircraft in Flight	8-14
Summary	8-15
Techniques to Counter the Effects of Windshear	8-15
Wake Turbulence	8-16
Aircraft Wake Vortex Characteristics	8-16
Wake Vortex Avoidance – Advice to Pilots	8-17
Wake Turbulence Spacing	8-17
Wake Turbulence Spacing Minima – Displaced Landing Threshold	8-18
Wake Turbulence Spacing Minima – Opposite Direction	8-18

CHAPTER 8 (continued)

Wake Turbulence Spacing Minima – Crossing and Parallel Runways	8-19
Wake Turbulence Spacing Minima – Intermediate Approach	8-19
Transport of Dangerous Goods by Air	8-19
Terminology	8-19
Dangerous Goods Categories	8-22
Requirements	8-22
Dangerous Goods on an Aeroplane for Operating Reasons	8-22
Loading Restrictions	8-22
Cargo Compartments	8-23
Packing and Labelling	8-23
Information for Passengers and Other Persons	8-23
Information to Crew Members	8-23
Information to the Commander	8-23
Information in the Event of an Aeroplane Incident or Accident	8-23
Contaminated Runways	8-23
Terminology	8-23
Aquaplaning (Hydroplaning)	8-24
Stationary Tyre	8-25
Recommendations	8-25
Wheel Braking on Wet Runways	8-25
Interpretation	8-26
Snow, Slush, or Ice on a Runway	8-26
Bird Hazard Reduction	8-27
Bird Hazards and Strikes	8-27
IBIS	8-27
Noise Abatement Procedures	8-28
Noise Abatement Departure Procedure 1 (NADP1)	8-29
Noise Abatement Departure Procedure 2 (NADP2)	8-30
Noise Abatement on Approach	8-31
Stabilised Approach	8-31

CHAPTER 9**TRANSOCEANIC AND POLAR FLIGHT**

Operational Approval and Aircraft System Requirements for Flight in the NAT MNPS Airspace	9-1
Minimum Navigation Performance Specification Airspace (MNPSA)	9-1
RVSM	9-3
Abbreviations	9-3
General	9-4
Emergency Locator Transmitters (ELT)	9-4
Navigation Requirements for Unrestricted MNPS Airspace Operations	9-4
Longitudinal Navigation	9-4
Lateral Navigation	9-4
Routes for Aircraft with Only One LRNS	9-5
Routes for Aircraft with Short-Range Navigation Equipment Only	9-5
Special Arrangements for the Penetration of MNPS Airspace by Non-MNPS Approved Aircraft	9-5
Equipment Required For Operations at RVSM Levels	9-5
Special Arrangements for Non-RVSM Approved Aircraft	9-6
Climb/Descent through RVSM Levels	9-6
Operation at RVSM Levels	9-6

CHAPTER 10**The Organised Track System (OTS)**

General	10-1
Mach Number Technique	10-1
Description of Terms	10-1
Objective	10-1
Procedures in NAT Oceanic Airspace	10-1
Procedure after Leaving Oceanic Airspace	10-2
Construction of the Organised Track System (OTS)	10-2
The NAT Track Message	10-2
NAT Track Message Content	10-2
Periods of Validity	10-3
OTS Changeover Period	10-3

CHAPTER 11**The Polar Track Structure (PTS)**

General	11-1
Abbreviated Clearances	11-1
Abbreviated Position Reports	11-1
Polar Track Structure (PTS)	11-2

CHAPTER 12**Other Routes and Route Structures Within or Adjacent to NAT MNPS Airspace**

General	12-1
Other Routes within NAT MNPS Airspace	12-1
Route Structures Adjacent to NAT MNPS Airspace	12-1
Irish/UK Domestic Route Structures	12-1
North American Routes (NARs)	12-1
Routes Between North America and the Caribbean Area	12-2
Shannon Oceanic Transition Area (SOTA)	12-2
Brest Oceanic Transition Area (BOTA)	12-2

CHAPTER 13**Flight Planning for NAT Routes**

Preferred Route Messages (PRMS)	13-1
Flight Plan Requirements	13-1
Routings	13-1
Flight Levels	13-2
Appropriate Direction Levels	13-2
ATC Flight Plans	13-2
Filing	13-2
Approved Flights	13-2
Mach Number and Speed	13-2
Flights Planning on the Organised Track System	13-2
Flights Planning on Random Route Segments at/or South of 70°N	13-3
Flights Planning on a Generally Eastbound or Westbound Direction on Random Route Segments North of 70°N	13-3
Flights Planning on Random Routes in a Generally Northbound or Southbound Direction	13-3
Flights Planning on the Polar Track Structure (PTS)	13-3
Flights Planning to Operate Without HF Communications	13-3

CHAPTER 14**Oceanic ATC Clearances**

General	14-1
Performance Limitation	14-1
Clearance Delivery	14-1
Critical Failure	14-1
ETA at OCA Boundary	14-1
Different Route	14-2
Clearance Elements	14-2
Clearance Not Received	14-2
Contents of Clearances	14-3
Oceanic Clearances for Flights Intending To Operate Within the NAT Region and Subsequently Enter the EUR or NAM Regions	14-3
Oceanic Clearances for Random Flights Intending To Operate Within the NAT Region and Subsequently Enter Regions Other Than NAM or EUR	14-3
Oceanic Flights Originating From the CAR or SAM Regions and Entering NAT MNPS Airspace via the New York OCA	14-4
Errors Associated With Oceanic Clearances	14-4
Waypoint Insertion Errors	14-4
ATC System Loop Error	14-4

CHAPTER 15**Communications and Position Reporting Procedures**

HF Communications	15-1
VHF Communications	15-1
Time and Place of Position Reports	15-1
Contents of Position Reports	15-1
Standard Message Types	15-2
Addressing of Position Reports	15-2
“When Able Higher” (WAH) Reports	15-2
Meteorological Reports	15-3
SELCAL	15-3
General Purpose VHF Communications (GP/VHF)	15-3
Data Link Communications	15-4
HF Communications Failure	15-4
General	15-4
Communications Failure Prior to Entering NAT Region	15-4
Communications Failure after Entering NAT Region	15-5
Procedure	15-5
Operation of Transponders	15-5
Airborne Collision Avoidance Systems (ACAS)	15-5

CHAPTER 16**MNPS Flight Operation and Navigation Procedures**

Flight Operation	16-1
Importance of Accurate Time	16-1
The Use of the Master Document	16-1
GPS Operational Control Restrictions	16-2
Effects of Satellite Availability	16-2
Flight Plan Check	16-2
In Flight Procedures	16-2
ATC Oceanic Clearance	16-2
Navigation Procedures	16-3
Entering the MNPS Airspace and Reaching an Oceanic Waypoint	16-3
Approaching Landfall	16-3
Avoiding Confusion between Magnetic and True Track Reference	16-3
Navigation in the Areas of Compass Unreliability	16-3

CHAPTER 17**Grid Navigation**

Introduction	17-1
Grid and Plotting on a Polar Chart	17-1
Gyros and Inertial Systems	17-4
Precession	17-4
Types of Gyro	17-5
Space (or Free) Gyro	17-5
Tied (or Displacement) Gyro	17-5
Earth Gyro	17-5
Rate Gyro	17-5
Rate Integrating Gyro	17-5
Solid State (Ring Laser) Gyro	17-5
Gyro Wander	17-5
Real Wander	17-5
Apparent Wander	17-6
Horizontal Axis Gyro	17-6
Transport Wander	17-7
Examples of Gyro Wander	17-7

CHAPTER 18**Procedures in the Event of Navigation System Degradation or Failure**

General	18-1
Detection of Failures	18-1
Methods of Determining which System is Faulty	18-1
Guidance on What Constitutes a Failed System	18-2
GPS Satellite Fault Detection Outage	18-2
Partial or Complete Loss of Navigation/FMS Capability by Aircraft Having State Approval for Unrestricted Operations in MNPS Airspace	18-2
Monitoring	18-3
Complete Failure of Navigation Systems Computer	18-3

CHAPTER 19**Regional Supplementary Procedures
Doc 7030/4: North Atlantic (NAT) and European (EUR) Supps**

North Atlantic (NAT) Region.....	19-1
Introduction	19-1
MNPS Specifications.....	19-1
Flight Planning	19-1
Separation of Aircraft	19-1
Lateral Separation.....	19-1
Longitudinal Separation	19-2
Western Atlantic Route System (WATRS)	19-2
Operations Not Meeting the MNPS Airspace Except the WATRS	19-2
European (EUR) Region	19-3
Submission of Flight Plans	19-3
8.33 KHz Spacing	19-3
Separation of Aircraft	19-3
Longitudinal Separation	19-3
Transfer of Radar Control	19-3

CHAPTER 20**In-Flight Contingencies**

Emergency and Precautionary Landings	20-1
General	20-1
Ditching	20-1
Precautionary Landing	20-2
Passenger Briefing.....	20-2
Evacuation	20-2
North Atlantic Procedures	20-3
Introduction	20-3
General Procedures	20-3
Special Procedures	20-3
Wake Turbulence	20-4
TCAS Alerts and Warnings	20-4