



European Aviation Safety Agency – Rulemaking Directorate
Notice of Proposed Amendment 2013-08 (B)

Requirements for ATM/ANS providers and the safety oversight thereof
(Implementing Rule)

RMT.0148 (ATM.001 (A))/ RMT.0149 (ATM.001(B)) AND
RMT.0157 (ATM.004(A))/ RMT.0158 (ATM.004(B)) — 10/05/2013

EXECUTIVE SUMMARY

This Notice of Proposed Amendment (NPA) addresses safety, proportionality and regulatory coordination issues related to provision of ATM/ANS by providers and to the safety oversight by competent authorities thereof.

It consists of 5 parts. This is Part B and deals with the Implementing Rule.

The main objectives are to maintain a high level of safety, provide for a smooth transition, and ensure cost-efficient rules in the field of ATM/ANS. The specific objective is to mitigate the risks linked to the increase of air traffic and also the increase of the complexity in the ATM/ANS system.

This NPA proposes an amendment and replacement of the Commission Implementing Regulations (EU) No 1034/2011 and No 1035/2011.

The proposals aim at:

- implementing Regulation (EC) No 216/2008 (hereinafter referred to as the 'Basic Regulation') and at transposing certain ICAO SARPs provisions contained in Annex 3 in relation to the meteorological services providers requirements;
- aligning Safety Management Systems (SMS) requirements in Commission Implementing Regulation (EU) No 1035/2011 with SMS requirements within the ICAO SMS framework and Management Systems requirements in Commission Implementing Regulation (EU) No 1034/2011 with SSP requirements required by ICAO;
- aligning the scope of the requirements for competent authorities with the requirements for ATM/ANS providers;
- introducing management systems requirements and streamlining the requirements for quality management systems for all ATM/ANS providers;
- implementing the essential requirements on human factors for air traffic controllers; and
- introducing training and competence assessment requirements for ATSEPs.

Applicability		Process map	
Affected regulations and decisions:	Commission Implementing Regulation (EU) No 1034/2011 and Commission Implementing Regulation (EU) No 1035/2011	Concept Paper:	No
		Terms of Reference:	30/08/2010
		Rulemaking group:	Yes
		RIA type:	Full
Affected stakeholders:	Member States, Competent authorities/ National Supervisory Authorities, ATM/ANS providers, Network Manager and the Agency	Technical consultation during NPA drafting:	No
		Duration of NPA consultation:	3 months
Driver/origin:	Legal obligations (Basic Regulation, EASp and ICAO SARPs)	Review group:	Yes
		Focussed consultation:	TBD
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TABLE OF CONTENTS

COVER REGULATION	9
ANNEX I	19
SUBPART A — GENERAL REQUIREMENTS	19
ATM/ANS.AR.A.001 Scope	19
ATM/ANS.AR.A.005 Oversight function	19
ATM/ANS.AR.A.010 Information to the Agency	19
ATM/ANS.AR.A.015 Immediate reaction to safety problem	20
ATM/ANS.AR.A.020 Safety directives	20
ATM/ANS.AR.A.025 Oversight reporting	20
SUBPART B — MANAGEMENT (ATM/ANS.AR.B)	21
ATM/ANS.AR.B.005 Management system	21
ATM/ANS.AR.B.010 Allocation of tasks to qualified entities	21
ATM/ANS.AR.B.015 Changes in the management system	22
ATM/ANS.AR.B.020 Oversight records	22
SUBPART C — OVERSIGHT, CERTIFICATION, AND ENFORCEMENT (ATM/ANS.AR.C) .	23
ATM/ANS.AR.C.005 Monitoring of safety performance	23
ATM/ANS.AR.C.010 Certification, declaration, and verification of ATM/ANS providers' compliance with the requirements	23
ATM/ANS.AR.C.015 Oversight	24
ATM/ANS.AR.C.020 Changes — ATM/ANS providers	26
ATM/ANS.AR.C.025 Findings, corrective actions, and enforcement measures	26
ATM/ANS.AR.C.030 Oversight of changes to the functional system	27
ATM/ANS.AR.C.035 Review procedure of the proposed changes	27
APPENDIX 1 TO ANNEX I	28
ANNEX II	34
SUBPART A — GENERAL COMMON REQUIREMENTS (ATM/ANS.OR.A)	34

ATM/ANS.OR.A.005	Scope.....	34
ATM/ANS.OR.A.010	Application for an ATM/ANS provider certificate	34
ATM/ANS.OR.A.015	Application for a limited certificate.....	34
ATM/ANS.OR.A.020	Continued validity.....	35
ATM/ANS.OR.A.025	Declaration by flight information services providers	35
ATM/ANS.OR.A.030	Demonstration of compliance	36
ATM/ANS.OR.A.035	Changes.....	36
ATM/ANS.OR.A.040	Changes to the functional system.....	36
ATM/ANS.OR.A.045	Facilitation of inspections, audits, and access	37
ATM/ANS.OR.A.050	Findings and corrective actions	37
ATM/ANS.OR.A.055	Immediate reaction to a safety problem.....	37
ATM/ANS.OR.A.060	Safety reporting	37
	SUBPART B — MANAGEMENT (ATM/ANS.OR.B)	38
ATM/ANS.OR.B.005	Technical and operational competence and capability	38
ATM/ANS.OR.B.010	Organisational structure.....	38
ATM/ANS.OR.B.015	Management system.....	38
ATM/ANS.OR.B.020	Contracted activities.....	39
ATM/ANS.OR.B.025	Human resources.....	39
ATM/ANS.OR.B.030	Facilities requirements	39
ATM/ANS.OR.B.035	Record keeping	40
ATM/ANS.OR.B.040	Operations manuals.....	40
	SUBPART C — SPECIFIC ORGANISATIONAL REQUIREMENTS FOR ANS AND ATFM PROVIDERS AND THE NETWORK MANAGER (ATM/ANS.OR.C).....	40
ATM/ANS.OR.C.005	Scope.....	40
ATM/ANS.OR.C.010	Business, annual, and performance plans	40
ATM/ANS.OR.C.015	Security management.....	41

ATM/ANS.OR.C.020 Financial strength	42
ATM/ANS.OR.C.025 Liability and insurance cover	42
ATM/ANS.OR.C.030 Open and transparent provision of services	42
ATM/ANS.OR.C.035 Contingency plans	42
ATM/ANS.OR.C.040 Reporting requirements	42
APPENDIX I TO ANNEX II (Part-ATM/ANS)	44
ANNEX III	46
SUBPART A — ADDITIONAL ORGANISATION REQUIREMENTS FOR THE PROVISION OF AIR TRAFFIC SERVICES (ATS.OR)	46
ATS.OR.105 Scope	46
ATS.OR.110 Ownership	46
ATS.OR.115 Open and transparent provision of service	46
ATS.OR.205 Safety management system	46
ATS.OR.210 Safety requirements for risk assessment and mitigation with regard to changes	48
ATS.OR.215 Software safety assurance system	48
ATS.OR.220 Licensing and medical certification requirements for air traffic controllers	48
ATS.OR.225 Safety requirements for engineering and technical personnel undertaking operational safety-related tasks	49
ATS.OR.305 Scope	49
ATS.OR.310 Safety management system	49
ATS.OR.315 Responsibilities of air traffic control service providers with regard to the problematic use of psychoactive substances by ATCOs	49
ATS.OR.320 Stress	50
ATS.OR.325 Fatigue	50
ATS.OR.330 ATCOs' rostering system(s)	50
SUBPART B — TECHNICAL REQUIREMENTS FOR THE PROVISION OF AIR TRAFFIC SERVICES (ATS.TR)	50

ATS.TR.105	Working methods and operating procedures	50
ANNEX IV		52
SUBPART A — ADDITIONAL ORGANISATION REQUIREMENTS FOR THE PROVISION OF METEOROLOGICAL SERVICES (MET.OR)		52
MET.OR.005	Scope and objective of meteorological services	52
MET.OR.100	Quality of the data & information	52
MET.OR.105	Retention of information	52
MET.OR.110	Information exchange requirements	52
MET.OR.200	Watch and other meteorological information	52
MET.OR.205	SIGMET	53
MET.OR.210	AIRMET	53
MET.OR.215	Forecasts and other meteorological information — General	54
MET.OR.220	Aerodrome forecasts (TAF)	54
MET.OR.225	Aerodrome forecasts — Landing (TREND)	54
MET.OR.226	Forecasts — Take-off	54
MET.OR.230	Area forecasts for low-level flights	55
MET.OR.235	Warnings and alerts	55
MET.OR.240	Information for use by operator or flight crew	55
MET.OR.245	Notification of discrepancies to the World Area Forecast Centres (WAFC)	56
MET.OR.250	Meteorological reports and other information	56
MET.OR.255	Observation of meteorological elements	56
MET.OR.260	Volcanic Ash Advisory Centre (VAAC) responsibilities	57
MET.OR.265	World Area Forecast Centre (WAFC) responsibilities	57
MET.OR.270	Tropical Cyclone Advisory Centre (TCAC) responsibilities	58
SUBPART B — TECHNICAL REQUIREMENTS FOR THE PROVISION OF METEOROLOGICAL SERVICES (MET.TR)		58

MET.TR.105 Working methods and operating procedures for the provision of meteorological services.....	58
ANNEX V	60
SUBPART A — ADDITIONAL ORGANISATION REQUIREMENTS FOR THE PROVISION OF AERONAUTICAL INFORMATION SERVICES (AIS.OR).....	60
AIS.OR.105 Scope	60
AIS.OR.110 Technical and operational competence and capability	60
SUBPART B — TECHNICAL REQUIREMENTS FOR THE PROVISION OF AERONAUTICAL INFORMATION SERVICES (AIS.TR)	60
AIS.TR.105 Working methods and operating procedures for the provision of aeronautical information services	60
ANNEX VI	62
ANNEX VII	63
SUBPART A — ADDITIONAL ORGANISATION REQUIREMENTS FOR THE PROVISION OF COMMUNICATION, NAVIGATION, AND SURVEILLANCE SERVICES (CNS.OR)	63
CNS.OR.105 Scope.....	63
CNS.OR.110 Technical and operational competence and capability	63
CNS.OR.115 Safety of services	63
SUBPART B — TECHNICAL REQUIREMENTS FOR THE PROVISION OF COMMUNICATION, NAVIGATION AND SURVEILLANCE SERVICES (CNS.TR).....	63
CNS.TR.105 Working methods and operating procedures	63
ANNEX VIII	65
SUBPART A — TECHNICAL REQUIREMENTS FOR THE PROVISION OF AIR TRAFFIC FLOW MANAGEMENT (ATFM.TR)	65
ATFM.TR.105 Scope.....	65
ATFM.TR.110 Working methods and operating procedures for the provision of air traffic flow management.....	65
ANNEX IX	66
ANNEX X	67
ANNEX XI	68
SUBPART A — TECHNICAL REQUIREMENTS FOR THE NETWORK MANAGER (NM.TR) .	68
NM.TR.105 Scope	68

NM.TR.110 Working methods and operating procedures for the provision of air traffic management network functions	68
ANNEX XII	69
SUBPART A — TECHNICAL AND ENGINEERING PERSONNEL	69
ATSEP.OR.005 Scope	69
ATSEP.OR.010 Identification of safety-related systems	69
ATSEP.OR.015 Training and competence assessment programme	69
ATSEP.OR.020 Language proficiency	69
ATSEP.OR.100 Training requirements — General.....	69
ATSEP.OR.105 Basic training.....	70
ATSEP.OR.110 Qualification training	70
ATSEP.OR.115 System and equipment rating training	70
ATSEP.OR.120 Continuation training	71
ATSEP.OR.125 Competence assessment — General	71
ATSEP.OR.130 Assessment of initial and ongoing competence.....	71
ATSEP.OR.135 ATSEP training instructors	71
ATSEP.OR.140 Technical skills assessors	71
APPENDIX 1 TO ANNEX XII	72
SUBPART A — TECHNICAL AND ENGINEERING ELECTRONIC PERSONNEL	72
Subject 1: INDUCTION	72
Subject 2: AIR TRAFFIC FAMILIARISATION	72
APPENDIX 2 TO ANNEX XII	73
SUBPART A — TECHNICAL AND ENGINEERING ELECTRONIC PERSONNEL	73
Subject 5: COMMUNICATION.....	73
Subject 6: NAVIGATION	73
Subject 7: SURVEILLANCE	74
Subject 8: DATA PROCESSING.....	74
Subject 9: SYSTEM MONITORING & CONTROL.....	74
APPENDIX 3 TO ANNEX XII	76
SUBPART A — TECHNICAL AND ENGINEERING ELECTRONIC PERSONNEL	76

APPENDIX 4 TO ANNEX XII	78
SUBPART A — TECHNICAL AND ENGINEERING ELECTRONIC PERSONNEL	78

COVER REGULATION

Article 1

Subject matter and scope

1. This Regulation lays down:
 - (a) common requirements for the provision of ATM/ANS; and
 - (b) requirements to be applied by the competent authorities and the qualified entities acting on their behalf in order to exercise the oversight function in the field ATM/ANS.
2. Unless Annexes II to XII make provision for the contrary, the common requirements referred to 1(a) do not apply to:
 - (a) activities other than the provision of ATM/ANS by a provider; and
 - (b) resources allocated to activities outside the provision of ATM/ANS.

Article 2

Definitions

For the purposes of this Regulation, the definitions in Article 2 of Regulation (EC) No 549/2004 and Article 3 of Regulation (EC) No 216/2008 apply. However, the definition of 'certificate' in Article 2(15) of Regulation (EC) No 549/2004 does not apply.

The following definitions also apply:

1. 'Aerial work' means an aircraft operation in which an aircraft is used for specialised services such as agriculture, construction, photography, surveying, observation and patrol, search and rescue or aerial advertisement;
2. 'Acceptable Means of Compliance (AMC)' are non-binding standards adopted by the Agency to illustrate means to establish compliance with Regulation (EC) No 216/2008 and its Implementing Rules;
3. 'Aeronautical fixed service (AFS)' means a telecommunication service between specified fixed points provided primarily for the safety of air navigation and for the regular, efficient and economical operation of air services;
4. 'Aircraft' means any machine that can derive support in the atmosphere from the reactions of the air other than the reactions of the air against the earth's surface;
5. 'AIRMET information' means information issued by a meteorological watch office concerning the occurrence or expected occurrence of specified en route weather phenomena which may affect the safety of low-level aircraft operations, and which was not already included in the forecast issued for low-level flights in the flight information region concerned or sub-area thereof;
6. 'Air traffic services unit' means a generic term meaning variously, air traffic control unit, flight information centre, or air traffic services reporting office;
7. 'ASHTAM' means a special series NOTAM notifying by means of a specific format change in activity of a volcano, a volcanic eruption and/or volcanic ash cloud that is of significance to aircraft operations;
8. 'Alternative means of compliance' are those that propose an alternative to an existing AMC or those that propose new means to establish compliance with

Regulation (EC) No 216/2008 and its Implementing Rules for which no associated AMC have been adopted by the Agency;

9. 'Altitude' means the vertical distance of a level, a point, or an object considered as a point, measured from mean sea level (MSL);
10. 'Area control centre' means a unit established to provide air traffic control service to controlled flights in control areas under its jurisdiction;
11. 'ATM/ANS provider' means any legal or natural person providing aeronautical information services, services consisting in the origination and processing of data and formatting and delivering data to general air traffic for the purpose of safety-critical air navigation, air traffic services, communication, navigation and surveillance services, meteorological services, air traffic flow management, airspace management, airspace design services and ATM network functions, either individually or bundled for general air traffic;
12. 'ATM network functions' means the functions performed by the Network Manager in accordance with Commission Regulation (EU) No 677/2011;
13. 'Audit' means a systematic, independent and documented process for obtaining evidence and evaluating it objectively to determine the extent to which requirements are complied with;
14. 'Commercial air transport' means any aircraft operation involving the transport of passengers, cargo or mail for remuneration or other valuable consideration;
15. 'Control area' means controlled airspace extending upwards from a specified limit above the earth;
16. 'Critical incident stress' means the manifestation of unusual and/or extreme emotional, physical, and behavioural reactions of an individual following an event or incident;
17. 'Enforcement measures' means measures provided for in Article 7 of Regulation (EC) No 550/2004 and Articles 10, 22a(d), 25, and 68 of Regulation (EC) No 216/2008, which shall include revocation, suspension, or limitation of certificates and may include financial penalties and other measures;
18. 'Fatigue' means a physiological state of reduced mental or physical performance capability resulting from sleep loss or extended wakefulness, circadian phase or workload (mental and/or physical activity) that can impair an ATCO's alertness and ability to safely perform his/her tasks;
19. 'Flight documentation' means documents, including charts or forms, containing meteorological information for a flight;
20. 'Flight information centre' means a unit established to provide flight information service and alerting service;
21. 'Flight test' means a generic term meaning variously or comprehensively, flights for the development phase of a new design (aircraft, propulsion systems, parts and appliances), flights to demonstrate compliance to certification basis or to type design for aircraft coming from the production line, flights intended to experiment new design concepts, requiring unconventional manoeuvres or profiles for which it could be possible to exit the already approved envelope of the aircraft, or flight test training flights;

22. 'Forecast' means a statement of expected meteorological conditions for a specified time or period, and for a specified area or portion of airspace;
23. 'Functional system' means a combination of equipment, software, procedures and human resources organised to perform a function within the context of ATM/ANS;
24. 'General aviation' means any civil aircraft operation other than aerial work or commercial air transport;
25. 'Gridded global forecasts' means forecasts of expected values of meteorological elements on a global grid with a defined vertical and horizontal resolution;
26. 'Hazard' means any means any condition, event, or circumstance which could induce a harmful effect;
27. 'Just culture' means a culture in which front line operators or others are not punished for actions, omissions, or decisions taken by them that are commensurate with their experience and training, but where gross negligence, wilful violations and destructive acts are not tolerated;
28. 'Meteorological information' means a meteorological report, analysis, forecast, and any other statement relating to existing or expected meteorological conditions;
29. 'Meteorological observation' means the measurement and evaluation of one or more meteorological elements;
30. 'Meteorological report' means a statement of observed meteorological conditions related to a specified time and location;
31. 'Meteorological satellite' means an artificial Earth satellite making meteorological observations and transmitting these observations to Earth;
32. 'Meteorological station' means a station, established by a Competent authority, designated to make observations and meteorological reports for use in air navigation;
33. 'Meteorological watch office' means an office monitoring meteorological conditions affecting flight operations and providing information concerning the occurrence or expected occurrence of specified en route weather phenomena, natural and other hazards which may affect the safety of aircraft operations within a specified area of responsibility;
34. 'Network Manager' means the body established under Article 6 of Regulation (EC) No 551/2004 to perform the duties provided in that Article and Commission Regulation (EU) No 677/2011.
35. 'NOTAM' means a notice distributed by means of telecommunication containing information concerning the establishment, condition, or change in any aeronautical facility, service, procedure, or hazard, the timely knowledge of which is essential to personnel concerned with flight operations;
36. 'OPMET' means meteorological information for use in preparatory or in-flight planning of flight operations;
37. 'Pan-European ATM/ANS' means an activity which is designed and established for users within most or all Member States and which may also extend beyond the airspace of the territory to which the Treaty applies;

38. 'Pre-eruption volcanic activity' means an unusual and/or increasing volcanic activity which could presage a volcanic eruption;
39. 'Problematic use of psychoactive substances' means the use of one or more psychoactive substances by an ATCO, in a way that:
 - (a) constitutes a direct hazard to the user or endangers the lives, health, or welfare of others; and/or
 - (b) causes or worsens an occupational, social, mental or physical problem or disorder;
40. 'Psychoactive substances' means alcohol, opioids, cannabinoids, sedatives and hypnotics, cocaine, other psychostimulants, hallucinogens, and volatile solvents, whereas caffeine and tobacco are excluded;
41. 'Rescue coordination centre' means a unit responsible for promoting efficient organisation of search and rescue services, and for coordinating the conduct of search and rescue operations within a search and rescue region;
42. 'Risk' means the combination of the overall probability, or frequency of occurrence of a harmful effect induced by a hazard and the severity of that effect;
43. 'Runway' means a defined rectangular area on a land aerodrome prepared for the landing and take-off of aircraft;
44. 'Runway Visual Range (RVR)' means the range over which the pilot of an aircraft on the centre line of a runway can see the runway surface markings or the lights delineating the runway or identifying its centre line;
45. 'Safety directive' means a document issued or adopted by a competent authority which mandates actions to be performed on a functional system or sets restrictions to its operational use to restore safety when evidence shows that aviation safety may otherwise be compromised;
46. 'Safety Management System (SMS)' means a systematic approach to managing safety, including the necessary organisational structures, accountabilities, policies, and procedures;
47. 'Search and rescue services unit' means a generic term covering, as the case may be, rescue coordination centre, rescue sub-centre or alerting post;
48. 'SIGMET information' means information issued by a meteorological watch office concerning the occurrence or expected occurrence of specified en route weather phenomena which may affect the safety of aircraft operations;
49. 'Stress' means the outcomes experienced by an individual when faced with a potentially stressful event. The experience of the event as negatively stressful (distress), neutral or positive (eustress) is based on the individual's perception of their ability to manage the event;
50. 'System and equipment training' means training designed to impart specific system/equipment knowledge and skills leading towards operational competence;
51. 'Tropical cyclone' means a generic term for a non-frontal synoptic-scale cyclone originating over tropical or subtropical waters with organised convection and definite cyclonic surface wind circulation;

52. 'Visibility' means visibility for aeronautical purposes, which is the greater of:
- (a) the greatest distance at which a black object of suitable dimensions, situated near the ground, can be seen and recognised when observed against a bright background;
 - (b) the greatest distance at which lights in the vicinity of 1 000 candelas can be seen and identified against an unlit background;
53. 'Volcanic Ash Advisory Centre (VAAC)' means meteorological centre designated by regional air navigation agreement to provide advisory information to meteorological watch offices, area control centres, flight information centres, world area forecast centres and international OPMET databanks regarding the lateral and vertical extent and forecast movement of volcanic ash in the atmosphere following volcanic eruptions;
54. 'World Area Forecast Centre (WAFC)' means a meteorological centre designated to preparing and issuing significant weather forecasts and upper-air forecasts in digital form on a global basis direct to Member States by appropriate means as part of the aeronautical fixed service.

Article 3

Competent authority

1. For the purpose of this Regulation, the competent authority for certification and oversight shall be:
 - (a) the national supervisory authority nominated or established by the Member State, in accordance with Article 4 of Regulation (EC) No 549/2004, where the ATM/ANS provider has its principal place of operation and, if any, its registered office;
 - (b) the competent authority(ies) nominated or established under agreements concluded among Member States in accordance with Article 2 paragraphs (3) to (6) of Regulation (EC) No 550/2004 for ATM/ANS providers where the responsibilities have been allocated differently from paragraph (a);
 - (c) the Agency for ATM/ANS providers in the airspace of the territory to which the Treaty applies and having their principal place of operation and, if any, their registered office located outside the territory subject to the provisions of the Treaty;
 - (d) the Agency for organisations providing pan-European ATM/ANS as well as for the Network Manager.
2. For the purpose of this Regulation, the competent authority responsible for the operation in a given airspace, shall be the authority established or nominated by the Member State having jurisdiction over that airspace.
3. If a Member State nominates or establishes more than one competent authority in accordance with 1(a), 1(b) and 2, the areas of competence of each competent authority shall be clearly defined in terms of responsibilities and geographic and airspace limitation, where appropriate. Coordination based on written arrangements shall be established between those entities to ensure effective oversight of all organisations subject to this Regulation within their respective remits.
4. When concluding an agreement on the supervision of ATM/ANS providers active in functional airspace blocks (FAB) or in cross border activities in which the Agency is the competent authority for at least one of the organisations, the Member States

concerned shall coordinate with the Agency so as to ensure that points (1), (2) and (3) of ATM/ANS.AR.A.005 (b) are met.

5. The competent authority(ies) shall be independent of any ATM/ANS providers. This independence shall be achieved through adequate separation, at the functional level at least, between the competent authorities and such ATM/ANS providers. Member States shall ensure that competent authorities exercise their powers impartially and transparently.
6. Member States shall notify the Agency of the names and addresses of the competent authority(ies), as well as any changes thereof.

Article 4

ATM/ANS providers

1. ATM/ANS providers shall be certified, except when so decided by Member States in accordance with Article 6, and shall comply with the requirements in Annex II (Part-ATM/ANS), Subparts A and B.
2. Air Navigation Service (ANS) Providers, Air Traffic Flow Management (ATFM) Providers and the Network Manager shall comply, in addition to 1, with the requirements in Annex II (Part-ATM/ANS), Subpart C.
3. Air traffic service (ATS) providers shall comply, in addition to 1 and 2, with the requirements in Annex III (Part-ATS).
4. Meteorological service (MET) providers shall comply, in addition to 1 and 2, with the requirements in Annex IV (Part-MET).
5. Aeronautical information service (AIS) providers shall comply, in addition to 1 and 2, with the requirements in Annex V (Part-AIS).
6. Data (DAT) providers shall comply, in addition to 1, with the requirements in Annex VI (Part-DAT).
7. Communication navigation and surveillance service (CNS) providers shall comply, in addition to 1 and 2, with the requirements in Annex VII (Part-CNS).
8. Air traffic flow management (ATFM) providers shall comply, in addition to 1 and 2, with the requirements in Annex VIII (Part-ATFM).
9. Airspace management (ASM) providers shall comply, in addition to 1, with the requirements in Annex IX (Part-ASM).
10. Airspace design service (ASD) providers shall comply, in addition to 1, with the requirements in Annex X (Part-ASD).
11. Network Manager shall comply, in addition to 1 and 2, with the requirements in Annex XI (Part-NM).
12. ATM/ANS providers shall comply, in addition to 1 to 10 as applicable, with the relevant requirements in Annex XII.

Article 5

Oversight capabilities

1. Member States and the Commission, where the Agency is the competent authority, shall ensure that competent authority(ies) has (have) the necessary capability to ensure the oversight of all ATM/ANS providers and Network Manager operating under their supervision and subject to their oversight programme, including sufficient resources to fulfil the requirements of this Regulation. When ensuring the necessary capability, Member States and the Commission shall use the

assessments produced by the competent authorities in accordance with paragraph 3.

2. Competent authorities shall comply with the requirements laid down in Annex I.
3. Competent authorities shall produce and update every two years, an assessment of the human resources needed to perform their oversight functions, based on the analysis of the processes required by this Regulation and their application.
4. Competent authorities shall ensure that all persons involved in oversight activities are competent to perform the required function.
5. Personnel authorised by the competent authority to carry out certification and/or oversight tasks shall be empowered:
 - (a) to examine the relevant records, data, procedures and any other material relevant to the execution of the certification and/or oversight tasks;
 - (b) to take copies of, or extracts from such records, data, procedures, and other material;
 - (c) to ask for an oral explanation on site;
 - (d) to enter relevant premises, operating sites, or means of transport;
 - (e) to perform audits, investigations, assessments, inspections;
 - (f) to request test and exercises; and
 - (g) to take or initiate enforcement measures.
6. The tasks under paragraph 5 shall be carried out in compliance with the legal provisions applicable to the competent authority undertaking them.

Article 6

Declaration by flight information service providers

1. When Member States decide that flight information service providers are allowed to declare their capability and means of discharging the responsibilities associated with the services provided, in accordance with Article 8b.3 of Regulation (EC) No 216/2008, the conditions under which these providers can be subject to declaration shall be at least the following:
 - (a) flight information services are provided by operating regularly at not more than one working position at any aerodrome;
 - (b) the flight information service provider fulfils all the criteria of ATM/ANS.OR.A.015(a) and (b)(1); and
 - (c) flight information services are provided on a temporary basis and for no longer than 30 consecutive days.

Article 7

Means of compliance

1. The Agency shall develop Acceptable Means of Compliance (AMC) that may be used to establish compliance with Regulation (EC) No 216/2008 and its Implementing Rules. When the AMC are complied with, the related requirements of the Implementing Rules are met.
2. Alternative means of compliance may be used to establish compliance with the Implementing Rules.

3. The competent authority shall establish a system to consistently evaluate that all alternative means of compliance used by itself or by ATM/ANS providers under its oversight allow the establishment of compliance with Regulation (EC) No 216/2008 and its Implementing Rules.
4. When a certified ATM/ANS provider wishes to use an alternative means of compliance, it shall, prior to implementing it, provide the competent authority with a full description of the alternative means of compliance. The description shall include any revisions to manuals or procedures that may be relevant, as well as an assessment demonstrating that Regulation (EC) No 216/2008 and its Implementing Rules are met.
5. The competent authority shall evaluate all alternative means of compliance proposed by an ATM/ANS provider by analysing the documentation provided and, if considered necessary, conducting an inspection of the ATM/ANS provider.

When the competent authority finds that the alternative means of compliance are in accordance with the Implementing Rules, it shall without undue delay:

- (a) notify the applicant that the alternative means of compliance may be implemented and, if applicable, amend the approval or certificate of the applicant accordingly;
- (b) notify the Agency of their content, including copies of all relevant documentation; and
- (c) inform other Member States about alternative means of compliance that were accepted.

The certified ATM/ANS provider may implement these alternative means of compliance subject to prior approval by the competent authority and upon receipt of the notification of such approval.

6. When the competent authority itself uses alternative means of compliance to achieve compliance with Regulation (EC) No 216/2008 and its Implementing Rules it shall:
 - (a) make them available to all ATM/ANS providers under its oversight; and
 - (b) without undue delay notify the Agency.

The competent authority shall provide the Agency with a full description of the alternative means of compliance, including any revisions to procedures that may be relevant, as well as an assessment demonstrating that the Implementing Rules are met.

Article 8

Flexibility provision

1. When applying Article 14(1) of Regulation (EC) No 216/2008, the notification sent by the Member State shall include at least:
 - (a) a description of the safety problem;
 - (b) the affected requirements of this Regulation;
 - (c) the identification of the person or ATM/ANS provider concerned;
 - (d) the identification of the affected activity;
 - (e) the action required and its justification;
 - (f) the time limit for compliance with the action required; and

- (g) its applicability date.
- 2. When applying Article 14(4) of Regulation (EC) No 216/2008, the notification sent by the Member State shall include at least:
 - (a) the requirement from which the exemption is granted;
 - (b) the reason for granting the exemption;
 - (c) the identification of the person or ATM/ANS provider to which the exemption applies;
 - (d) the type of the activity concerned;
 - (e) the applicability date and the duration of the exemption;
 - (f) a reference to previous similar exemptions, if any; and
 - (g) evidence demonstrating that the level of safety is not adversely affected, including, if applicable, a description of the related mitigation measures.
- 3. When applying Article 14(6) of Regulation (EC) No 216/2008, the notification sent by the Member State shall include at least:
 - (a) the requirements from which the Member State intends to derogate;
 - (b) the reason for granting the derogation;
 - (c) the identification of the person or ATM/ANS provider to which the derogation applies;
 - (d) the conditions that the Member State has put in place to ensure that an equivalent level of protection is achieved; and
 - (e) evidence demonstrating that an equivalent level of protection is ensured.

Article 9

Transitional provisions

[to be determined]

Article 10

Repeal

- 1. Commission Implementing Regulation (EU) No 1034/2011 and Commission Implementing Regulation (EU) No 1035/2011 are repealed.
- 2. References made to the repealed regulations shall be construed as being made to this regulation.
- 3. Annex VI to Commission Regulation (EU) No 677/2011 is repealed.
- 4. References made to the Annex in 3 shall be construed as being made to this regulation.

Article 11

Entry into force

This Regulation shall enter into force on the twentieth day following that of its publication in the Official Journal of the European Union.

This Regulation shall be binding in its entirety and directly applicable in all Member States.

Done at Brussels, ...

For the Commission

[\[...\]](#)

The President

ANNEX I

REQUIREMENTS FOR COMPETENT AUTHORITIES IN ATM/ANS (Part-ATM/ANS.AR)

SUBPART A — GENERAL REQUIREMENTS

ATM/ANS.AR.A.001 Scope

This Part establishes the requirements for the administration and management system to be complied with by the competent authorities responsible for the application and the enforcement of Annexes II to XI to this Regulation, except for those established or nominated under Article 3 (2).

ATM/ANS.AR.A.005 Oversight function

- (a) The competent authority shall exercise oversight as part of its supervision of requirements applicable to ATM/ANS and other network functions, to monitor the safe provision of these activities and to verify that the applicable requirements and their implementing arrangements are met.
- (b) In addition to Article 3(4) of this Regulation, competent authorities shall conclude an agreement on the supervision of ATM/ANS providers active in functional airspace blocks (FABs) which extend across the airspace falling under the responsibility of more than one Member State or in cases of cross-border provision. The competent authorities concerned shall identify and allocate the responsibilities for safety oversight in a manner which ensures that:
 - (1) specific points of responsibility exist to implement each provision of this Regulation;
 - (2) the competent authorities concerned have visibility of the safety oversight mechanisms and their results; and
 - (3) relevant information exchange is ensured between competent authorities.

The competent authorities concerned shall regularly review the agreement and its practical implementation in particular in the light of achieved safety performance.

ATM/ANS.AR.A.010 Information to the Agency

- (a) The competent authority shall without undue delay notify the Agency in case of any significant problems with the implementation of Regulation (EC) No 216/2008, with this Regulation, or any relevant safety aspects of Regulations (EC) No 549/2004, (EC) No 550/2004, (EC) No 551/2004, and (EC) No 552/2004 (the Single European Sky legislation).
- (b) The competent authority shall provide the Agency with safety-significant information stemming from the occurrence reports it has received.

ATM/ANS.AR.A.015 Immediate reaction to safety problem

- (a) Without prejudice to Directive 2003/42/EC¹, the competent authority shall implement a system to appropriately collect, analyse, and disseminate safety information.
- (b) The Agency shall implement a system to appropriately analyse any safety information received from the competent authorities and without undue delay provide to Member States and the Commission, as appropriate, with any information, including recommendations or corrective actions to be taken, necessary for them to react in a timely manner to a safety problem involving ATM/ANS providers subject to Regulation (EC) No 216/2008 and its Implementing Rules.
- (c) Upon receiving the information referred to in (a) and (b), the competent authority shall take adequate measures to address the safety problem, including the issuing of safety directives in accordance with ATM/ANS.AR.A.020.
- (d) Measures taken under (c) shall immediately be notified to the ATM/ANS providers which need to comply with them under Regulation (EC) No 216/2008 and its Implementing Rules. The competent authority shall also notify those measures to the Agency and, when combined action is required, the other competent authorities concerned.

ATM/ANS.AR.A.020 Safety directives

- (a) The competent authority shall issue a safety directive when they have determined the existence of an unsafe condition in a functional system requiring immediate action.
- (b) Safety directive shall be forwarded to the ATM/ANS providers concerned and contain, as a minimum, the following information:
 - (1) the identification of the unsafe condition;
 - (2) the identification of the affected functional system;
 - (3) the actions required and their rationale;
 - (4) the time limit for completing the actions required-; and
 - (5) its date of entry into force.
- (c) The competent authorities shall forward a copy of the safety directive to the Agency and any other competent authorities concerned.
- (d) The competent authorities shall verify the compliance of ATM/ANS providers with the applicable safety directives.

ATM/ANS.AR.A.025 Oversight reporting

The competent authority shall contribute to the annual reports by the Member States, as required by Article 12 of Regulation (EC) No 549/2004, on oversight actions pursuant to this Regulation.

¹ Directive 2003/42/EC of the European Parliament and of the Council of 13 June 2003 on occurrence reporting in civil aviation (OJ L 167, 4.7.2003, p. 23)

SUBPART B — MANAGEMENT (ATM/ANS.AR.B)**ATM/ANS.AR.B.005 Management system**

- (a) The competent authority shall establish and maintain a management system, including as a minimum:
 - (1) documented policies and procedures to describe its organisation, means and methods to achieve compliance with Regulation (EC) No 216/2008 and its Implementing Rules. The procedures shall be kept up to date and serve as the basic working documents within that competent authority for all related tasks;
 - (2) a sufficient number of personnel, including ATM/ANS inspectors, to perform its tasks and discharge its responsibilities. Such personnel shall be qualified to perform their allocated tasks and have the necessary knowledge, experience, initial, on-the-job and recurrent training to ensure continuing competence. A system shall be in place to plan the availability of personnel, in order to ensure the proper completion of all related tasks;
 - (3) adequate facilities and office accommodation to perform the allocated tasks;
 - (4) a function to monitor compliance of the management system with the relevant requirements and adequacy of the procedures, including the establishment of an internal audit process and a safety risk management process. Compliance monitoring shall include a feedback system of audit findings to the senior management of the competent authority to ensure implementation of corrective actions as necessary; and
 - (5) a person or group of persons, ultimately responsible to the senior management of the competent authority for the compliance monitoring function.
- (b) The competent authority shall, for each field of activity included in the management system, appoint one or more persons with the overall responsibility for the management of the relevant task(s).
- (c) The competent authority shall establish procedures for participation in a mutual exchange of all necessary information and assistance with other competent authorities concerned including all findings raised and follow-up actions taken as a result of oversight of ATM/ANS provider exercising activities in the territory of a Member State, but certified by the competent authority of another Member State or the Agency.
- (d) A copy of the procedures related to the management system and their amendments shall be made available to the Agency for the purpose of standardisation.

ATM/ANS.AR.B.010 Allocation of tasks to qualified entities

- (a) Tasks related to the initial certification or continuous oversight of ATM/ANS providers subject to Regulation (EC) No 216/2008 and its Implementing Rules shall only be allocated by the competent authority to qualified entities. When allocating tasks, the competent authority shall ensure that:
 - (1) it has a system in place to initially and continuously assess that the qualified entity complies with Annex V to Regulation (EC) No 216/2008. This system and the results of the assessments shall be documented;
 - (2) it has established a documented agreement with the qualified entity, approved by both parties at the appropriate management level, which clearly defines:

- (i) the tasks to be performed;
 - (ii) the declarations, reports and records to be provided;
 - (iii) the technical conditions to be met when performing such tasks;
 - (iv) the related liability coverage; and
 - (v) the protection given to information acquired when carrying out such tasks.
- (3) the qualified entity has prior experience in assessing safety in aviation entities; and
- (4) the qualified entity has no involvement in internal activities within the safety or quality management systems of the organisation concerned.
- (b) The competent authority shall ensure that the internal audit process and the safety risk management process required by ATM/ANS.AR.B.005(a)(4) cover all certification or continuous oversight tasks performed on its behalf.
- (c) The competent authority shall maintain a record of the qualified entities commissioned to conduct audits or reviews on their behalf in accordance with ATM/ANS.AR.B.020. The records shall document compliance with the requirements contained in paragraph (a).

ATM/ANS.AR.B.015 Changes in the management system

- (a) The competent authority shall have a system in place to identify changes that affect its capability to perform its tasks and discharge its responsibilities as defined in Regulation (EC) No 216/2008 and its Implementing Rules. This system shall enable it to take action, as appropriate, to ensure that the management system remains adequate and effective.
- (b) The competent authority shall update its management system to reflect any change to Regulation (EC) No 216/2008 and its Implementing Rules in a timely manner, so as to ensure effective implementation.
- (c) The competent authority shall notify the Agency of changes affecting its capability to perform its tasks and discharge its responsibilities as defined in Regulation (EC) No 216/2008 and its Implementing Rules.

ATM/ANS.AR.B.020 Oversight records

- (a) The competent authority shall establish a system of record keeping providing for adequate storage, accessibility, and reliable traceability of:
 - (1) the management system's documented policies and procedures;
 - (2) training, qualification, and authorisation of personnel as required by ATM/ANS.AR.B.005 (a)(2) and Article 5 (5);
 - (3) the allocation of tasks, covering the elements required by ATM/ANS.AR.B.010, as well as the details of tasks allocated;
 - (4) certification and/or declaration processes and ongoing compliance of ATM/ANS providers, including the reports of all audits and other safety-related records;
 - (5) designations as appropriate;
 - (6) oversight of organisations exercising activities within the territory of the Member State, but certified by the competent authority of another Member State or the Agency, as agreed between these authorities;

- (7) the evaluation and notification to the Agency of alternative means of compliance proposed by organisations and the assessment of alternative means of compliance used by the competent authority itself;
 - (8) findings, corrective actions, and date of action closure;
 - (9) enforcement measures taken;
 - (10) safety information, safety directives and follow-up measures ; and
 - (11) the use of flexibility provisions in accordance with Article 14 of Regulation (EC) No 216/2008.
- (b) The competent authority shall maintain a list of all ATM/ANS provider certificates issued.
 - (c) All records shall be kept for a minimum period of 5 years after the expiry of the certificate or until there is no material need to maintain the records, whichever is the longest unless a greater period is prescribed by data protection law.

SUBPART C — OVERSIGHT, CERTIFICATION, AND ENFORCEMENT (ATM/ANS.AR.C)

ATM/ANS.AR.C.005 Monitoring of safety performance

- (a) The competent authorities shall regularly monitor and assess the safety performance of the ATM/ANS providers.
- (b) The competent authorities shall use the results of the monitoring of safety in particular within their risk-based oversight.

ATM/ANS.AR.C.010 Certification, declaration, and verification of ATM/ANS providers' compliance with the requirements

- (a) Within the framework of ATM/ANS.AR.B.005(a)(1) the competent authority shall establish a process in order to verify:
 - (1) ATM/ANS providers' compliance with applicable requirements set out in Annex II to XI of this Regulation, and any applicable conditions attached to the certificate before the issue or renewal of a certificate. The certificate shall be issued in accordance with Appendix I to this Part;
 - (2) compliance with any safety-related obligations in the designation act issued in accordance with Article 8 of Regulation (EC) No 550/2004;
 - (3) continued compliance with the applicable requirements of the ATM/ANS providers certified by or making declarations to the competent authority;
 - (4) implementation of safety objectives, safety requirements, and other safety-related conditions identified in declarations of verification of systems, including any relevant declaration of conformity or suitability for use of constituents of systems issued in accordance with Regulation (EC) No 552/2004;
 - (5) [To be developed under RMT.0469 and RMT.0470];
 - (6) [To be developed under RMT.0469 and RMT.0470]; and
 - (7) the implementation of safety directives, corrective actions, and enforcement measures.
- (b) The process referred to in paragraph (a) shall:
 - (1) be based on documented procedures;

- (2) be supported by documentation specifically intended to provide oversight personnel with guidance to perform their functions;
- (3) provide the organisation concerned with an indication of the results of the oversight activity;
- (4) be based on audits and reviews conducted by the competent authority;
- (5) with regard to certified ATM/ANS providers, provide the competent authority with the evidence needed to support further action, including measures foreseen by Article 9 of Regulation (EC) No 549/2004, Article 7(7) of Regulation (EC) No 550/2004, and by Article 10, Article 25, and Article 68 of Regulation (EC) No 216/2008 in situations where requirements are not complied with.
- (6) with regard to ATM/ANS providers making declarations, provide the competent authority with the evidence to take, if appropriate, remedial action which may include enforcement actions including, where appropriate, under national law.

ATM/ANS.AR.C.015 Oversight

- (a) Competent authorities, or qualified entities as delegated by them, shall conduct audits.
- (b) The audits referred to in paragraph (a) shall:
 - (1) provide competent authorities with evidence of compliance with applicable requirements and with implementing arrangements by evaluating the need for improvement or corrective action;
 - (2) be independent of any internal auditing activities undertaken by the ATM/ANS provider;
 - (3) be conducted by auditors qualified in accordance with the requirements of ATM/ANS.AR.B.005(a)(2);
 - (4) apply to complete implementing arrangements or elements thereof, and to processes, products or services;
 - (5) determine whether:
 - (i) implementing arrangements comply with the applicable requirements;
 - (ii) actions taken comply with the implementing arrangements and applicable requirements;
 - (iii) the results of actions taken match the results expected from the implementing arrangements; and
 - (6) lead to the correction of any identified non-conformities in accordance with ATM/ANS.AR.C.025.
- (c) The competent authority shall, on the basis of the evidence at its disposal, monitor annually the continuous compliance of the ATM/ANS providers under its supervision.

To this end, the competent authority shall establish and maintain an oversight programme including audits, which shall:

- (1) cover all the areas of potential safety concern, with a focus on those areas where problems have been identified;

- (2) cover all the ATM/ANS providers and services and network functions under the supervision of the competent authority;
- (3) cover the oversight of personnel, including the air traffic safety electronics personnel (ATSEP);
- (4) ensure that audits are conducted in a manner commensurate with the level of the risk posed by the ATM/ANS providers' operations and services provided;

OPTION 1

- (5) ensure that audits are conducted in sufficient number and depth over a period of two years to sample each organisation under its supervision in a manner commensurate with the level of risk posed by each ATM/ANS provider;

OPTION 2

- (5) ensure that for ATM/ANS providers under its supervision, an oversight planning cycle not exceeding 24 months is applied.

The oversight planning cycle may be reduced if there is evidence that the safety performance of the organisation has decreased.

For ATM/ANS providers certified by the competent authority, the oversight planning cycle may be extended to a maximum of 36 months if the competent authority has established that during the previous 24 months:

- (i) the organisation has demonstrated an effective identification of aviation safety hazards and management of associated risks; and
- (ii) the organisation has continuously demonstrated under ATM/ANS.OR.A.035 that it has full control over all changes; and
- (iii) no level 1 findings have been issued; and
- (iv) all corrective actions have been implemented within the time period accepted or extended by the competent authority as defined in ATM/ANS.AR.C.025.

If, in addition to the above, the ATM/ANS provider has established an effective continuous reporting system to the competent authority on the safety performance and regulatory compliance of the organisation, which has been approved by the competent authority, the oversight planning cycle may be extended to a maximum of 48 months;

- (6) ensure follow-up of the implementation of corrective actions.
- (7) be subject to consultation with the ATM/ANS providers concerned.
- (8) indicate the envisaged interval of the inspections of the different sites.
- (d) Competent authorities may decide to modify the objectives and the scope of pre-planned audits and to include additional audits, wherever that need arises.
- (e) Competent authorities shall decide which arrangements, elements, services, functions, products, physical locations, and activities are to be audited within a specified time frame.
- (f) Audit observations and findings issued in accordance with ATM/ANS.AR.C.025 shall be documented. The latter shall be supported by evidence, and identified in terms of the applicable requirements and their implementing arrangements against which the audit has been conducted.
- (g) An audit report, including the details of the findings and observations, shall be drawn up.

ATM/ANS.AR.C.020 Changes — ATM/ANS providers

- (a) Upon receiving an application for a change that requires prior approval, the competent authority shall verify the ATM/ANS provider's compliance with the applicable requirements before issuing the approval.

The competent authority shall approve the conditions under which the ATM/ANS provider may operate during the change unless the competent authority determines that the change cannot be implemented.

When satisfied that the ATM/ANS provider is in compliance with the applicable requirements, the competent authority shall approve the change.

- (b) Without prejudice to any additional enforcement measures, when the ATM/ANS provider implements changes requiring prior approval without having received competent authority approval as defined in (a), the competent authority shall take immediate appropriate action.
- (c) For changes not requiring prior approval, the competent authority shall approve a procedure developed by the ATM/ANS provider in accordance with ATM/ANS.OR.A.035(b) defining the scope of such changes and its management and notification mechanism. In the continuous oversight process the competent authority shall assess the information provided in the notification and verify whether actions taken comply with the approved procedures and applicable requirements.

ATM/ANS.AR.C.025 Findings, corrective actions, and enforcement measures

- (a) The competent authority shall have a system to analyse findings for their safety significance and decide on enforcement measures on the basis of the safety risk posed by the ATM/ANS provider's or Network Manager's non-compliance.
- (b) In circumstances where no or very low additional safety risk would be present with immediate appropriate mitigation measures, the competent authority may accept the provision of ATM/ANS to ensure continuity of service whilst corrective actions are being taken.
- (c) A level 1 finding shall be issued by the competent authority when any serious non-compliance is detected with the applicable requirements of Regulation (EC) No 216/2008 and its Implementing Rules, with the ATM/ANS provider's procedure and manuals, with the terms of conditions or certificate, or with the content of a declaration which poses a significant risk to flight safety or otherwise calls into question the ATM/ANS provider's fitness to continue operations.

Level 1 findings shall include, but not be limited to:

- (1) promulgating operational procedures and/or providing a service in a way which introduces a significant risk to flight safety;
 - (2) obtaining or maintaining the validity of the ATM/ANS provider's certificate by falsification of submitted documentary evidence;
 - (3) evidence of malpractice or fraudulent use of the ATM/ANS provider's certificate; and
 - (4) the lack of an accountable manager.
- (d) A level 2 finding shall be issued by the competent authority when any other non-compliance is detected with the applicable requirements of Regulation (EC) No 216/2008 and its Implementing Rules, with the ATM/ANS provider's procedures

and manuals or with the terms of conditions or certificate, or with the content of a declaration.

- (e) When a finding is detected, during oversight or by any other means, the competent authority shall, without prejudice to any additional action required by Regulation (EC) No 216/2008 and this Regulation as well as Regulations (EC) No 549/2004, 550/2004, 551/2004, and 552/2004 and their Implementing Rules, communicate the finding to the ATM/ANS provider in writing and require corrective action to address the non-compliance(s) identified.
 - (1) In the case of level 1 findings, the competent authority shall take immediate and appropriate action, and may, if appropriate, revoke, limit, or suspend in whole or in part the certificate while ensuring the continuity of services provided that safety is not compromised, and in the case of the Network Manager, it shall inform the Commission. The measure taken shall depend upon the extent of the finding, until successful corrective action has been taken by the ATM/ANS provider.
 - (2) In the case of level 2 findings, the competent authority shall:
 - (i) grant the ATM/ANS provider a corrective action implementation period included in an action plan appropriate to the nature of the finding; and
 - (ii) assess the corrective action and implementation plan proposed by the ATM/ANS provider and, if the assessment concludes that they are sufficient to address the non-compliance(s), accept them.
 - (3) Where the ATM/ANS provider fails to submit an acceptable corrective action plan, or to perform the corrective action within the time period accepted or extended by the competent authority, the finding shall be raised to a level 1 finding, and action taken as laid down in (e)(1).
- (f) The competent authority may issue observations.
- (g) The competent authority shall record all findings it has raised and where applicable, the enforcement measures it has applied, as well as all corrective actions and date of action closure for findings.

ATM/ANS.AR.C.030 Oversight of changes to the functional system

Reserved

ATM/ANS.AR.C.035 Review procedure of the proposed changes

Reserved

APPENDIX 1 TO ANNEX I
CERTIFICATE FOR AIR TRAFFIC MANAGEMENT/AIR NAVIGATION SERVICE
PROVIDER (ATM/ANSP)
EUROPEAN UNION
COMPETENT AUTHORITY

AIR TRAFFIC MANAGEMENT/AIR NAVIGATION SERVICE PROVIDER
CERTIFICATE

[CERTIFICATE NUMBER/REFERENCE]

Pursuant to Commission Regulation (EU) No .../... (and to Commission Regulation (EU) No .../...) and subject to the conditions specified below, the [competent authority] hereby certifies

[NAME OF THE ATM/ANS PROVIDER]

[ADDRESS OF THE ATM/ANS PROVIDER]

as a certified Air Traffic Management/Air Navigation Service Provider with the privilege to provide ATM/ANS, as listed in the attached conditions approval.

Privileges:

This certificate is limited to the conditions and the scope of providing services as listed in the attached approval.

This certificate is valid whilst the certified ATM/ANS provider remains in compliance with Commission Regulation (EU) No .../... and other applicable regulations.

Subject to compliance with the foregoing privileges, this certificate shall remain valid unless the certificate has been surrendered, superseded, limited, suspended or revoked.

Date of issue:

Signed:

[Competent authority]

AIR TRAFFIC MANAGEMENT/AIR NAVIGATION SERVICE PROVIDER CERTIFICATE

SERVICE PROVISIONS CONDITIONS

Attachment to ATM/ANSP certificate number:

[CERTIFICATE NUMBER/REFERENCE]

[NAME OF THE ATM/ANS PROVIDER]

has obtained the privileges to provide (*and conduct**) the following services (*and training**):

Services	Type of Service	Part of Service	Subpart of Service	Special limitations / conditions ** / ***
<input type="checkbox"/> Air Traffic Services (ATSs)	<input type="checkbox"/> Air Traffic Control (ATC)	<input type="checkbox"/> Area Control Service	n/a	
		<input type="checkbox"/> Approach Control Service	n/a	
		<input type="checkbox"/> Aerodrome Control Service	n/a	
	<input type="checkbox"/> Flight Information Service (FIS)	<input type="checkbox"/> HF Operational Flight Information Service (OFIS) Broadcasts	n/a	
		<input type="checkbox"/> VHF Operational Flight Information Service (OFIS) Broadcasts	n/a	
		<input type="checkbox"/> Voice-Automatic Terminal Information Service (Voice-ATIS) Broadcasts	n/a	
		<input type="checkbox"/> Data Link Automatic Terminal Information Service (D-ATIS)	n/a	
		<input type="checkbox"/> VOLMET Broadcasts and/or D-VOLMET Service	n/a	
	<input type="checkbox"/> Alerting Services (AL)	n/a	n/a	

	<input type="checkbox"/> Advisory Service	n/a	n/a	
	<input type="checkbox"/> Aerodrome Flight Information Service (AFIS)	n/a	n/a	
<input type="checkbox"/> Air Traffic Services (ATs) for flight test	<input type="checkbox"/> Air Traffic Control (ATC)	<input type="checkbox"/> Area Control Service	n/a	
		<input type="checkbox"/> Approach Control Service	n/a	
		<input type="checkbox"/> Aerodrome Control Service	n/a	
	<input type="checkbox"/> Flight Information Service (FIS)	<input type="checkbox"/> HF Operational Flight Information Service (OFIS) Broadcasts	n/a	
		<input type="checkbox"/> VHF Operational Flight Information Service (OFIS) Broadcasts	n/a	
		<input type="checkbox"/> Voice-Automatic Terminal Information Service (Voice-ATIS) Broadcasts	n/a	
		<input type="checkbox"/> Data Link Automatic Terminal Information Service (D-ATIS)	n/a	
		<input type="checkbox"/> VOLMET Broadcasts and/or D-VOLMET Service	n/a	
	<input type="checkbox"/> Alerting Services (AL)	n/a	n/a	
	<input type="checkbox"/> Advisory Service	n/a	n/a	
	<input type="checkbox"/> Aerodrome Flight Information Service (AFIS)	n/a	n/a	
<input type="checkbox"/> Communication, navigation or surveillance services (CNS)	<input type="checkbox"/> Communications (C)	<input type="checkbox"/> Aeronautical Mobile Service (air-ground communication)	<input type="checkbox"/> For flight information service	
			<input type="checkbox"/> For area control service	

			<input type="checkbox"/> For approach control service		
			<input type="checkbox"/> For aerodrome control service		
		<input type="checkbox"/> Aeronautical Fixed Service (ground-ground communications)	n/a		
		<input type="checkbox"/> Aeronautical Mobile Satellite Service (AMSS)	n/a		
	<input type="checkbox"/> Navigation (N)	<input type="checkbox"/> Provision of NDB signal-in-space	n/a		
		<input type="checkbox"/> Provision of VOR signal-in-space	n/a		
		<input type="checkbox"/> Provision of DME signal-in-space	n/a		
		<input type="checkbox"/> Provision of ILS signal-in-space	<input type="checkbox"/> CAT I		
			<input type="checkbox"/> CAT II		
			<input type="checkbox"/> CAT III		
		<input type="checkbox"/> Provision of MLS signal-in-space	<input type="checkbox"/> CAT I		
			<input type="checkbox"/> CAT II		
			<input type="checkbox"/> CAT III		
		<input type="checkbox"/> Provision of GNSS signal-in-space	<input type="checkbox"/> GNSS Core System		
			<input type="checkbox"/> Satellite-Based Augmentation System (SBAS)		
			<input type="checkbox"/> Ground-Based Augmentation System (GBAS)		
		<input type="checkbox"/> Surveillance (S)	<input type="checkbox"/> Provision of data from Primary Surveillance Radar (PSR)	n/a	

		<input type="checkbox"/> Provision of data from Secondary Surveillance Radar (SSR)	<input type="checkbox"/> Mode A/C <input type="checkbox"/> Mode S	
		<input type="checkbox"/> Provision of Automatic Dependent Surveillance (ADS) Data	<input type="checkbox"/> ADS-C <input type="checkbox"/> ADS-B	
		<input type="checkbox"/> Provision of data from Surface Movement Radar (SMR)	n/a	
<input type="checkbox"/> Aeronautical Information Services (AIS)	<input type="checkbox"/> AIS	Provision of the whole AIS service as described in ...	n/a	
<input type="checkbox"/> Meteorological Services (MET)	<input type="checkbox"/> MET	Provision of the whole MET service as described in ...	n/a	
<input type="checkbox"/> Air Traffic Flow Management (ATFM)	<input type="checkbox"/> ATFM	Provision of the local ATFM service as described in ...	n/a	
<input type="checkbox"/> Air Space Management (ASM)	<input type="checkbox"/> ASM	Provision of the local ASM (Tactical/ASM Level 3) service as described in ...	n/a	
<input type="checkbox"/> Air Space Design (ASD)	<input type="checkbox"/> ASD	<input type="checkbox"/> Airspace structure <input type="checkbox"/> Procedure design	n/a	

<input type="checkbox"/> ATM network functions	<input type="checkbox"/> Design of ERN	n/a	n/a	
	<input type="checkbox"/> Scarce resources	<input type="checkbox"/> Radio frequency	n/a	
		<input type="checkbox"/> Transponder code	n/a	

This service approval is valid as long as:

- (a) the ATM/ANSP certificate has not been surrendered, superseded, limited, suspended, or revoked; and
- (b) all operations are conducted in compliance with Commission Regulation (EU) No .../..., other applicable regulations, and, when relevant, with the procedures in the ATM/ANS provider's documentation as required by Commission Regulation (EU) No .../..., Part-XXXX.

Date of issue:

Signed: [Competent authority]

For the Member State/EASA

EASA Form xxx Issue 1 — Page 5/5

ANNEX II

COMMON REQUIREMENTS FOR THE PROVISION OF ATM/ANS (Part-ATM/ANS.OR)

SUBPART A — GENERAL COMMON REQUIREMENTS (ATM/ANS.OR.A)

ATM/ANS.OR.A.005 Scope

This Part establishes the requirements to be met by an ATM/ANS provider subject to Regulation (EC) No 216/2008.

ATM/ANS.OR.A.010 Application for an ATM/ANS provider certificate

- (a) Application for an ATM/ANS provider certificate or an amendment to an existing certificate shall be made in a form and manner established by the competent authority, taking into account the applicable requirements of Regulation (EC) No 216/2008 and its Implementing Rules.
- (b) To obtain the certificate necessary to provide ATM/ANS, ATM/ANS providers shall comply with:
 - (1) the general common requirements set out in this Annex; and
 - (2) the specific requirements set out in Annexes III to XI to this Regulation according to the functions and services they provide.
- (c) An ATM/ANS provider shall comply with the applicable requirements no later than the time at which the certificate is issued.

ATM/ANS.OR.A.015 Application for a limited certificate

- (a) Notwithstanding ATM/ANS.OR.A.010(b), air traffic services providers may apply for a certificate limited to the airspace under the responsibility of the Member State where their principal place of operation and, if any, registered office is located, when they provide or plan to provide services only with respect to one or more of the following categories:
 - (1) aerial work;
 - (2) general aviation;
 - (3) commercial air transport limited to aircraft with less than 10 tonnes of maximum take-off mass or less than 20 passenger seats; and/or
 - (4) commercial air transport with less than 10 000 movements per year, regardless of the maximum take-off mass and the number of passenger seats;
- (b) In addition, the following air navigation service providers may also apply for a limited certificate:
 - (1) air navigation service providers, other than providers of air traffic services, with a gross annual turnover of EUR 1 000 000 or less in relation to the services they provide or plan to provide;
 - (2) Air navigation service providers providing aerodrome flight information services by operating regularly not more than one working position at any aerodrome.

- (c) Air navigation service providers applying for a limited certificate under (a) or (b) (1) shall comply, at least, with:
 - (1) ATM/ANS.OR.B.005 Technical and operational competence and capability;
 - (2) ATM/ANS.OR.B.015 Management system;
 - (3) ATM/ANS.OR.B.025 Human resources;
 - (4) ATM/ANS.OR.C.030 Open and transparent provision of services; and
 - (5) the specific requirements set out in Annexes III, IV, V and VII to this Regulation according to the type of services they provide.
- (d) Air navigation service providers applying for a limited certificate under (b)(2) shall comply at least with the requirements in (c)(1) to (4) and with the requirements in Annex III, except ATS.OR.205(a)(2), ATS.OR.205(c)(1)(ii) and ATS.OR.210.
- (e) Applicants for a limited certificate shall submit an application to the competent authority in a form and manner established by that competent authority.

ATM/ANS.OR.A.020 Continued validity

- (a) The ATM/ANS provider's certificate shall remain valid subject to:
 - (1) the ATM/ANS provider remaining in compliance with the relevant requirements of Regulation (EC) No 550/2004 and Regulation (EC) No 216/2008 and its Implementing Rules, taking into account the provisions related to the handling of findings as specified under ATM/ANS.AR.C.025;
 - (2) the competent authority being granted access as defined in ATM/ANS.OR.A.045 to determine continued compliance with the relevant requirements of Regulation (EC) No 550/2004 and Regulation (EC) No 216/2008 and its Implementing Rules; and
 - (3) the certificate not being surrendered or revoked.
- (b) Upon revocation or surrender, the certificate shall be returned to the competent authority without delay.

ATM/ANS.OR.A.025 Declaration by flight information services providers

- (a) Flight information services providers declaring their activities shall:
 - (1) provide the competent authority with all relevant information prior to commence operations, using the form established in Appendix I to this Part;
 - (2) provide the competent authority with a list of the alternative means of compliance used, in accordance with Article 7 of this Regulation;
 - (3) maintain compliance with the applicable requirements and with the information given in the declaration;
 - (4) notify the competent authority of any changes to its declaration or the means of compliance it uses through submission of an amended declaration; and
 - (5) provide their services in accordance with their operations manual and comply with all relevant provisions contained therein.
- (b) Before ceasing the provision of such services, the providers shall notify the competent authority.
- (c) Flight information services providers shall comply with the following requirements:
 - (1) in this Annex:

- (i) this subpart, except ATM/ANS.OR.A. 010, ATM/ANS.OR.A. 015 and ATM/ANS.OR.A. 020;
 - (ii) ATM/ANS.OR.B.005 Technical and operational competence and capability;
 - (iii) ATM/ANS.OR.B.010 Organisational structure;
 - (iv) ATM/ANS.OR.B.015 Management system;
 - (v) ATM/ANS.OR.B.025 Human resources;
 - (vi) ATM/ANS.OR.B.040 Operations manuals; and
 - (vii) ATM/ANS.OR.C.025 Liability and insurance cover; and
- (2) Annex III, except ATS.OR.205(a)(2),(c)(1)(ii) and ATS.OR.210.
- (d) Flight information service providers shall only start operation after receiving the acknowledgement of receipt of the declaration from the competent authority.
- (e) The declaration shall remain valid subject to:
- (1) the flight information services provider remaining in compliance with the relevant requirements of Regulation (EC) No 550/2004 and Regulation (EC) No 216/2008 and its Implementing Rules, taking into account the provisions related to the handling of findings as specified under ATM/ANS.AR.C.025;
 - (2) the competent authority being granted access as defined in ATM/ANS.OR.A.045 to determine continued compliance with the relevant requirements of Regulation (EC) No 550/2004 and Regulation (EC) No 216/2008 and its Implementing Rules; and
 - (3) the declaration not being withdrawn by the flight information services provider.

ATM/ANS.OR.A.030 Demonstration of compliance

ATM/ANS providers shall provide all the relevant evidence to demonstrate compliance with the applicable common requirements at the request of the competent authority. ATM/ANS providers may make full use of existing data.

ATM/ANS.OR.A.035 Changes

- (a) A certified ATM/ANS provider shall notify the competent authority of planned changes to its provision of services and functions which may affect its compliance with the applicable requirements or with the conditions attached to the certificate. These changes shall require prior approval by the competent authority.
- (b) Any other change shall be notified and managed following a procedure previously agreed between the ATM/ANS provider and its competent authority. This procedure shall define the changes that do not require prior approval by the competent authority before the change is implemented.

ATM/ANS.OR.A.040 Changes to the functional system

[To be developed under RMT.0469 and RMT.0470]

ATM/ANS.OR.A.045 Facilitation of inspections, audits, and access

- (a) ATM/ANS providers shall facilitate inspections and audits by the competent authority or by a qualified entity acting on the latter's behalf, including site visits and visits without prior notice.
- (b) For the purpose of determining compliance with the relevant requirements of Regulation (EC) No 216/2008 and its Implementing Rules, ATM/ANS providers shall grant access to any facility, document, records, data, procedures, or any other material relevant to its activity subject to certification, whether it is contracted or not, to any person authorised by the competent authority.

ATM/ANS.OR.A.050 Findings and corrective actions

After receipt of notification of findings from the competent authority, the ATM/ANS provider shall:

- (a) identify the root cause of the non-compliance;
- (b) define a corrective action plan that shall be approved by the competent authority; and
- (c) demonstrate corrective action implementation to the satisfaction of the competent authority within the period agreed with that authority as defined in ATM/ANS.AR.C.025(e).

ATM/ANS.OR.A.055 Immediate reaction to a safety problem

An ATM/ANS provider shall implement any safety measures, including safety directives, mandated by the competent authority in accordance with ATM/ANS.AR.A.015(c) .

ATM/ANS.OR.A.060 Safety reporting

- (a) ATM/ANS providers shall report to the competent authority or to any other entity required by the Member State where the ATM/ANS provider is providing ATM/ANS, any occurrence as defined in Regulation (EU) No 996/2010² and Directive 2003/42/EC, notably accidents, serious incidents and incidents.
- (b) Without prejudice to paragraph (a), ATM/ANS providers shall report to the competent authority and to the entity responsible for the design of system and constituents, if different from the ATM/ANS provider, any malfunction, technical defect, exceeding of technical limitations, occurrence, or other irregular circumstance that has or may have endangered the safety of ATM/ANS and that has not resulted in an accident or serious incident.
- (c) Without prejudice to Regulation (EU) No 996/2010, Directive 2003/42/EC, Commission Regulation (EC) No 1321/2007³, and Commission Regulation (EC) No 1330/2007⁴, the reports referred in paragraphs (a) and (b) shall be made in a

² Regulation (EU) No 996/2010 of the European Parliament and of the Council of 20 October 2010 on the investigation and prevention of accidents and incidents in civil aviation and repealing Directive 94/56/EC Text with EEA relevance (OJ L 295, 12.11.2010, p. 35).

³ Commission Regulation (EC) No 1321/2007 of 12 November 2007 laying down implementing rules for the integration into a central repository of information on civil aviation occurrences exchanged in accordance with Directive 2003/42/EC of the European Parliament and of the Council Text with EEA relevance (OJ L 294, 13.11.2007, p. 3).

⁴ Commission Regulation (EC) No 1330/2007 of 24 September 2007 laying down implementing rules for the dissemination to interested parties of information on civil aviation occurrences referred to in Article 7(2) of Directive 2003/42/EC of the European Parliament and of the Council (Text with EEA relevance) (OJ L 295, 14.11.2007, p. 7).

form and manner established by the competent authority and contain all pertinent information about the condition known to the ATM/ANS provider.

- (d) Reports shall be made as soon as practicable, but in any case within 72 hours of the ATM/ANS provider identifying the condition to which the report relates, unless exceptional circumstances prevent this.
- (e) Where relevant, the ATM/ANS provider shall produce a follow-up report to provide details of actions it intends to take to prevent similar occurrences in the future, as soon as these actions have been identified.

SUBPART B — MANAGEMENT (ATM/ANS.OR.B)

ATM/ANS.OR.B.005 Technical and operational competence and capability

ATM/ANS providers shall be able to provide their services in a safe, efficient, continuous and sustainable manner, consistent with any foreseen level of overall demand for a given airspace. To this end, they shall maintain adequate technical and operational capacity and expertise.

ATM/ANS.OR.B.010 Organisational structure

- (a) ATM/ANS providers shall set up and manage their organisation according to a structure that supports the safe, efficient and continuous provision of ATM/ANS.
- (b) The organisational structure shall define:
 - (1) the authority, duties, and responsibilities of the nominated post holders, in particular of the management personnel in charge of safety, quality, security, finance, and human resources-related functions;
 - (2) the relationship and reporting lines between different parts and processes of the organisation.

ATM/ANS.OR.B.015 Management system

- (a) The ATM/ANS provider shall implement and maintain a management system that includes:
 - (1) clearly defined lines of responsibility and accountability throughout the ATM/ANS provider, including a direct accountability of the accountable manager;
 - (2) a description of the overall philosophies and principles of the ATM/ANS provider with regard to safety, quality, and security of its services, as applicable, referred to as the policy, signed by the accountable manager;
 - (3) the means to verify the performance of the ATM/ANS provider's organisation in reference to the performance indicators and performance targets of the management system in relation to the provision of ATM/ANS;
 - (4) a formal process to identify changes within the ATM/ANS provider's organisation and its functional system which may affect the provision of ATM/ANS;
 - (5) A formal processes to review the management system, identify the causes of substandard performance of the management system, determine the implications of such substandard performance in ATM/ANS, and eliminate or mitigate such causes;

- (6) a training programme that ensures that personnel are trained and competent to perform their duties; and
 - (7) formal means for communication that ensure that all personnel are fully aware of the management system, to convey critical information, and explain why particular actions are taken and why procedures are introduced or changed.
- (b) The ATM/ANS provider shall document all management system key processes, including a process for making personnel aware of their responsibilities, and its amendment procedure.
 - (c) The ATM/ANS provider shall establish a function to monitor compliance of the organisation with the relevant requirements and the adequacy of the procedures. Compliance monitoring shall include a feedback system of findings to the accountable manager to ensure effective implementation of corrective actions as necessary.
 - (d) The management system shall be proportionate to the size of the organisation and its activities, taking into account the hazards and associated risks inherent in those activities.
 - (e) Within the management system, the ATM/ANS provider shall establish formal interfaces with the relevant stakeholders to:
 - (1) identify the aviation safety hazards entailed by its activities, to evaluate them, and to manage the associated risks as appropriate; and
 - (2) provide its services in accordance with the requirements of this regulation.
 - (f) In the case that the ATM/ANS provider holds also an aerodrome operator certificate, it shall ensure that the management system covers all activities in the scope of its certificates.

ATM/ANS.OR.B.020 Contracted activities

- (a) When contracting or purchasing any part of its activity to external organisations, ATM/ANS providers shall ensure that the contracted or purchased activity, system, or constituent conforms to the applicable requirements.
- (b) When an ATM/ANS provider contracts any part of its activity to an organisation, the contracted organisation shall work under the certificate of the ATM/ANS provider. The ATM/ANS provider shall ensure that the competent authority is given access to the contracted organisation, to determine continued compliance with the applicable requirements.

ATM/ANS.OR.B.025 Human resources

ATM/ANS provider shall employ appropriately skilled personnel to ensure the provision of ATM/ANS in a safe, efficient, continuous and sustainable manner. In this context, it shall establish policies for the recruitment and training of personnel in accordance with ATM/ANS.OR.B.015(a)(6).

ATM/ANS.OR.B.030 Facilities requirements

The ATM/ANS providers shall ensure that there are adequate and appropriate facilities to perform and manage all tasks and activities in accordance with the applicable requirements.

ATM/ANS.OR.B.035 Record keeping

- (a) The ATM/ANS provider shall establish a system of record keeping that allows adequate storage and reliable traceability of all its activities, covering in particular all the elements indicated in ATM/ANS.OR.B.015.
- (b) The records shall be kept for a period of at least 5 years unless otherwise specified by the competent authority.
- (c) Records shall be stored in a manner that ensures protection against damage, alteration, and theft.

ATM/ANS.OR.B.040 Operations manuals

- (a) ATM/ANS providers shall provide and keep up to date their operations manuals relating to the provision of their services for the use and guidance of operations personnel.
- (b) They shall ensure that:
 - (1) operations manuals contain the instructions and information required by the operations personnel to perform their duties;
 - (2) relevant parts of the operations manuals are accessible to the personnel concerned; and
 - (3) the operations personnel are informed of amendments to the operations manual applying to their duties in a manner that enables their application as of their entry into force.

SUBPART C — SPECIFIC ORGANISATIONAL REQUIREMENTS FOR ANS AND ATFM PROVIDERS AND THE NETWORK MANAGER (ATM/ANS.OR.C)**ATM/ANS.OR.C.005 Scope**

This Subpart establishes the requirements to be met by air navigation services (ANS) and air traffic flow management (ATFM) providers and the Network Manager with respect to additional responsibilities in addition to those established in Subparts A and B.

ATM/ANS.OR.C.010 Business, annual, and performance plans

- (a) BUSINESS PLAN
 - (1) Air navigation services and air traffic flow management providers shall produce a business plan covering a minimum period of five years. The business plan shall:
 - (i) set out the overall aims and goals of the air navigation services and of the air traffic flow management providers, and its strategy towards achieving them in consistency with any overall longer term plan of the air navigation services provider or of the air traffic flow management provider and with relevant Union requirements for the development of infrastructure or other technology;
 - (ii) contain appropriate performance targets in terms of safety, capacity, environment, and cost-efficiency, as may be applicable.
 - (2) The information listed in points (i) and (ii) shall be consistent with the national or functional airspace block performance plan referred to in Article 11 of Regulation (EC) No 549/2004 and, as far as safety data is concerned, consistent with the State Safety Programme referred to in Standard 2.27.1 of

Annex 11 to the Convention on International Civil Aviation, Amendment 47B from 20 July 2009 as applicable.

- (3) Air navigation services and air traffic flow management providers shall produce safety and business justifications for major investment projects including, where relevant, the estimated impact on the appropriate performance targets referred to in point (1)(ii) and identifying investments stemming from the legal requirements associated with the implementation of the Single European Sky ATM Research Programme (SESAR).

(b) ANNUAL PLAN

- (1) Air navigation services and air traffic flow management providers shall produce an annual plan covering the forthcoming year which shall further specify the features of the business plan and describe any changes to it.
- (2) The annual plan shall cover the following provisions on the level and quality of service, such as the expected level of capacity, safety, environment, and cost-efficiency, as may be applicable:
 - (i) information on the implementation of new infrastructure or other developments, and a statement on how they will contribute to improving the performance of the air navigation services provider or of the air traffic flow management provider, including level and quality of services;
 - (ii) performance indicators consistent with the national or functional airspace block performance plan referred to in Article 11 of Regulation (EC) No 549/2004 against which the performance level and quality of service may be reasonably assessed;
 - (iii) information on the measures foreseen to mitigate the safety risks identified in the safety plan of the air navigation services and air traffic flow management provider, including safety indicators to monitor safety risk and, where appropriate, the estimated cost of mitigation measures; and
 - (iv) the air navigation services and air traffic flow management providers' expected short-term financial position as well as any changes to or impacts on the business plan.

(c) PERFORMANCE PART OF THE PLANS

The air navigation services and the air traffic flow management providers shall make the content of the performance part of the business plan and of the annual plan available to the Commission on request under the conditions set by the competent authority in accordance with national law.

ATM/ANS.OR.C.015 Security management

- (a) Air navigation services and air traffic flow management providers and the Network Manager shall, as an integral part of the management system required in ATM/ANS.OR.B.015, establish a security management system to ensure:
 - (1) the security of their facilities and personnel so as to prevent unlawful interference with the provision of services; and
 - (2) the security of operational data they receive, or produce, or otherwise employ, so that access to it is restricted only to those authorised.
- (b) The security management system shall define:
 - (1) the procedures relating to security risk assessment and mitigation, security monitoring and improvement, security reviews, and lesson dissemination;

- (2) the means designed to detect security breaches and to alert personnel with appropriate security warnings; and
 - (3) the means of containing the effects of security breaches and to identify recovery action and mitigation procedures to prevent re-occurrence.
- (c) Air navigation services and air traffic flow management providers and the Network Manager shall ensure the security clearance of their personnel, if appropriate, and coordinate with the relevant civil and military authorities to ensure the security of their facilities, personnel and data.

ATM/ANS.OR.C.020 Financial strength

ECONOMIC AND FINANCIAL CAPACITY

The air navigation services and air traffic flow management provider shall be able to meet its financial obligations, such as fixed and variable costs of operation or capital investment costs. It shall use an appropriate cost accounting system. It shall demonstrate its ability through the annual plan as referred to in ATM/ANS.OR.C.010(b), as well as through balance sheets and accounts as practicable under its legal statute, and regularly undergo an independent financial audit.

ATM/ANS.OR.C.025 Liability and insurance cover

- (a) Air navigation services and air traffic flow management providers shall have in place arrangements to cover their liabilities arising from applicable law.
- (b) The method employed to provide the cover shall be appropriate to the potential loss and damage in question, taking into account the legal status of the air navigation services provider and/or of the air traffic flow management provider and the level of commercial insurance cover available.
- (c) An air navigation services or air traffic flow management provider which avails itself of services of another air navigation services or air traffic flow management provider shall ensure that the agreements cover the allocation of liability between them.

ATM/ANS.OR.C.030 Open and transparent provision of services

- (a) Air navigation services and air traffic flow management providers shall provide their services in an open and transparent manner. They shall publish the conditions of access to their services and changes thereto and establish a formal consultation process with the users of their services on a regular basis, either individually or collectively, and at least once a year.
- (b) Air navigation services and air traffic flow management providers shall not discriminate on grounds of nationality or identity of the user or the class of users in accordance with applicable Union law.

ATM/ANS.OR.C.035 Contingency plans

Air navigation services and air traffic flow management providers and the Network Manager shall have in place contingency plans for all the services they provide in the case of events which result in significant degradation or interruption of their services.

ATM/ANS.OR.C.040 Reporting requirements

- (a) Air navigation services and air traffic flow management providers shall provide an annual report of their activities to the relevant competent authority.

- (b) For air navigation services and air traffic flow management providers, the annual report shall cover their financial results without prejudice to Article 12 of Regulation (EC) No 550/2004, as well as their operational performance and any other significant activities and developments in particular in the area of safety.
- (c) The Network Manager shall, in accordance with Article 20 of Commission Regulation (EU) No 677/2011, provide an annual report of its activities. This report shall cover its operational performance, as well as significant activities and developments in particular in the area of safety.
- (d) The annual report required in (a) and (c) shall include as a minimum:
 - (1) an assessment of the level of performance of services generated;
 - (2) for air navigation services and air traffic flow management providers, the performance of the air navigation services and air traffic flow management providers compared to the performance targets established in the business plan referred to in ATM/ANS.OR.C.010(a), reconciling actual performance against the annual plan by using the indicators of performance established in the annual plan;
 - (3) for the Network Manager, the performance compared to the performance objectives established in the Network Strategy Plan under Article 2 (24) of Commission Regulation (EU) No 677/2011, reconciling actual performance against the Network Operational plan under Article 2 (23) of Commission Regulation (EU) No 677/2011 by using the indicators of performance established in the Network Operational plan;
 - (4) provide an explanation for differences with the targets, and identify measures for closing any gaps during the reference period referred to in Article 11 of Regulation (EC) No 549/2004;
 - (5) developments in operations and infrastructure;
 - (6) the financial results, as long as they are not published separately in accordance with Article 12(1) of Regulation (EC) No 550/2004;
 - (7) information about the formal consultation process with the users of its services; and
 - (8) information about the human resources policy.
- (e) Air navigation services and air traffic flow management providers and the Network Manager shall make the content of the annual report available to the Commission and the Agency on request, and to the public under the conditions set by the competent authority in accordance with national law.

APPENDIX I TO ANNEX II (Part-ATM/ANS)

<p align="center">DECLARATION OF PROVISION OF FLIGHT INFORMATION SERVICES</p> <p align="center">in accordance with Commission Regulation (EU) No .../... on ATM/ANS</p>
<p>Provider of flight information service</p> <p>Name:</p> <p>Principal place of operation and, if any, registered office:</p> <p>Name and contact details of the accountable manager:</p>
<p>Flight Information Service</p>
<p>Starting date of provision of flight information services/applicability date of the change:</p>
<p>Type(s) of flight information services:</p> <p><input type="checkbox"/> HF Operational Flight Information Service (OFIS) Broadcasts</p> <p><input type="checkbox"/> VHF Operational Flight Information Service (OFIS) Broadcasts</p> <p><input type="checkbox"/> Voice-Automatic Terminal Information Service (Voice-ATIS) Broadcasts</p> <p><input type="checkbox"/> Data Link Automatic Terminal Information Service (D-ATIS)</p> <p><input type="checkbox"/> VOLMET Broadcasts and/or D-VOLMET Service</p>
<p>List of alternative means of compliance with references to the AMCs they replace (attach to the declaration)</p>
<p>Statements</p>
<p><input type="checkbox"/> The management system documentation including the operations manual reflect the applicable requirements set out in Part-ATM/ANS, Part-ANS/ATFM, and Part-ATS.</p> <p>The provision of flight information services will be carried out in accordance with the procedures and instructions specified in the operations manual.</p>
<p><input type="checkbox"/> The provider of flight information service has ensured compliance with the relevant requirements laid down in Regulation (EC) No 552/2004 regarding the declarations of verification of the systems it uses, including any relevant declaration of conformity or suitability for use of constituents of systems.</p>
<p><input type="checkbox"/> The operational and technical and engineering personnel are trained in accordance with the applicable requirements.</p>
<p><input type="checkbox"/> (If applicable)</p> <p>The provider of flight information service has implemented and demonstrated conformance to an officially recognised industry standard.</p> <p>Reference of the standard:</p>

Certification body:

Date of the last conformance audit:

☐ Any change in the provision of flight information service that affects the information disclosed in this declaration will be notified to the competent authority.

☐ The provider of flight information service confirms that the information disclosed in this declaration is correct.

Date, name, and signature of the accountable manager

ANNEX III

SPECIFIC REQUIREMENTS FOR THE PROVISION OF AIR TRAFFIC SERVICES (Part-ATS)

SUBPART A — ADDITIONAL ORGANISATION REQUIREMENTS FOR THE PROVISION OF AIR TRAFFIC SERVICES (ATS.OR)

Section 1 — General requirements

ATS.OR.105 Scope

This Part establishes the requirements to be met by air traffic services (ATS) providers with respect to additional responsibilities to those established in Part-ATM/ANS.OR.

ATS.OR.110 Ownership

- (a) Air traffic services providers shall notify to the competent authorities:
 - (1) their legal status, their ownership structure, and any arrangements having a significant impact on control over their assets;
 - (2) any links with organisations not involved in the provision of air navigation services, including commercial activities in which they are engaged either directly or through related undertakings, which account for more than 1 % of their expected revenue; furthermore, they shall notify any change of any single shareholding which represents 10 % or more of their total shareholding.
- (b) Air traffic services providers shall take all necessary measures to prevent any situation of conflict of interests that could compromise the impartial and objective provision of their services.

ATS.OR.115 Open and transparent provision of service

In addition to ATM/ANS.OR.C.030 of Annex III and where a Member State decides to organise the provision of specific air traffic services in a competitive environment, that Member State may take all appropriate measures to ensure that the providers of these specific air traffic services shall neither engage in conduct that would have as its object or effect the prevention, restriction or distortion of competition, nor shall they engage in conduct that amounts to an abuse of a dominant position in accordance with applicable national and Union law.

Section 2 — Safety of services

ATS.OR.205 Safety management system

- (a) SAFETY POLICY AND OBJECTIVES
 - (1) Air traffic services providers shall, as an integral part of the management system required in ATM/ANS.OR.B.015, have in place a safety management system (SMS) which:
 - (i) ensures a formalised, explicit, and proactive approach to systematic safety management in meeting their safety responsibilities within the provision of their services; operates in respect of all their services and the supporting arrangements under its managerial control; and

includes, as its foundation, a statement of safety policy defining the organisation's fundamental approach to managing safety;

- (ii) ensures that everyone involved in the safety aspects of the provision of air traffic services has an individual safety responsibility for their own actions; that managers are responsible for the safety performance of their respective departments or divisions and that the top management of the provider carries an overall safety responsibility;
 - (iii) ensures that the achievement of satisfactory safety in air traffic services shall be afforded the highest priority; and
 - (iv) ensures that while providing air traffic services, the principal safety objective is to minimise its contribution to the risk of an aircraft accident as far as reasonably practicable.
- (2) Within the operation of the SMS, air traffic services providers shall ensure that a safety management function is identified with organisational responsibility for development and maintenance of the SMS; ensure that this point of responsibility is independent of line management, and accountable directly to the highest organisational level. However, in the case of small organisations where a combination of responsibilities may prevent sufficient independence in this regard, the arrangements for safety assurance shall be supplemented by additional independent means; and ensure that the top management of the provider is actively involved in ensuring safety management.
- (3) The air traffic services provider shall ensure that an emergency response plan is properly coordinated with the emergency response plans of those organisations it must interface with during the provision of its services.
- (4) Within the operation of the SMS, air traffic services providers shall ensure that the SMS is systematically documented in a manner which defines the provider's approach to the management of safety so as to meet their safety objectives.
- (b) SAFETY RISK MANAGEMENT
- Within the operation of the SMS, air traffic services providers shall:
- (1) ensure that risk assessment and mitigation is conducted to an appropriate level to ensure that due consideration is given to all aspects of the provision of ATS (risk assessment and mitigation). As far as changes to the ATM/ANS functional system are concerned, ATS.OR.210 shall apply; and
 - (2) ensure that, wherever practicable, quantitative safety levels are derived and are maintained for all functional systems.
- (c) SAFETY ASSURANCE
- (1) Within the operation of the SMS, air traffic services providers shall ensure that:
 - (i) safety surveys are carried out as a matter of routine, to recommend improvements where needed, to provide assurance to managers of the safety of activities within their areas, and to confirm compliance with the relevant parts of the SMS;
 - (ii) methods are in place to detect changes in functional systems or operations which may suggest any element is approaching a point at which acceptable standards of safety can no longer be met, and that corrective action is taken;

- (iii) safety records are maintained throughout the SMS operation as a basis for providing safety assurance to all associated with, responsible for or dependent upon the services provided, and to the competent authority; and
 - (iv) ensure that ATS operational or technical occurrences which are considered to have significant safety implications are investigated immediately, and any necessary corrective action is taken.
- (2) The air traffic services provider shall monitor and assess the effectiveness of their SMS processes to enable continuous improvement of the overall performance of the SMS.

(d) SAFETY PROMOTION

- (1) Within the operation of the SMS, air traffic services providers shall ensure that personnel are adequately trained and competent for the job they are required to do, in addition to being properly licensed, if so required, and satisfying applicable medical fitness requirements.
- (2) The air traffic services provider shall develop and maintain a safety training programme that ensures that personnel are trained and competent to perform their SMS duties.
- (3) The scope of the safety training programme in (2) shall be appropriate to each individual's involvement in the SMS.
- (4) Within the operation of the SMS, air traffic services providers shall ensure that:
 - (i) all personnel are aware of the potential safety hazards connected with their duties;
 - (ii) the lessons arising from safety occurrence investigations and other safety activities are disseminated within the organisation at management and operational levels;
 - (iii) all personnel are actively encouraged to propose solutions to identified hazards, and changes are made to improve safety where they appear needed;
 - (iv) and a just culture environment is provided

ATS.OR.210 Safety requirements for risk assessment and mitigation with regard to changes

[To be developed under RMT.0469 and RMT.0470]

ATS.OR.215 Software safety assurance system

[To be developed under RMT.0469 and RMT.0470]

ATS.OR.220 Licensing and medical certification requirements for air traffic controllers

Air traffic services providers shall ensure that air traffic controllers are properly licensed and hold a valid medical certificate in accordance with Commission Implementing Regulation (EU) No XXX/XXXX.

ATS.OR.225 Safety requirements for engineering and technical personnel undertaking operational safety-related tasks

- (a) With regard to the personnel involved in safety-related tasks including personnel of subcontracted organisations, air traffic services providers shall document the adequacy of the competence of the personnel; the rostering arrangements in place to ensure sufficient capacity and continuity of service; the personnel qualification schemes and policy, the personnel training policy, training plans and records as well as arrangements for the supervision of non-qualified personnel. They shall have procedures in place for cases where the physical or mental condition of the personnel is in doubt.
- (b) Air traffic services providers shall maintain a register of information on the numbers, status and deployment of the personnel involved in safety-related tasks.
- (c) That register shall:
 - (1) identify the accountable managers for safety-related functions;
 - (2) record the relevant qualifications of technical and operational personnel, against required skills and competence requirements; and
 - (3) specify the locations and duties to which technical and operational personnel are assigned, including any rostering methodology.
- (d) Requirements for air traffic safety electronics personnel regarding training and competence assessment are in Annex XII of this Regulation.

Section 3 — Human factors principles for the provision of air traffic control service**ATS.OR.305 Scope**

This section establishes the requirements to be met by an air traffic control service provider with regard to human performance in order to:

- (a) prevent and mitigate the negative effects of either stress and/or fatigue on Air Traffic Controllers (ATCOs) to ensure the safety of air traffic; and
- (b) prevent and mitigate the risk that ATC service is provided by ATCOs with impaired cognitive judgement due to problematic use of psychoactive substances.

ATS.OR.310 Safety management system

The air traffic control service provider shall ensure that any operational risk arising from ATCOs' stress and fatigue is managed by its safety management system.

ATS.OR.315 Responsibilities of air traffic control service providers with regard to the problematic use of psychoactive substances by ATCOs

- (1) The air traffic control service provider shall develop and implement a policy, with related procedures, to prevent and mitigate any effect of problematic use of psychoactive substances by ATCOs on the provision of air traffic control service under the responsibility of the provider.
- (2) Without prejudice to the existing EU Directive 95/46/EC as implemented under national law addressing the treatment and protection of personal data, the provider of air traffic control service shall develop and implement an objective, transparent and non-discriminatory procedure for the detection of cases of problematic use of psychoactive substances by ATCOs which may lead to a provisional inability to exercise the privileges of their licence, in accordance with ATCO.A.015 of Commission Regulation (EU) No XXX/XXX.

ATS.OR.320 Stress

In order to prevent and mitigate the negative effects of ATCOs' stress on the provision of air traffic control service under its responsibility, the air traffic control service provider shall:

- (a) develop and maintain a policy for the management of ATCOs' stress, including the implementation of a critical incident stress management programme;
- (b) establish and maintain procedures for the identification of sources of ATCOs' occupational stress together with prevention, mitigation and monitoring strategies; and
- (c) provide ATCOs with education and information programmes on prevention of stress, including critical incident stress.

ATS.OR.325 Fatigue

In order to prevent and mitigate the negative effect of ATCOs' fatigue on the provision of air traffic control service under its responsibility, the air traffic control service provider shall:

- (a) develop and maintain a policy for the management of ATCOs' fatigue;
- (b) establish and maintain procedures for the identification of sources of ATCOs' occupational fatigue, together with prevention, mitigation and monitoring strategies;
- (c) provide ATCOs with education and information programmes on prevention of fatigue; and
- (d) make available staff support mechanisms and facilities.

ATS.OR.330 ATCOs' rostering system(s)

- (a) The air traffic control service provider shall develop, implement, and monitor an ATCOs' rostering system(s) to prevent and mitigate the effect of their occupational fatigue on the safety of the service provided.
- (b) When establishing an ATCOs' rostering system, the air traffic control service provider shall involve affected ATCOs in relation to safety issues concerning fatigue in ATCOs' rostering system(s).
- (c) When establishing the rostering system, the air traffic control service provider shall address elements stated in paragraph 5(b)(i) of Annex Vb to the Basic Regulation taking into account the intended operation by the air traffic control provider.

SUBPART B — TECHNICAL REQUIREMENTS FOR THE PROVISION OF AIR TRAFFIC SERVICES (ATS.TR)**Section 1 — General requirements****ATS.TR.105 Working methods and operating procedures**

- (a) Air traffic services providers shall be able to demonstrate that their working methods and operating procedures are compliant with:

- (1) Commission Implementing Regulation (EU) No 923/2012⁵ of 26/09/2012 laying down the common rules of the air and operational provisions regarding services and procedures in air navigation and amending Implementing Regulation (EU) No 1035/2011 and Regulations (EC) No 1265/2007, (EC) No 1794/2006, (EC) No 730/2006, (EC) No 1033/2006 and (EU) No 255/2010; and
- (2) the standards in the following annexes to the Convention on International Civil Aviation as far as they are relevant for the provision of air traffic services in the airspace concerned:
 - (i) Annex 10 on aeronautical telecommunications, Volume II on communication procedures including those with PANS Status in its sixth edition of October 2001, including all amendments up to No 87; and
 - (ii) Annex 11 on air traffic services in its 13th edition of July 2001, including all amendments up to No 48.
- (b) Notwithstanding (a), for ATS Units providing services for flight testing, the competent authority may specify additional or alternative conditions and procedures to those contained in (a) when so required for the provision of services for flight testing.

⁵ Commission Implementing Regulation (EU) No 923/2012 of 26 September 2012 laying down the common rules of the air and operational provisions regarding services and procedures in air navigation and amending Implementing Regulation (EU) No 1035/2011 and Regulations (EC) No 1265/2007, (EC) No 1794/2006, (EC) No 730/2006, (EC) No 1033/2006 and (EU) No 255/2010 Text with EEA relevance (OJ L 281, 13.10.2012, p. 1).

ANNEX IV

SPECIFIC REQUIREMENTS FOR THE PROVISION OF METEOROLOGICAL SERVICES (Part-MET)

SUBPART A — ADDITIONAL ORGANISATION REQUIREMENTS FOR THE PROVISION OF METEOROLOGICAL SERVICES (MET.OR)

Section 1 — General requirements

MET.OR.005 Scope and objective of meteorological services

- (a) This subpart establishes additional requirements to those in Annex II to be met by meteorological services providers.
- (b) The objective of meteorological services shall be achieved by supplying the following users: operators, flight crew members, air traffic services units, search and rescue services units, aerodrome operators, accident and incident investigation bodies, and other entities in scope of ATM/ANS with the meteorological information necessary for the performance of their respective functions.

MET.OR.100 Quality of the data & information

Meteorological services providers shall confirm the accuracy of the information distributed for operations, including the source of such information, whilst also ensuring that such information is distributed in a timely manner, and updated as required.

MET.OR.105 Retention of information

- (a) Meteorological services providers shall retain information issued for a period of at least 30 days from the date of issue.
- (b) This information shall be made available, on request, for inquiries or investigations and, for these purposes, shall be retained until the inquiry or investigation is completed.

MET.OR.110 Information exchange requirements

Meteorological services providers shall ensure they have systems and processes in place, as well as access to suitable telecommunications facilities to:

- (a) enable the exchange of operational meteorological information with other meteorological offices; and
- (b) provide the required meteorological information to the users in a timely manner.

Section 2 — Specific requirements

Chapter 1 — Requirements for meteorological watch offices

MET.OR.200 Watch and other meteorological information

Within its area of responsibility, a meteorological watch office shall:

- (a) maintain continuous watch over meteorological conditions affecting flight operations;

- (b) coordinate with the organisation responsible for the provision of NOTAM and/or ASHTAM to ensure that information on volcanic ash included in SIGMET and NOTAM and/or ASHTAM messages is consistent;
- (c) coordinate with volcano observatories to ensure that information on volcanic activity is received in an efficient and timely manner;
- (d) provide its associated area control center/flight information centre (ACC/FIC), and its associated VAAC with information received on pre-eruption volcanic activity, a volcanic eruption and volcanic ash cloud for which a SIGMET has not already been issued; and
- (e) provide its associated ACC/FIC with information received on the accidental release of radioactive materials into the atmosphere in the area for which it maintains watch or adjacent areas and for which a SIGMET has not already been issued.

MET.OR.205 SIGMET

The meteorological watch office shall:

- (a) provide and disseminate SIGMET messages;
- (b) give a concise description in abbreviated plain language concerning the occurrence and/or expected occurrence of specified en route weather phenomena which may affect the safety of aircraft operations, and of the development of those phenomena in time and space;
- (c) ensure that SIGMET information is cancelled when the phenomena are no longer occurring or are no longer expected to occur in the area covered by the SIGMET;
- (d) ensure that the period of validity of a SIGMET message is not more than 4 hours. In the special case of SIGMET messages for volcanic ash cloud and tropical cyclones, the period of validity shall be extended up to 6 hours; and
- (e) ensure that SIGMET messages are issued not more than 4 hours before the commencement of the period of validity. In the special case of SIGMET messages for volcanic ash cloud and tropical cyclones, these messages shall be issued as soon as practicable, but not more than 12 hours before the commencement of the period of validity and be updated at least every 6 hours.

MET.OR.210 AIRMET

The meteorological watch office shall:

- (a) provide and disseminate AIRMET information to associated air traffic services units, as determined by the competent authority, taking into account the density of air traffic operating below flight level 100;
- (b) give a concise description in abbreviated plain language concerning the occurrence and/or expected occurrence of specified en route weather phenomena, which have not been included in MET.OR.230 and which may affect the safety of low-level flights, and of the development of those phenomena in time and space;
- (c) cancel AIRMET information when the phenomena are no longer occurring or are no longer expected to occur in the area; and
- (d) ensure that the period of validity of an AIRMET message is not more than 4 hours.

Chapter 2 — Requirements for aerodrome meteorological offices

MET.OR.215 Forecasts and other meteorological information — General

An aerodrome meteorological office shall:

- (a) prepare and/or obtain forecasts and other relevant information necessary for the performance of its respective functions for flights with which it is concerned, as determined by the competent authority;
- (b) provide forecasts and/or warnings for local meteorological conditions on aerodromes for which it is responsible;
- (c) keep the forecasts and warnings under continuous review and issue amendments promptly when necessary, and cancel the forecasts that cannot be kept under continuous review;
- (d) provide briefing, consultation, and flight documentation to flight crew members and/or other flight operations personnel;
- (e) provide other meteorological information necessary for the performance of their respective functions;
- (f) provide its associated air traffic services unit, aeronautical information service unit and meteorological watch office with information received on pre-eruption volcanic activity, a volcanic eruption, or volcanic ash cloud;
- (g) provide, if applicable, meteorological information to search and rescue services units and maintain liaison with the search and rescue services unit throughout a search and rescue operation; and
- (h) provide meteorological information to relevant aeronautical information services units, as necessary, for the conduct of their functions.

MET.OR.220 Aerodrome forecasts (TAF)

- (a) An aerodrome meteorological office shall issue aerodrome forecasts (TAF) at a specified time, and shall provide a concise statement of the expected meteorological conditions at an aerodrome for a specified period.
- (b) When issuing TAF, the aerodrome meteorological office shall ensure that not more than one TAF is valid at an aerodrome at any given time.

MET.OR.225 Aerodrome forecasts — Landing (TREND)

- (a) The aerodrome meteorological office shall prepare forecasts for landing as determined by the competent authority;
- (b) This forecast shall be issued in the form of a TREND forecast.

MET.OR.226 Forecasts — Take-off

The aerodrome meteorological office shall:

- (a) prepare forecasts for take-off as determined by the competent authority; and
- (b) supply forecasts for take-off to operators and flight crew members on request within the 3 hours before the expected time of departure.

MET.OR.230 Area forecasts for low-level flights

The aerodrome meteorological office shall:

- (a) provide area forecast for low-level flights, when the density of traffic operating below flight level 100, or up to flight level 150 in mountainous areas, or higher, where necessary, warrants the routine issue and dissemination of area forecasts for such operations, as determined by the competent authority;
- (b) ensure that the frequency of issue, the form, and the fixed time or period of validity of area forecast for low-level flights and the criteria for amendments thereto, are based on the agreement in (a); and
- (c) ensure that area forecasts for low-level flights prepared in support of the issuance of AIRMET information are issued every 6 hours for a period of validity of 6 hours and transmitted to meteorological watch offices concerned not later than 1 hour prior to the beginning of their validity period.

MET.OR.235 Warnings and alerts

An aerodrome meteorological office shall:

- (a) give concise aerodrome warnings information of meteorological conditions which could adversely affect aircraft on the ground, including parked aircraft, and the aerodrome facilities and services;
- (b) prepare wind shear warnings for aerodromes where wind shear is considered a factor, in accordance with local arrangements with the appropriate ATS unit and operators concerned;
- (c) give concise information on the observed or expected existence of wind shear which could adversely affect aircraft on the approach path or take-off path or during circling approach between runway level and 500 m (1 600 ft) above that level and aircraft on the runway during the landing roll or take-off run. Where local topography has been shown to produce significant wind shears at heights in excess of 500 m (1 600 ft) above runway level, then 500 m (1 600 ft) shall not be considered restrictive;
- (d) issue, at aerodromes where wind shear is detected by automated, ground-based, wind shear remote-sensing or detection equipment, wind shear alerts generated by these systems; and
- (e) cancel warnings when the conditions are no longer occurring and/or no longer expected to occur at the aerodrome.

MET.OR.240 Information for use by operator or flight crew

- (a) An aerodrome meteorological office shall provide meteorological information:
 - (1) to its associated air traffic services unit for use in their flight information service; and
 - (2) to operators for in-flight replanning on request.
- (b) Whenever the meteorological information to be included in the flight documentation will differ materially from that made available for flight planning, the aerodrome meteorological office shall:

- (1) advise immediately the operator or flight crew concerned; and
- (2) if practicable, provide with the revised information in agreement with the operator.

MET.OR.245 Notification of discrepancies to the World Area Forecast Centres (WAFC)

Meteorological services providers using WAFC Binary Universal Form for the Representation (BUFR) data shall notify the WAFC concerned immediately if significant discrepancies are detected or meteorological reported in respect of WAFC Significant Weather (SIGWX) forecasts concerning:

- (a) icing, turbulence, cumulonimbus clouds that are obscured, frequent, embedded, or occurring at a squall line, and sandstorms/dust storms; and
- (b) volcanic eruptions or an accidental release of radioactive materials into the atmosphere, of significance to aircraft operations.

Chapter 3 — Requirements for meteorological stations

MET.OR.250 Meteorological reports and other information

- (a) Meteorological stations shall disseminate to the appropriate entities specified in MET.OR.005(b):
 - (1) local routine and local special reports, only for dissemination at the aerodrome of origin; and
 - (2) METAR at half-hourly intervals for dissemination beyond the aerodrome of origin.
- (b) The meteorological station shall:
 - (1) assess the runway visual range, using instrumented systems, on all runways intended for Category II and III instrument approach and landing operations;
 - (2) without delay inform the air traffic service units and aeronautical information service of an aerodrome of changes in the serviceability status of the automated equipment used for assessing runway visual range;
 - (3) without delay report to the associated air traffic services unit, aeronautical information services unit, and meteorological watch office the occurrence of pre-eruption volcanic activity, volcanic eruptions, and volcanic ash cloud; and
 - (4) establish a list of criteria to provide local special reports in consultation with the appropriate ATS units, operators and others concerned.

MET.OR.255 Observation of meteorological elements

The meteorological station shall observe and/or measure the following elements:

- (a) surface, wind, direction, and speed;
- (b) visibility;
- (c) present weather at the aerodrome and its vicinity;
- (d) clouds;
- (e) air temperature and dew point temperature; and

- (f) atmospheric pressure.

Chapter 4 — Requirements for Volcanic Ash Advisory Centre (VAAC)

MET.OR.260 Volcanic Ash Advisory Centre (VAAC) responsibilities

In its area of responsibility, the VAAC shall:

- (a) when a volcano has erupted, or is expected to erupt, or volcanic ash is reported, provide advisory information regarding the extent and forecast movement of the volcanic ash cloud to:
 - (1) the European aviation crisis coordination cell;
 - (2) meteorological watch offices serving flight information regions in its area of responsibility which may be affected;
 - (3) operators, area control centres, and flight information centres serving flight information regions in its area of responsibility which may be affected;
 - (4) world area forecast centres, international OPMET databanks, international NOTAM offices, and centres designated by regional air navigation agreement for the operation of aeronautical fixed service satellite distribution systems; and
 - (5) other VAACs whose areas of responsibility may be affected.
- (b) coordinate with volcano observatories to ensure that information on volcanic activity is received in an efficient and timely manner;
- (c) provide the advisory information in (a) at least every 6 hours until such time as the volcanic ash cloud is no longer identifiable from satellite data, no further meteorological reports of volcanic ash are received from the area, and no further eruptions of the volcano are reported; and
- (d) maintain a 24-hour watch.

Chapter 5 — Requirements for World Area Forecast Centre (WAFC)

MET.OR.265 World Area Forecast Centre (WAFC) responsibilities

- (a) The World Area Forecast Centre shall, in a digital form, provide users with:
 - (1) gridded global forecasts of:
 - (i) upper wind;
 - (ii) upper-air temperature and humidity;
 - (iii) geopotential altitude of flight levels;
 - (iv) flight level and temperature of tropopause;
 - (v) direction, speed, and flight level of maximum wind;
 - (vi) cumulonimbus clouds;
 - (vii) icing; and
 - (viii) turbulence; and

- (2) global forecasts of significant weather (SIGWX) phenomena, including volcanic activity and accidental release of radioactive materials.
- (b) The World Area Forecast Centre shall ensure that world area forecast system products in digital form are transmitted using binary data communications techniques.

Chapter 6 — Requirements for Tropical Cyclone Advisory Centre (TCAC)

MET.OR.270 Tropical Cyclone Advisory Centre (TCAC) responsibilities

A tropical cyclone advisory centre shall:

- (a) issue advisory information concerning the position of the cyclone centre, its direction and speed of movement, central pressure, and maximum surface wind near the centre, in abbreviated plain language to:
 - (1) meteorological watch offices in its area of responsibility;
 - (2) other TCACs whose areas of responsibility may be affected; and
- (b) world area forecast centres, international OPMET databanks, and centres responsible for the operation of aeronautical fixed service satellite distribution systems; and
- (c) issue updated advisory information to meteorological watch offices for each tropical cyclone, as necessary, but at least every six hours.

SUBPART B — TECHNICAL REQUIREMENTS FOR THE PROVISION OF METEOROLOGICAL SERVICES (MET.TR)

Section 1 — General requirements

MET.TR.105 Working methods and operating procedures for the provision of meteorological services

Meteorological services providers shall be able to demonstrate that their working methods and operating procedures are compliant with:

- (a) Commission Implementing Regulation (EU) No 923/2012 of 26/09/2012 laying down the common rules of the air and operational provisions regarding services and procedures in air navigation and amending Implementing Regulation (EU) No 1035/2011 and Regulations (EC) No 1265/2007, (EC) No 1794/2006, (EC) No 730/2006, (EC) No 1033/2006, and (EU) No 255/2010.
- (b) the standards in the following Annexes to the Convention on International Civil Aviation as far as they are relevant for the provision of meteorological services in the airspace concerned:
 - (1) Annex 3 on meteorological service for international air navigation in its 17th edition of July 2010, including all amendments up to No 75;
 - (2) Annex 11 on air traffic services in its 13th edition of July 2001, including all amendments up to No 48; and
 - (3) Annex 14 on aerodromes in the following versions:

- (i) Volume I on aerodrome design and operations in its 5th edition of July 2009, including all amendments up to No 10-B;
 - (ii) Volume II on heliports in its 3rd edition of July 2009, including all amendments up to No 4.
- (c) Notwithstanding (b)(3), the relevant requirements in Commission Regulation (EU) No XXX/XXX laying down requirements and administrative procedures related to aerodromes pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council in the case the meteorological services providers provide services at aerodromes within the scope of that regulation.

ANNEX V**SPECIFIC REQUIREMENTS FOR THE PROVISION OF AERONAUTICAL
INFORMATION SERVICES
(Part-AIS)****SUBPART A — ADDITIONAL ORGANISATION REQUIREMENTS FOR THE
PROVISION OF AERONAUTICAL INFORMATION SERVICES (AIS.OR)****Section 1 — General requirements****AIS.OR.105 Scope**

This subpart establishes additional requirements to those in Annex II to be met by aeronautical information services providers.

AIS.OR.110 Technical and operational competence and capability

- (a) Aeronautical information services providers shall ensure that information and data is available for operations in a form suitable for:
 - (1) flight operating personnel, including flight crew;
 - (2) flight planning, flight management systems, and flight simulators; and
 - (3) air traffic services providers which are responsible for flight information services, aerodrome flight information services, and the provision of pre-flight information.
- (b) Aeronautical information services providers shall ensure the integrity of data and confirm the level of accuracy of the information distributed for operations, including the source of such information, before such information is distributed.

**SUBPART B — TECHNICAL REQUIREMENTS FOR THE PROVISION OF
AERONAUTICAL INFORMATION SERVICES (AIS.TR)****Section 1 — General requirements****AIS.TR.105 Working methods and operating procedures for the provision of
aeronautical information services**

Aeronautical information services providers shall be able to demonstrate that their working methods and operating procedures are compliant with the standards in:

- (a) Commission Regulation (EU) No 73/2010⁶;
- (b) the following Annexes to the Convention on International Civil Aviation as far as they are relevant for the provision of aeronautical information services in the airspace concerned:

⁶ Commission Regulation (EU) No 73/2010 of 26 January 2010 laying down requirements on the quality of aeronautical data and aeronautical information for the single European sky (OJ L 23, 27.1.2010, p. 6).

- (1) Annex 3 on meteorological service for international air navigation in its 17th edition of July 2010, including all amendments up to No 75;
- (2) Annex 4 on aeronautical charts in its 11th edition of July 2009, including all amendments up to No 56; and
- (3) without prejudice to Commission Regulation (EU) No 73/2010, Annex 15 on aeronautical information services in its 13th edition of July 2010, including all amendments up to No 36.

ANNEX VI

SPECIFIC REQUIREMENTS FOR THE PROVISION OF DATA FOR AIRSPACE USERS FOR THE PURPOSE OF AIR NAVIGATION (Part-DAT)

Reserved

ANNEX VII**SPECIFIC REQUIREMENTS FOR THE PROVISION OF COMMUNICATION,
NAVIGATION, AND SURVEILLANCE SERVICES
(Part-CNS)****SUBPART A — ADDITIONAL ORGANISATION REQUIREMENTS FOR THE
PROVISION OF COMMUNICATION, NAVIGATION, AND SURVEILLANCE
SERVICES (CNS.OR)****Section 1 — General requirements****CNS.OR.105 Scope**

This subpart establishes additional requirements to those in Annex II to be met by communication, navigation, or surveillance services providers.

CNS.OR.110 Technical and operational competence and capability

- (a) Communication, navigation, or surveillance services providers shall ensure the availability, continuity, accuracy, and integrity of their services;
- (b) Communication, navigation, or surveillance services providers shall confirm the quality level of the services they are providing, and shall demonstrate that their equipment is regularly maintained and, where required, calibrated;

CNS.OR.115 Safety of services

Providers of communication, navigation, or surveillance services shall comply with the requirements in ATS.OR.205 and ATS.OR.225.

**SUBPART B — TECHNICAL REQUIREMENTS FOR THE PROVISION OF
COMMUNICATION, NAVIGATION AND SURVEILLANCE SERVICES
(CNS.TR)****Section 1 — General requirements****CNS.TR.105 Working methods and operating procedures**

Communication, navigation, or surveillance services providers shall be able to demonstrate that their working methods and operating procedures are compliant with the standards of Annex 10 on aeronautical telecommunications to the Convention on International Civil Aviation in the following versions as far as they are relevant for the provision of communication, navigation, or surveillance services in the airspace concerned:

- (a) Volume I on radio navigation aids in its sixth edition of July 2006, including all amendments up to No 87;
- (b) Volume II on communication procedures including those with PANS status in its sixth edition of October 2001, including all amendments up to No 87;
- (c) Volume III on communications systems in its second edition of July 2007 including all amendments up to No 87;
- (d) Volume IV on surveillance radar and collision avoidance systems in its fourth edition of July 2007, including all amendments up to No 87; and

- (e) Volume V on aeronautical radio frequency spectrum utilisation in its second edition of July 2001, including all amendments up to No 87.

ANNEX VIII

SPECIFIC REQUIREMENTS FOR THE PROVISION OF AIR TRAFFIC FLOW MANAGEMENT (Part-ATFM)

SUBPART A — TECHNICAL REQUIREMENTS FOR THE PROVISION OF AIR TRAFFIC FLOW MANAGEMENT (ATFM.TR)

Section 1 — General requirements

ATFM.TR.105 Scope

This subpart establishes additional requirements to those in Annex II to be met by air traffic flow management providers.

ATFM.TR.110 Working methods and operating procedures for the provision of air traffic flow management

Air traffic flow management providers shall be able to demonstrate that their working methods and operating procedures are compliant with Commission Regulation (EU) No 255/2010⁷.

⁷ Commission Regulation (EU) No 255/2010 of 25 March 2010 laying down common rules on air traffic flow management (Text with EEA relevance) (OJ L 80, 26.3.2010, p. 10)

ANNEX IX

SPECIFIC REQUIREMENTS FOR THE PROVISION OF AIRSPACE MANAGEMENT (Part-ASM)

Reserved

ANNEX X

SPECIFIC REQUIREMENTS FOR THE PROVISION OF AIRSPACE DESIGN (Part-ASD)

Reserved.

ANNEX XI**SPECIFIC REQUIREMENTS FOR THE NETWORK MANAGER
(Part-NM)****SUBPART A — TECHNICAL REQUIREMENTS FOR THE NETWORK
MANAGER (NM.TR)****Section 1 — General requirements****NM.TR.105 Scope**

This subpart establishes additional requirements to those in Annex II to be met by the Network Manager.

NM.TR.110 Working methods and operating procedures for the provision of air traffic management network functions

The Network Manager shall be able to demonstrate that its working methods and operating procedures are compliant with other Union legislation and in particular with Commission Regulation (EU) No 255/2010 and Commission Regulation (EU) No 677/2011⁸.

⁸ Commission Regulation (EU) No 677/2011 of 7 July 2011 laying down detailed rules for the implementation of air traffic management (ATM) network functions and amending Regulation (EU) No 691/2010 (OJ L 185, 15.7.2011, p. 1)

ANNEX XII

SPECIFIC REQUIREMENTS FOR ATM/ANS PROVIDERS REGARDING PERSONNEL TRAINING AND COMPETENCE ASSESSMENT REQUIREMENTS (Part-PERS)

SUBPART A — TECHNICAL AND ENGINEERING PERSONNEL

Section 1 — Air Traffic Safety Electronics Personnel

Chapter 1 — General

ATSEP.OR.005 Scope

- (a) This section establishes the requirements to be met by an ATM/ANS provider with respect to the training and competence assessment of Air Traffic Safety Electronics Personnel (ATSEP);
- (b) Any authorised personnel who is competent to operate, maintain, release from, and return into operations safety-related air traffic management and communication, navigation, and surveillance systems shall be considered to be ATSEP; and
- (c) The design, testing, installation, and commissioning of operational systems and equipment are excluded from the scope of this section.

ATSEP.OR.010 Identification of safety-related systems

An ATM/ANS provider shall identify safety-related air traffic management and communication, navigation, and surveillance systems through their management systems in relation to their service.

ATSEP.OR.015 Training and competence assessment programme

An ATM/ANS provider that employs ATSEP shall:

- (a) establish a training and competence assessment programme to cover the duties and responsibilities to be performed by ATSEP; and
- (b) maintain records of all training completed by and competence assessment of ATSEP and make such records available:
 - (1) on request, to the ATSEP concerned; and
 - (2) on request, and with the agreement of the ATSEP, to the new ATM/ANS provider when the ATSEP changes ATM/ANS provider.

ATSEP.OR.020 Language proficiency

An ATM/ANS provider shall ensure that ATSEPs are proficient in the language(s) required to perform their duties.

Chapter 2 — Training requirements

ATSEP.OR.100 Training requirements — General

An ATM/ANS provider shall ensure that ATSEPs:

- (a) have successfully completed:
 - (1) the basic training as set out in ATSEP.OR.105;
 - (2) the qualification training as set out in ATSEP.OR.110; and
 - (3) the system/equipment rating training as set out in ATSEP.OR.115; and
- (b) complete continuation training in accordance with ATSEP.OR.120.

ATSEP.OR.105 Basic training

- (a) An ATM/ANS provider that employs ATSEPs shall ensure that basic training comprises:
 - (1) the subjects, topics, and sub-topics contained in Appendix 1 to this Annex; and
 - (2) where relevant to its activities, the subjects, topics, and sub-topics contained in Appendix 2 to this Annex.
- (b) An ATM/ANS provider may determine the most suitable entry level for their candidate ATSEP and, consequently, adapt the number and/or level of subjects, topics or sub-topics in (a) where relevant.

ATSEP.OR.110 Qualification training

An ATM/ANS provider that employs ATSEP shall ensure that qualification training comprises the subjects, topics, and sub-topics contained in Appendix 3 to this Annex.

- (a) In addition, the qualification training shall contain, as a minimum, one of the qualification streams, contained in Appendix 4 to this Annex.
- (b) The qualification stream shall be determined by associating the safety-related air traffic management and communication, navigation, and surveillance system(s) the candidate ATSEP will ultimately be working with, to the applicable stream(s).

ATSEP.OR.115 System and equipment rating training

- (a) The system/equipment rating training shall be applicable to the duties to be performed and include:
 - (1) theoretical courses; and/or
 - (2) practical courses; and/or
 - (3) on-the-job training.
- (b) An ATM/ANS provider shall ensure that candidate ATSEP acquire knowledge and skills pertaining to:
 - (1) the functionality of the system/equipment;
 - (2) the actual and potential impact of ATSEP actions on the system/equipment; and
 - (3) the impact of the system/equipment on the operational environment.

ATSEP.OR.120 Continuation training

An ATM/ANS provider shall ensure that ATSEP undertake appropriate continuation training, including refresher, equipment/systems upgrades and modifications, and/or emergency training.

Chapter 3 — Competence assessment requirements**ATSEP.OR.125 Competence assessment — General**

An ATM/ANS provider shall ensure that ATSEPs:

- (a) have been assessed as competent before performing their duties; and
- (b) are subject to ongoing competence assessment in accordance with ATSEP.OR.130.

ATSEP.OR.130 Assessment of initial and ongoing competence

An ATM/ANS provider that employs ATSEP shall:

- (a) establish, implement, and document processes for:
 - (1) assessing the initial and ongoing competence of ATSEP;
 - (2) addressing a failure or degradation of ATSEP competence; and
 - (3) ensuring the supervision of personnel who have not been assessed as competent; and
- (b) define the following criteria against which initial and ongoing competence shall be assessed:
 - (1) technical skills;
 - (2) behavioural skills;
 - (3) knowledge;
 - (4) experience; and
 - (5) language proficiency.

Chapter 4 — Instructors and assessors**ATSEP.OR.135 ATSEP training instructors**

- (a) An ATM/ANS provider shall ensure that ATSEP training instructors are suitably experienced and have appropriate knowledge in the field where instruction is to be given.
- (b) In addition, an ATM/ANS provider shall ensure that on-the-job training instructors have the skills to intervene in instances where safety may be compromised during the training.

ATSEP.OR.140 Technical skills assessors

An ATM/ANS provider that employs ATSEP shall ensure that technical skills assessors are suitably experienced to assess the criteria defined in ATSEP.OR.130(b).

APPENDIX 1 TO ANNEX XII**SUBPART A — TECHNICAL AND ENGINEERING ELECTRONIC PERSONNEL****Section 1 — Air Traffic Safety Electronics Personnel****ATSEP.OR.105****Basic training****Subject 1: INDUCTION****TOPIC 1 BASIND — Induction**

- Sub-topic 1.1 BASIND — Training and Assessment Overview
- Sub-topic 1.2 BASIND — National Organisation
- Sub-topic 1.3 BASIND — Workplace
- Sub-topic 1.4 BASIND — ATSEP role
- Sub-topic 1.5 BASIND — European/Worldwide Dimension
- Sub-topic 1.6 BASIND — International Standards and Recommended Practices
- Sub-topic 1.7 BASIND — Data Security
- Sub-topic 1.8 BASIND — Quality Management
- Sub-topic 1.9 BASIND — Safety Management System
- Sub-topic 1.10 BASIND — Health and Safety

Subject 2: AIR TRAFFIC FAMILIARISATION**TOPIC 1 BASATF — Air Traffic Familiarisation**

- Sub-topic 1.1 BASATF — Air Traffic Management
- Sub-topic 1.2 BASATF — Air Traffic Control
- Sub-topic 1.3 BASATF — Ground-based Safety Nets
- Sub-topic 1.4 BASATF — Air Traffic Control Tools and Monitoring Aids
- Sub-topic 1.5 BASATF — Familiarisation

APPENDIX 2 TO ANNEX XII

SUBPART A — TECHNICAL AND ENGINEERING ELECTRONIC PERSONNEL

Section 1 — Air Traffic Safety Electronics Personnel

ATSEP.OR.105

Basic training

Subject 3: AERONAUTICAL INFORMATION SERVICES

TOPIC 1 BASAIS — Aeronautical Information Service

Sub-topic 1.1 BASAIS — Aeronautical Information Services

Subject 4: METEOROLOGY

TOPIC 1 BASMET — Meteorology

Sub-topic 1.1 BASMET — Introduction to Meteorology

Sub-topic 1.2 BASMET — Impact on Aircraft and ATS Operation

Sub-topic 1.3 BASMET — Meteorological Parameters and Information

Sub-topic 1.4 BASMET — Meteorological Systems

Subject 5: COMMUNICATION

TOPIC 1 BASCOM — General Introduction

Sub-topic 1.1 BASCOM — Introduction to Communications

TOPIC 2 BASCOM — Voice Communications

Sub-topic 2.1 BASCOM — Introduction to voice communications

Sub-topic 2.2 BASCOM — Air-Ground Communication

Sub-topic 2.3 BASCOM — Ground-Ground Communication

TOPIC 3 BASCOM — Data Communications

Sub-topic 3.1 BASCOM — Introduction to Data Communications

Sub-topic 3.2 BASCOM — Networks

Sub-topic 3.3 BASCOM — Aviation Specific Networks, Applications and Service Providers

Subject 6: NAVIGATION

TOPIC 1 BASNAV — Introduction

Sub-topic 1.1 BASNAV — Purpose and use of Navigation

TOPIC 2 BASNAV — The Earth

Sub-topic 2.1 BASNAV — Form of the Earth

Sub-topic 2.2 BASNAV — Coordinate systems, direction and distance

Sub-topic 2.3 BASNAV — Earth's Magnetism

TOPIC 3 BASNAV — Navigational System Performance

Sub-topic 3.1 BASNAV — Factors affecting electronic navigation performance

Sub-topic 3.2 BASNAV — Performance of Navigation Systems

Sub-topic 3.3 BASNAV — Means of Navigation

TOPIC 4 BASNAV — Navigational Systems

Sub-topic 4.1 BASNAV — Terrestrial Navigation Aids

Sub-topic 4.2 BASNAV — On-board Navigation Systems

Sub-topic 4.3 BASNAV — Space-Based Navigation Systems

TOPIC 5 BASNAV — Performance-based Navigation

Sub-topic 5.1 BASNAV — PBN

Sub-topic 5.2 BASNAV — Future Developments

Subject 7: SURVEILLANCE**TOPIC 1 BASSUR — Surveillance**

Sub-topic 1.1 BASSUR — Introduction to Surveillance

Sub-topic 1.2 BASSUR — Avionics

Sub-topic 1.3 BASSUR — Primary Radar

Sub-topic 1.4 BASSUR — Secondary Radars

Sub-topic 1.5 BASSUR — Surveillance Data Message Format

Sub-topic 1.6 BASSUR — Automatic Dependent Surveillance (ADS)

Sub-topic 1.7 BASSUR — Weather Radar

Sub-topic 1.8 BASSUR — Integration of Surveillance Information

Sub-topic 1.9 BASSUR — Multilateration

Sub-topic 1.10 BASSUR — Airport Surface Surveillance

Sub-topic 1.11 BASSUR — Display of Surveillance Information

Sub-topic 1.12 BASSUR — Analysis Tools

Subject 8: DATA PROCESSING**TOPIC 1 BASDAT— Data Processing**

Sub-topic 1.1 BASDAT — Introduction to Data Processing

Sub-topic 1.2 BASDAT — System Software and Hardware Principles

Sub-topic 1.3 BASDAT — Surveillance Data Processing

Sub-topic 1.4 BASDAT — Flight Data Processing (FDP)

Sub-topic 1.5 BASDAT — Human Machine Interface Systems

Sub-topic 1.6 BASDAT — Miscellaneous Information

Subject 9: SYSTEM MONITORING & CONTROL**TOPIC 1 BASSMC — System Monitoring and Control (SMC)**

Sub-topic 1.1 BASSMC — Overview of SMC Function

Sub-topic 1.2 BASSMC — System Configuration

Sub-topic 1.3 BASSMC — Monitoring and Control Functions

Sub-topic 1.4 BASSMC — Coordination and Reporting

Sub-topic 1.5 BASSMC — Emergency Coordination

Sub-topic 1.6 BASSMC — Equipment Operating

Subject 10: MAINTENANCE PROCEDURES

TOPIC 1 BASMP — Maintenance procedures

Sub-topic 1.1 BASMP — Maintenance Procedures

Subject 11: FACILITIES

TOPIC 1 BASFAC — Facilities

Sub-topic 1.1 BASFAC — Power Supplies

Sub-topic 1.2 BASFAC — Air Conditioning

APPENDIX 3 TO ANNEX XII**SUBPART A — TECHNICAL AND ENGINEERING ELECTRONIC PERSONNEL****Section 1 — Air Traffic Safety Electronics Personnel****ATSEP.OR.110****Qualification training — Shared****Subject 1: SAFETY****TOPIC 1 — Safety management**

Sub-topic 1.1 — Policy and Principles

Sub-topic 1.2 — Concept of Risk and Principles of Risk Assessment

Sub-topic 1.3 — Safety Assessment Process

Sub-topic 1.4 — Air Navigation System Risk Classification Scheme

Sub-topic 1.5 — Safety Regulation

Subject 2: HEALTH AND SAFETY**TOPIC 1 — Hazard awareness and legal rules**

Sub-topic 1.1 — Hazard Awareness

Sub-topic 1.2 — Regulations and Procedures

Sub-topic 1.3 — Handling of Hazardous Material

Subject 3: HUMAN FACTORS**TOPIC 1 — Introduction to human factors**

Sub-topic 1.1 — Introduction

TOPIC 2 — Working knowledge and skills

Sub-topic 2.1 — ATSEP knowledge, skills and competence

TOPIC 3 — Psychological factors

Sub-topic 3.1 — Cognition

TOPIC 4 — Medical

Sub-topic 4.1 — Fatigue

Sub-topic 4.2 — Fitness

Sub-topic 4.3 — Work Environment

TOPIC 5 — Organisational and Social Factors

Sub-topic 5.1 — Basic Needs of People at Work

Sub-topic 5.2 — Team Resource Management

Sub-topic 5.3 — Teamwork and Team Roles

TOPIC 6 — Communication

Sub-topic 6.1 — Written Report

Sub-topic 6.2 — Verbal and Non-verbal Communication

TOPIC 7 — Stress

Sub-topic 7.1 — Stress

Sub-topic 7.2 — Stress Management

TOPIC 8 — Human Error

Sub-topic 8.1 — Human Error

APPENDIX 4 TO ANNEX XII**SUBPART A — TECHNICAL AND ENGINEERING ELECTRONIC PERSONNEL****Section 1 — Air Traffic Safety Electronics Personnel****ATSEP.OR.110****Qualification training — Streams****1. COMMUNICATION — VOICE****Subject 1: VOICE****TOPIC 1 COMVCE — Air-ground**

- Sub-topic 1.1 COMVCE — Transmission/Reception
- Sub-topic 1.2 COMVCE — Radio Antenna Systems
- Sub-topic 1.3 COMVCE — Voice Switch
- Sub-topic 1.4 COMVCE — Controller Working Position
- Sub-topic 1.5 COMVCE — Radio Interfaces

TOPIC 2 COMVCE — Ground-ground

- Sub-topic 2.1 COMVCE — Interfaces
- Sub-topic 2.2 COMVCE — Protocols
- Sub-topic 2.3 COMVCE — Switch
- Sub-topic 2.4 COMVCE — Communication Chain
- Sub-topic 2.5 COMVCE — Controller Working Position

Subject 2: TRANSMISSION PATH**TOPIC 1 COMVCE — Lines**

- Sub-topic 1.1 COMVCE — Lines Theory
- Sub-topic 1.2 COMVCE — Digital Transmissions
- Sub-topic 1.3 COMVCE — Types of Lines

TOPIC 2 COMVCE — Specific links

- Sub-topic 2.1 COMVCE — Microwave Link
- Sub-topic 2.2 COMVCE — Satellite

Subject 3: RECORDERS**TOPIC 1 COMVCE — Legal recorders**

- Sub-topic 1.1 COMVCE — Regulations
- Sub-topic 1.2 COMVCE — Principles

Subject 4: FUNCTIONAL SAFETY**TOPIC 1 COMVCE — Safety altitude**

- Sub-topic 1.1 COMVCE — Safety Attitude

TOPIC 2 COMVCE — Functional safety

Sub-topic 2.1 COMVCE — Functional safety

2. COMMUNICATION — DATA**Subject 1: DATA****TOPIC 1 COMDAT— Introduction to networks**

Sub-topic 1.1 COMDAT — Types
 Sub-topic 1.2 COMDAT — Networks
 Sub-topic 1.3 COMDAT — External Network Services
 Sub-topic 1.4 COMDAT — Measuring Tools
 Sub-topic 1.5 COMDAT — Troubleshooting

TOPIC 2 COMDAT — Protocols

Sub-topic 2.1 COMDAT — Fundamental Theory
 Sub-topic 2.2 COMDAT — General Protocols
 Sub-topic 3.3 COMDAT — Specific Protocols

TOPIC 3 COMDAT — National networks

Sub-topic 3.1 COMDAT — National Networks

TOPIC 4 COMDAT — European networks

Sub-topic 4.1 COMDAT — Network Technologies

TOPIC 5 COMDAT — Global Networks

Sub-topic 5.1 COMDAT — Networks and Standards
 Sub-topic 5.2 COMDAT — Description
 Sub-topic 5.3 COMDAT — Global Architecture
 Sub-topic 5.4 COMDAT — Air-Ground Sub-networks
 Sub-topic 5.5 COMDAT — Ground-Ground sub-networks
 Sub-topic 5.6 COMDAT — Networks on Board of the Aircraft
 Sub-topic 5.7 COMDAT — Air-Ground Applications

Subject 2: TRANSMISSION PATH**TOPIC 1 COMDAT — Lines**

Sub-topic 1.1 COMDAT — Lines Theory
 Sub-topic 1.2 COMDAT — Digital Transmission
 Sub-topic 1.3 COMDAT — Types of Lines

TOPIC 2 COMDAT — Specific Links

Sub-topic 2.1 COMDAT — Microwave Link
 Sub-topic 2.2 COMDAT — Satellite

Subject 3: RECORDERS**TOPIC 1 COMDAT — Legal Recorders**

Sub-topic 1.1 COMDAT — Regulations

Sub-topic 1.2 COMDAT — Principles

Subject 4: FUNCTIONAL SAFETY

TOPIC 1 COMDAT — Safety Altitude

Sub-topic 1.1 COMDAT — Safety Attitude

TOPIC 2 COMDAT — Functional safety

Sub-topic 2.1 COMDAT — Functional Safety

3. NAVIGATION — NON-DIRECTIONAL BEACON (NDB)

Subject 1: PERFORMANCE-BASED NAVIGATION

TOPIC 1 NAVNDB — Navigation Concepts

Sub-topic 1.1 NAVNDB — Operational Requirements

Sub-topic 1.2 NAVNDB — Performance-based Navigation

Sub-topic 1.3 NAVNDB — Area Navigation Concept (RNAV)

Sub-topic 1.4 NAVNDB — NOTAM

Subject 2: GROUND-BASED SYSTEMS — NDB

TOPIC 1 NAVNDB — NDB/Locator

Sub-topic 1.1 NAVNDB — Use of the System

Sub-topic 1.2 NAVNDB — Ground Station Architecture

Sub-topic 1.3 NAVNDB — Transmitter Sub-system

Sub-topic 1.4 NAVNDB — Antenna Sub-system

Sub-topic 1.5 NAVNDB — Monitoring and Control Sub-systems

Sub-topic 1.6 NAVNDB — On-board Equipment

Sub-topic 1.7 NAVNDB — System Check and Maintenance

Subject 3: GLOBAL NAVIGATION SATELLITE SYSTEM

TOPIC 1 NAVNDB — GNSS

Sub-topic 1.1 NAVNDB — General View

Subject 4: ON-BOARD EQUIPMENT

TOPIC 1 NAVNDB — On-board Systems

Sub-topic 1.1 NAVNDB — On-Board Systems

TOPIC 2 NAVNDB — Autonomous Navigation

Sub-topic 2.1 NAVNDB — Inertial Navigation

TOPIC 3 NAVNDB — Vertical Navigation

Sub-topic 3.1 NAVNDB — Vertical Navigation

Subject 5: FUNCTIONAL SAFETY

TOPIC 1 NAVNDB — Safety attitude

Sub-topic 1.1 NAVNDB — Safety Attitude

TOPIC 2 NAVNDB — Functional safety

Sub-topic 1.1 NAVNDB — Functional Safety

4. NAVIGATION — DIRECTION FINDING (DF)

Subject 1: PERFORMANCE-BASED NAVIGATION

TOPIC 1 NAVDF — Navigation Concepts

Sub-topic 1.1 NAVDF — Operational Requirements

Sub-topic 1.2 NAVDF — Performance-based Navigation

Sub-topic 1.3 NAVDF — Area Navigation Concept (RNAV)

Sub-topic 1.4 NAVDF — NOTAM

Subject 2: GROUND-BASED SYSTEMS — DF

TOPIC 1 NAVDF — DF

Sub-topic 1.1 — Use of the System

Sub-topic 1.2 — VDF/DDF Equipment Architecture

Sub-topic 1.3 — Receiver Sub-system

Sub-topic 1.4 — Antenna Sub-system

Sub-topic 1.5 — Monitoring and Control Sub-systems

Sub-topic 1.6 — System Check and Maintenance

Subject 3: GLOBAL SATELLITE NAVIGATION SYSTEM

TOPIC 1 NAVDF — GNSS

Sub-topic 1.1 — General View

Subject 4: ON-BOARD EQUIPMENT

TOPIC 1 NAVDF — On-board Systems

Sub-topic 1.1 NAVDF — On-Board Systems

TOPIC 2 NAVDF — Autonomous Navigation

Sub-topic 2.1 NAVDF — Inertial Navigation

TOPIC 3 NAVDF — Vertical Navigation

Sub-topic 3.1 NAVDF — Vertical Navigation

Subject 5: FUNCTIONAL SAFETY

TOPIC 1 NAVDF — Safety Attitude

Sub-topic 1.1 NAVDF — Safety Attitude

TOPIC 2 NAVDF — Functional Safety

Sub-topic 2.1 NAVDF — Functional Safety

5. NAVIGATION — VHF OMNIDIRECTIONAL RADIO RANGE (VOR)

Subject 1: PERFORMANCE-BASED NAVIGATION

TOPIC 1 NAVVOR — Navigation Concepts

- Sub-topic 1.1 NAVVOR — Operational Requirements
- Sub-topic 1.2 NAVVOR — Performance-based Navigation
- Sub-topic 1.3 NAVVOR — Area Navigation Concept (RNAV)
- Sub-topic 1.4 NAVVOR — NOTAM

Subject 2: GROUND-BASED SYSTEMS — VOR

TOPIC 1 NAVVOR — VOR

- Sub-topic 1.1 NAVVOR — Use of the System
- Sub-topic 1.2 NAVVOR — Fundamentals of CVOR and/or DVOR
- Sub-topic 1.3 NAVVOR — Ground Station Architecture
- Sub-topic 1.4 NAVVOR — Transmitter Sub-system
- Sub-topic 1.5 NAVVOR — Antenna Sub-system
- Sub-topic 1.6 NAVVOR — Monitoring and Control Sub-system
- Sub-topic 1.7 NAVVOR — On-board Equipment
- Sub-topic 1.8 NAVVOR — System Check and Maintenance

Subject 3: GLOBAL SATELLITE NAVIGATION SYSTEM

TOPIC 1 NAVVOR — GNSS

- Sub-topic 1.1 NAVVOR — General View

Subject 4: ON-BOARD EQUIPMENT

TOPIC 1 NAVVOR — On-board Systems

- Sub-topic 1.1 NAVVOR — On-Board Systems

TOPIC 2 NAVVOR — Autonomous navigation

- Sub-topic 2.1 NAVVOR — Inertial Navigation

TOPIC 3 NAVVOR — Vertical navigation

- Sub-topic 3.1 NAVVOR — Vertical Navigation

Subject 5: FUNCTIONAL SAFETY

TOPIC 1 NAVVOR — Safety attitude

- Sub-topic 1.1 NAVVOR — Safety Attitude

TOPIC 2 NAVVOR — Functional safety

- Sub-topic 2.1 NAVVOR — Functional Safety

6. NAVIGATION — DISTANCE MEASURING EQUIPMENT (DME)

Subject 1: PERFORMANCE-BASED NAVIGATION

TOPIC 1 NAVDME — Navigation concepts

- Sub-topic 1.1 NAVDME — Operational Requirements
- Sub-topic 1.2 NAVDME — Performance-based Navigation
- Sub-topic 1.3 NAVDME — Area Navigation Concept (RNAV)
- Sub-topic 1.4 NAVDME — NOTAM

Subject 2: GROUND-BASED SYSTEMS — DME

TOPIC 1 NAVDME — DME

- Sub-topic 1.1 NAVDME — Use of the System
- Sub-topic 1.2 NAVDME — Fundamentals of DME
- Sub-topic 1.3 NAVDME — Ground Station Architecture
- Sub-topic 1.4 NAVDME — Receiver Sub-system
- Sub-topic 1.5 NAVDME — Signal Processing
- Sub-topic 1.6 NAVDME — Transmitter Sub-system
- Sub-topic 1.7 NAVDME — Antenna Sub-system
- Sub-topic 1.8 NAVDME — Monitoring and Control Sub-system
- Sub-topic 1.9 NAVDME — On-board Equipment
- Sub-topic 1.10 NAVDME — System Check and Maintenance

Subject 3: GLOBAL SATELLITE NAVIGATION SYSTEM

TOPIC 1 NAVDME — GNSS

- Sub-topic 1.1 NAVDME — General View

Subject 4: ON-BOARD EQUIPMENT

TOPIC 1 NAVDME — On-board Systems

- Sub-topic 1.1 NAVDME — On-Board Systems

TOPIC 2 NAVDME — Autonomous Navigation

- Sub-topic 2.1 NAVDME — Inertial Navigation

TOPIC 3 NAVDME — Vertical Navigation

- Sub-topic 3.1 NAVDME — Vertical Navigation

Subject 5: FUNCTIONAL SAFETY

TOPIC 1 NAVDME — Safety Attitude

- Sub-topic 1.1 NAVDME — Safety Attitude

TOPIC 2 NAVDME — Functional Safety

- Sub-topic 2.1 NAVDME — Functional Safety

7. NAVIGATION — INSTRUMENT LANDING SYSTEM (ILS)

Subject 1: PERFORMANCE-BASED NAVIGATION

TOPIC 1 NAVILS — Navigation concepts

- Sub-topic 1.1 NAVILS — Operational Requirements
- Sub-topic 1.2 NAVILS — Performance-based Navigation

Sub-topic 1.3 NAVILS — Area Navigation Concept (RNAV)

Sub-topic 1.4 NAVILS — NOTAM

Subject 2: GROUND-BASED SYSTEMS — ILS

TOPIC 1 NAVILS — ILS

Sub-topic 1.1 NAVILS — Use of the System

Sub-topic 1.2 NAVILS — Fundamentals of ILS

Sub-topic 1.3 NAVILS — 2F-Systems

Sub-topic 1.4 NAVILS — Ground Station Architecture

Sub-topic 1.5 NAVILS — Transmitter Sub-system

Sub-topic 1.6 NAVILS — Antenna Sub-system

Sub-topic 1.7 NAVILS — Monitoring and Control Sub-system

Sub-topic 1.8 NAVILS — On-board Equipment

Sub-topic 1.9 NAVILS — System Check and Maintenance

Subject 3: GLOBAL SATELLITE NAVIGATION SYSTEM

TOPIC 1 NAVILS — GNSS

Sub-topic 1.1 NAVILS — General View

Subject 4: ON-BOARD EQUIPMENT

TOPIC 1 NAVILS — On-board Systems

Sub-topic 1.1 NAVILS — On-Board Systems

TOPIC 2 NAVILS — Autonomous navigation

Sub-topic 2.1 NAVILS — Inertial Navigation

TOPIC 3 NAVILS — Vertical Navigation

Sub-topic 3.1 NAVILS — Vertical Navigation

Subject 5: FUNCTIONAL SAFETY

TOPIC 1 NAVILS — Safety Attitude

Sub-topic 1.1 NAVILS — Safety Attitude

TOPIC 2 NAVILS — Functional Safety

Sub-topic 2.1 NAVILS — Functional Safety

8. NAVIGATION — MICROWAVE LANDING SYSTEM (MLS)

Subject 1: PERFORMANCE-BASED NAVIGATION

TOPIC 1 NAVMLS — Navigation Concepts

Sub-topic 1.1 NAVMLS — Operational Requirements

Sub-topic 1.2 NAVMLS — Performance-based Navigation

Sub-topic 1.3 NAVMLS — Area Navigation Concept (RNAV)

Sub-topic 1.4 NAVMLS — NOTAM

Subject 2: GROUND-BASED SYSTEMS — MLS

TOPIC 1 NAVMLS — MLS

- Sub-topic 1.1 NAVMLS — Use of the System
- Sub-topic 1.2 NAVMLS — Fundamentals of MLS
- Sub-topic 1.3 NAVMLS — Ground Station Architecture
- Sub-topic 1.4 NAVMLS — Transmitter Sub-system
- Sub-topic 1.5 NAVMLS — Antenna Sub-system
- Sub-topic 1.6 NAVMLS — Monitoring and Control Sub-system
- Sub-topic 1.7 NAVMLS — On-board Equipment
- Sub-topic 1.4 NAVMLS — System Check and Maintenance

Subject 3: GLOBAL SATELLITE NAVIGATION SYSTEM**TOPIC 1 NAVMLS — GNSS**

- Sub-topic 1.1 NAVMLS — General View

Subject 4: ON-BOARD EQUIPMENT**TOPIC 1 NAVMLS — On-board Systems**

- Sub-topic 1.1 NAVMLS — On-Board Systems

TOPIC 2 NAVMLS — Autonomous navigation

- Sub-topic 2.1 NAVMLS — Inertial Navigation

TOPIC 3 NAVMLS — Vertical navigation

- Sub-topic 3.1 NAVMLS — Vertical Navigation

Subject 5: FUNCTIONAL SAFETY**TOPIC 1 NAVMLS — Safety attitude**

- Sub-topic 1.1 NAVMLS — Safety Attitude

TOPIC 2 NAVMLS — Functional safety

- Sub-topic 2.1 NAVMLS — Functional Safety

9. SURVEILLANCE — PRIMARY SURVEILLANCE RADAR**Subject 1: PRIMARY SURVEILLANCE RADAR****TOPIC 1 SURPSR — ATC surveillance**

- Sub-topic 1.1 SURPSR — Use of PSR for Air Traffic Services
- Sub-topic 1.2 SURPSR — Antenna (PSR)
- Sub-topic 1.3 SURPSR — Transmitters
- Sub-topic 1.4 SURPSR — Characteristics of Primary Targets
- Sub-topic 1.5 SURPSR — Receivers
- Sub-topic 1.6 SURPSR — Signal Processing and Plot Extraction
- Sub-topic 1.7 SURPSR — Plot Combining
- Sub-topic 1.8 SURPSR — Characteristics of Primary Radar

TOPIC 2 SURPSR — Surface Movement Radar

Sub-topic 2.1 SURPSR — Use of SMR for Air Traffic Services

Sub-topic 2.2 SURPSR — Radar Sensor

TOPIC 3 SURPSR — Test and Measurement

Sub-topic 3.1 SURPSR — Test and Measurement

Subject 2: HUMAN MACHINE INTERFACE (HMI)

TOPIC 1 SURPSR — HMI

Sub-topic 1.1 SURPSR — ATCO HMI

Sub-topic 1.2 SURPSR — ATSEP HMI

Sub-topic 1.3 SURPSR — Pilot HMI

Sub-topic 1.4 SURPSR — Displays

Subject 3: SURVEILLANCE DATA TRANSMISSION

TOPIC 1 SURPSR — SDT

Sub-topic 1.1 SURPSR — Technology and Protocols

Sub-topic 1.2 SURPSR — Verification Methods

Subject 4: FUNCTIONAL SAFETY

TOPIC 1 SURPSR — Safety Attitude

Sub-topic 1.1 SURPSR — Safety Attitude

TOPIC 2 SURPSR — Functional Safety

Sub-topic 2.1 SURPSR — Functional Safety

Subject 5: DATA PROCESSING SYSTEMS

TOPIC 1 SURPSR — System Components

Sub-topic 1.1 SURPSR — Surveillance Data Processing Systems

10.SURVEILLANCE — SECONDARY SURVEILLANCE RADAR

Subject 1: SECONDARY SURVEILLANCE RADAR (SSR)

TOPIC 1 SURSSR — SSR and Mono-pulse SSR

Sub-topic 1.1 SURSSR — Use of SSR for Air Traffic Services

Sub-topic 1.2 SURSSR — Antenna (SSR)

Sub-topic 1.3 SURSSR — Interrogator

Sub-topic 1.4 SURSSR — Transponder

Sub-topic 1.5 SURSSR — Receivers

Sub-topic 1.6 SURSSR — Signal Processing and Plot Extraction

Sub-topic 1.7 SURSSR — Plot Combining

Sub-topic 1.8 SURSSR — Test and Measurement

TOPIC 2 SURSSR — Mode S

Sub-topic 2.1 SURSSR — Introduction to Mode S

Sub-topic 2.2 SURSSR — Mode S System

TOPIC 3 SURSSR — Multilateration

Sub-topic 3.1 SURSSR — MLAT in use

Sub-topic 3.2 SURSSR — MLAT Principles

TOPIC 4 SURSSR — Environment

Sub-topic 4.1 SURSSR — SSR Environment

Subject 2: HUMAN MACHINE INTERFACE (HMI)

TOPIC 1 SURSSR — HMI

Sub-topic 1.1 SURSSR — ATCO HMI

Sub-topic 1.2 SURSSR — ATSEP HMI

Sub-topic 1.3 SURSSR — Pilot HMI

Sub-topic 1.1 SURSSR — Displays

Subject 3: SURVEILLANCE DATA TRANSMISSION

TOPIC 1 SURSSR — SDT

Sub-topic 1.1 SURSSR — Technology and Protocols

Sub-topic 1.2 SURSSR — Verification Methods

Subject 4: FUNCTIONAL SAFETY

TOPIC 1 SURSSR — Safety attitude

Sub-topic 1.1 SURSSR — Safety Attitude

TOPIC 2 SURSSR — Functional safety

Sub-topic 2.1 SURSSR — Functional Safety

Subject 5: DATA PROCESSING SYSTEMS

TOPIC 1 SURSSR — System components

Sub-topic 1.1 SURADS — Surveillance Data Processing Systems

11.SURVEILLANCE — AUTOMATIC DEPENDENT SURVEILLANCE

Subject 1: AUTOMATIC DEPENDENT SURVEILLANCE (ADS)

TOPIC 1 SURADS — General view on ADS

Sub-topic 1.1 SURADS — Definition of ADS

TOPIC 2 SURADS — ADS-B

Sub-topic 2.1 SURADS — Introduction to ADS-B

Sub-topic 2.2 SURADS — Techniques of ADS-B

Sub-topic 2.3 SURADS — VDL Mode 4 (STDMA)

Sub-topic 2.4 SURADS — Mode S Extended Squitter

Sub-topic 2.5 SURADS — UAT

Sub-topic 2.6 SURADS — ASTERIX

TOPIC 3 SURADS — ADS-C

Sub-topic 3.1 SURADS — Introduction to ADS-C

Sub-topic 3.2 SURADS — Techniques in ADS-C

Subject 2: HUMAN MACHINE INTERFACE (HMI)**TOPIC 1 SURADS — HMI**

Sub-topic 1.1 SURADS — ATCO HMI

Sub-topic 1.2 SURADS — ATSEP HMI

Sub-topic 1.3 SURADS — Pilot HMI

Sub-topic 1.1 SURADS — Displays

Subject 3: SURVEILLANCE DATA TRANSMISSION**TOPIC 1 SURADS — SDT**

Sub-topic 1.1 SURADS — Technology and Protocols

Sub-topic 1.2 SURADS — Verification Methods

Subject 4: FUNCTIONAL SAFETY**TOPIC 1 SURADS — Safety attitude**

Sub-topic 1.1 SURADS — Safety Attitude

TOPIC 2 SURADS — Functional safety

Sub-topic 2.1 SURADS — Functional Safety

Subject 5: DATA PROCESSING SYSTEMS**TOPIC 1 SURADS — System components**

Sub-topic 1.1 SURADS — Surveillance Data Processing Systems

12.DATA — DATA PROCESSING**Subject 1: FUNCTIONAL SAFETY****TOPIC 1 DATDP — Functional Safety**

Sub-topic 1.1 DATDP — Functional Safety

Sub-topic 1.2 DATDP — Software Integrity and Security

TOPIC 2 DATDP — Safety Attitude

Sub-topic 2.1 DATDP — Safety Attitude

Subject 2: DATA PROCESSING SYSTEMS**TOPIC 1 DATDP — User requirements**

Sub-topic 1.1 DATDP — Controller requirements

Sub-topic 1.2 DATDP — Trajectories, Prediction and Calculation

Sub-topic 1.3 DATDP — Ground Safety Nets

Sub-topic 1.4 DATDP — Decision Support

TOPIC 2 DATDP — System Components Data

- Sub-topic 2.1 DATDP — Processing Systems
- Sub-topic 2.2 DATDP — Flight Data Processing Systems
- Sub-topic 2.3 DATDP — Surveillance Data Processing Systems

Subject 3: DATA PROCESS

TOPIC 1 DATDP — Software process

- Sub-topic 1.1 DATDP — Middleware
- Sub-topic 1.2 DATDP — Operating Systems
- Sub-topic 1.3 DATDP — Configuration Control
- Sub-topic 1.4 DATDP — Software Development Process

TOPIC 2 DATDP — Hardware platform

- Sub-topic 2.1 DATDP — Equipment Upgrade
- Sub-topic 2.2 DATDP — COTS
- Sub-topic 2.3 DATDP — Interdependence
- Sub-topic 2.4 DATDP — Maintainability

TOPIC 3 DATDP — Testing

- Sub-topic 3.1 DATDP — Testing

Subject 4: DATA

TOPIC 1 DATDP — Data Essential Features

- Sub-topic 1.1 DATDP — Data Significance
- Sub-topic 1.2 DATDP — Data Configuration Control
- Sub-topic 1.3 DATDP — Data Standards

TOPIC 2 DATDP — ATM Data — Detailed structure

- Sub-topic 2.1 DATDP — System Area
- Sub-topic 2.2 DATDP — Characteristic Points
- Sub-topic 2.3 DATDP — Aircraft Performances
- Sub-topic 2.4 DATDP — Screen Manager
- Sub-topic 2.5 DATDP — Auto-coordination Messages
- Sub-topic 2.6 DATDP — Configuration Control Data
- Sub-topic 2.7 DATDP — Physical Configuration Data
- Sub-topic 2.8 DATDP — Relevant Meteo Data
- Sub-topic 2.9 DATDP — Alert and Error Messages to ATSEP
- Sub-topic 2.10 DATDP — Alert and Error Messages to ATCO

Subject 5: COMMUNICATION DATA

TOPIC 1 DATDP — Introduction to Networks

- Sub-topic 1.1 DATDP — Types
- Sub-topic 1.2 DATDP — Networks
- Sub-topic 1.3 DATDP — External Network Services
- Sub-topic 1.4 DATDP — Measuring Tools
- Sub-topic 1.5 DATDP — Troubleshooting

TOPIC 2 DATDP — Protocols

Sub-topic 2.1 DATDP — Fundamental Theory

Sub-topic 2.2 DATDP — General Protocols

Sub-topic 2.3 DATDP — Specific Protocols

TOPIC 3 DATDP — National Networks

Sub-topic 3.1 DATDP — National Networks

Subject 6: SURVEILLANCE PRIMARY

TOPIC 1 DATDP — ATC Surveillance

Sub-topic 1.1 DATDP — Use of PSR for Air Traffic Services

Subject 7: SURVEILLANCE SECONDARY

TOPIC 1 DATDP — SSR AND MSSR

Sub-topic 1.1 DATDP — Use of SSR for Air Traffic Services

TOPIC 2 DATDP — Mode S

Sub-topic 2.1 DATDP — Introduction to Mode S

TOPIC 3 DATDP — Multilateration

Sub-topic 3.1 DATDP — MLAT Principles

Subject 8: SURVEILLANCE — HMI

TOPIC 1 DATDP — HMI

Sub-topic 1.1 DATDP — ATCO HMI

Subject 9: SURVEILLANCE DATA TRANSMISSION

TOPIC 1 DATDP — Surveillance Data Transmission

Sub-topic 1.1 DATDP — Technology and Protocols

13.SYSTEM MONITORING AND CONTROL — COMMUNICATION

Subject 1: SMC — ANS STRUCTURE

TOPIC 1 SMCCOM— ANSP Organisation and Operation

Sub-topic 1.1 SMCCOM — ANSP Organisation and Operation

TOPIC 2 SMCCOM — ANSP Maintenance Program

Sub-topic 2.1 SMCCOM — Policy

TOPIC 3 SMCCOM — ATM Context

Sub-topic 3.1 SMCCOM — ATM Context

TOPIC 4 SMCCOM — ANSP Administrative Practices

Sub-topic 4.1 SMCCOM — Administration

Subject 2: SMC — ANS SYSTEM/EQUIPMENT

TOPIC 1 SMCCOM — Operational Impacts

Sub-topic 1.1 SMCCOM — Degradation or Loss of System/Equipment Services

TOPIC 2 SMCCOM — User Position Functionality and Operation

Sub-topic 2.1 SMCCOM — User Working Position

Sub-topic 2.2 SMCCOM — SMC Working Position

Subject 3: SMC — TOOLS, PROCESSES AND PROCEDURES**TOPIC 1 SMCCOM — Requirements**

Sub-topic 1.1 SMCCOM — SMS

Sub-topic 1.2 SMCCOM — QMS

Sub-topic 1.3 SMCCOM — SMS application in the working environment

TOPIC 2 SMCCOM — Maintenance Agreements with Outside Agencies

Sub-topic 2.1 SMCCOM — Principles of agreements

TOPIC 3 SMCCOM — SMC General Processes

Sub-topic 3.1 SMCCOM — Roles and responsibilities

TOPIC 4 SMCCOM — Maintenance Management Systems

Sub-topic 4.1 SMCCOM — Reporting

Subject 4: SMC - TECHNOLOGY**TOPIC 1 SMCCOM — Technologies and Principles**

Sub-topic 1.1 SMCCOM — General

Sub-topic 1.2 SMCCOM — Communication

Sub-topic 1.3 SMCCOM — Facilities

Subject 5: COMMUNICATION VOICE**TOPIC 1 SMCCOM — Air-Ground**

Sub-topic 1.1 SMCCOM — Controller Working Position

TOPIC 2 SMCCOM — Ground-Ground

Sub-topic 2.1 SMCCOM — Interfaces

Sub-topic 2.2 SMCCOM — Switch

Sub-topic 2.3 SMCCOM — Controller Working Position

Subject 6: COMMUNICATION - DATA**TOPIC 1 SMCCOM — European Networks**

Sub-topic 1.1 SMCCOM — Network Technologies

TOPIC 2 SMCCOM — Global Networks

Sub-topic 2.1 SMCCOM — Networks and Standards

Sub-topic 2.2 SMCCOM — Description

Sub-topic 2.3 SMCCOM — Global Architecture

Sub-topic 2.4 SMCCOM — Air-Ground Sub-networks

Sub-topic 2.5 SMCCOM — Ground-Ground sub-networks

Sub-topic 2.6 SMCCOM — Air-Ground Applications

Subject 7: COMMUNICATION — RECORDERS

TOPIC 1 SMCCOM — legal recorders

Sub-topic 1.1 SMCCOM — Regulations

Sub-topic 1.2 SMCCOM — Principles

Subject 8: NAVIGATION — PBN NDB**TOPIC 1 SMCCOM — NAV Concepts**

Sub-topic 1.1 SMCCOM — NOTAM

14. SYSTEM MONITORING AND CONTROL — NAVIGATION**Subject 1: SMC — ANS STRUCTURE****TOPIC 1 SMCNAV — ANSP Organisation and Operation**

Sub-topic 1.1 SMCNAV — ANSP Organisation and Operation

TOPIC 2 SMCNAV — ANSP Maintenance Program

Sub-topic 2.1 SMCNAV — Policy

TOPIC 3 SMCNAV — ATM Context

Sub-topic 3.1 SMCNAV — ATM Context

TOPIC 4 SMCNAV — ANSP Administrative Practices

Sub-topic 4.1 SMCNAV — Administration

Subject 2: SMC — ANS SYSTEM/EQUIPMENT**TOPIC 1 SMCNAV — Operational Impacts**

Sub-topic 1.1 SMCNAV — Degradation or Loss of System/Equipment Services

TOPIC 2 SMCNAV — User Position Functionality and Operation

Sub-topic 2.1 SMCNAV — User Working Position

Sub-topic 2.2 SMCNAV — SMC Working Position

Subject 3: SMC — TOOLS, PROCESSES AND PROCEDURES**TOPIC 1 SMCNAV — Requirements**

Sub-topic 1.1 SMCNAV — SMS

Sub-topic 1.2 SMCNAV — QMS

Sub-topic 1.3 SMCNAV — SMS application in the working environment

TOPIC 2 SMCNAV — Maintenance Agreements with Outside Agencies

Sub-topic 2.1 SMCNAV — Principles of agreements

TOPIC 3 SMCNAV — SMC General Processes

Sub-topic 3.1 SMCNAV — Roles and responsibilities

TOPIC 4 SMCNAV — Maintenance Management Systems

Sub-topic 4.1 SMCNAV — Reporting

Subject 4: SMC — TECHNOLOGY

TOPIC 1 SMCNAV — Technologies and Principles

Sub-topic 1.1 SMCNAV — General
 Sub-topic 1.2 SMCNAV — Communication
 Sub-topic 1.3 SMCNAV — Facilities

Subject 5: COMMUNICATION — DATA**TOPIC 1 SMCNAV — European Networks**

Sub-topic 1.1 SMCNAV — Network Technologies

TOPIC 2 SMCNAV — Global Networks

Sub-topic 2.1 SMCNAV — Networks and Standards
 Sub-topic 2.2 SMCNAV — Description
 Sub-topic 2.3 SMCNAV — Global Architecture
 Sub-topic 2.4 SMCNAV — Air-Ground Sub-networks
 Sub-topic 2.5 SMCNAV — Ground-Ground sub-networks
 Sub-topic 2.6 SMCNAV — Air-Ground Applications

Subject 6: COMMUNICATION — RECORDERS**TOPIC 1 SMCNAV — Legal Recorders**

Sub-topic 1.1 SMCNAV — Regulations
 Sub-topic 1.2 SMCNAV — Principles

Subject 7: NAVIGATION — PBN NDB**TOPIC 1 SMCNAV — NAV Concepts**

Sub-topic 1.1 SMCNAV — NOTAM

Subject 8: NAVIGATION — GROUND-BASED SYSTEMS-NDB**TOPIC 1 SMCNAV — NDB Locator**

Sub-topic 1.1 SMCNAV — Use of the System

Subject 9: NAVIGATION — GROUND-BASED SYSTEMS-DFI**TOPIC 1 SMCNAV — DF**

Sub-topic 1.1 SMCNAV — Use of the System

Subject 10: NAVIGATION — GROUND-BASED SYSTEMS-VOR**TOPIC 1 SMCNAV — VOR**

Sub-topic 1.1 SMCNAV — Use of the System

Subject 11: NAVIGATION — GROUND-BASED SYSTEMS - DME**TOPIC 1 SMCNAV — DME**

Sub-topic 1.1 SMCNAV — Use of the System

Subject 12: NAVIGATION — GROUND-BASED SYSTEMS - ILS**TOPIC 1 SMCNAV — ILS**

Sub-topic 1.1 SMCNAV — Use of the System

15. SYSTEM MONITORING AND CONTROL — SURVEILLANCE

Subject 1: SMC — ANS STRUCTURE

TOPIC 1 SMCSUR— ANSP Organisation and Operation

Sub-topic 1.1 SMCSUR — ANSP Organisation and Operation

TOPIC 2 SMCSUR — ANSP Maintenance Program

Sub-topic 2.1 SMCSUR — Policy

TOPIC 3 SMCSUR — ATM Context

Sub-topic 3.1 SMCSUR — ATM Context

TOPIC 4 SMCSUR — ANSP Administrative Practices

Sub-topic 4.1 SMCSUR — Administration

Subject 2: SMC — ANS SYSTEM/EQUIPMENT

TOPIC 1 SMCSUR — Operational Impacts

Sub-topic 1.1 SMCSUR — Degradation or Loss of System/Equipment Services

TOPIC 2 SMCSUR — User Position Functionality and Operation

Sub-topic 2.1 SMCSUR — User Working Position

Sub-topic 2.2 SMCSUR — SMC Working Position

Subject 3: SMC — TOOLS, PROCESSES AND PROCEDURES

TOPIC 1 SMCSUR — Requirements

Sub-topic 1.1 SMCSUR — SMS

Sub-topic 1.2 SMCSUR — QMS

Sub-topic 1.3 SMCSUR — SMS application in the working environment

TOPIC 2 SMCSUR — Maintenance Agreements with Outside Agencies

Sub-topic 2.1 SMCSUR — Principles of agreements

TOPIC 3 SMCSUR — SMC General Processes

Sub-topic 3.1 SMCSUR — Roles and responsibilities

TOPIC 4 SMCSUR — Maintenance Management Systems

Sub-topic 4.1 SMCSUR — Reporting

Subject 4: SMC - TECHNOLOGY

TOPIC 1 SMCSUR — Technologies and Principles

Sub-topic 1.1 SMCSUR — General

Sub-topic 1.2 SMCSUR — Communication

Sub-topic 1.3 SMCSUR — Facilities

Subject 5: COMMUNICATION — DATA

TOPIC 1 SMCSUR — European Networks

Sub-topic 1.1 SMCSUR — Network Technologies

TOPIC 2 SMCSUR — Global Networks

- Sub-topic 2.1 SMCSUR — Networks and Standards
- Sub-topic 2.2 SMCSUR — Description
- Sub-topic 2.3 SMCSUR — Global Architecture
- Sub-topic 2.4 SMCSUR — Air-Ground Sub-networks
- Sub-topic 2.5 SMCSUR — Ground-Ground sub-networks
- Sub-topic 2.6 SMCSUR — Air-Ground Applications

Subject 6: COMMUNICATION — RECORDERS**TOPIC 1 SMCSUR — Legal Recorders**

- Sub-topic 1.1 SMCSUR — Regulations
- Sub-topic 1.2 SMCSUR — Principles

Subject 7: NAVIGATION — PBN**TOPIC 1 SMCSUR — NAV Concepts**

- Sub-topic 1.1 SMCSUR — NOTAM

Subject 8: SURVEILLANCE — PRIMARY**TOPIC 1 SMCSUR — ATC Surveillance**

- Sub-topic 1.1 SMCSUR — Use of PSR for Air Traffic Services

Subject 9: SURVEILLANCE — SECONDARY**TOPIC 1 SMCSUR — SSR AND MSSR**

- Sub-topic 1.1 SMCSUR — Use of SSR for Air Traffic Services

TOPIC 2 SMCSUR — Mode S

- Sub-topic 2.1 SMCSUR — Introduction to Mode S

TOPIC 3 SMCSUR — Multilateration

- Sub-topic 3.1 SMCSUR — MLAT Principles

Subject 10: SURVEILLANCE — HMI**TOPIC 1 SMCSUR — HMI**

- Sub-topic 1.1 SMCSUR — ATCO HMI

Subject 11: SURVEILLANCE — DATA TRANSMISSION**TOPIC 1 SMCSUR — Surveillance Data Transmission**

- Sub-topic 1.1 SMCSUR — Technology and Protocols

16.SYSTEM MONITORING AND CONTROL — DATA**Subject 1: SMC — ANS STRUCTURE****TOPIC 1 SMCDAT — ANSP Organisation and Operation**

- Sub-topic 1.1 SMCDAT — ANSP Organisation and Operation

TOPIC 2 SMCDAT — ANSP Maintenance Program

Sub-topic 2.1 SMCDAT — Policy

TOPIC 3 SMCDAT — ATM Context

Sub-topic 3.1 SMCDAT — ATM Context

TOPIC 4 SMCDAT — ANSP ADMINISTRATIVE PRACTICES

Sub-topic 4.1 SMCDAT — Administration

Subject 2: SMC — ANS SYSTEM/EQUIPMENT**TOPIC 1 SMCDAT — Operational Impacts**

Sub-topic 1.1 SMCDAT — Degradation or Loss of System/Equipment Services

TOPIC 2 SMCDAT — User Position Functionality and Operation

Sub-topic 2.1 SMCDAT — User Working Position

Sub-topic 2.2 SMCDAT — SMC Working Position

Subject 3: SMC — TOOLS, PROCESSES AND PROCEDURES**TOPIC 1 SMCDAT — Requirements**

Sub-topic 1.1 SMCDAT — SMS

Sub-topic 1.2 SMCDAT — QMS

Sub-topic 1.3 SMCDAT — SMS application in the working environment

TOPIC 2 SMCDAT — Maintenance Agreements with Outside Agencies

Sub-topic 2.1 SMCDAT — Principles of agreements

TOPIC 3 SMCDAT — SMC General Processes

Sub-topic 3.1 SMCDAT — Roles and responsibilities

TOPIC 4 SMCDAT — Maintenance Management Systems

Sub-topic 4.1 SMCDAT — Reporting

Subject 4: SMC — TECHNOLOGY**TOPIC 1 SMCDAT — Technologies and Principles**

Sub-topic 1.1 SMCDAT — General

Sub-topic 1.2 SMCDAT — Communication

Sub-topic 1.3 SMCDAT — Facilities

Subject 5: COMMUNICATION — DATA**TOPIC 1 SMCDAT — European Networks**

Sub-topic 1.1 SMCDAT — Network Technologies

TOPIC 2 SMCDAT — Global Networks

Sub-topic 2.1 SMCDAT — Networks and Standards

Sub-topic 2.2 SMCDAT — Description

Sub-topic 2.3 SMCDAT — Global Architecture

Sub-topic 2.4 SMCDAT — Air-Ground Sub-networks

Sub-topic 2.5 SMCDAT — Ground-Ground sub-networks

Sub-topic 2.6 SMCDAT — Air-Ground Applications

Subject 6: COMMUNICATION — RECORDERS

TOPIC 1 SMCDAT — Legal Recorders

Sub-topic 1.1 SMCDAT — Regulations

Sub-topic 1.2 SMCDAT — Principles

Subject 7: NAVIGATION — PBN

TOPIC 1 SMCDAT — NAV Concepts

Sub-topic 1.1 SMCDAT — NOTAM

Subject 8: SURVEILLANCE — PRIMARY

TOPIC 1 SMCDAT — ATC Surveillance

Sub-topic 1.1 SMCDAT — Use of PSR for Air Traffic Services

Subject 9: SURVEILLANCE — SECONDARY

TOPIC 1 SMCDAT — SSR AND MSSR

Sub-topic 1.1 SMCDAT — Use of SSR for Air Traffic Services

TOPIC 2 SMCDAT — Mode S

Sub-topic 2.1 SMCDAT — Introduction to Mode S

TOPIC 3 SMCDAT — Multilateration

Sub-topic 3.1 SMCDAT — MLAT Principles

Subject 10: SURVEILLANCE — HMI

TOPIC 1 SMCDAT — HMI

Sub-topic 1.1 SMCDAT — ATCO HMI

Subject 11: SURVEILLANCE — DATA TRANSMISSION

TOPIC 1 SMCDAT — Surveillance Data Transmission

Sub-topic 1.1 SMCDAT — Technology and Protocols

Subject 12: SURVEILLANCE — DATA PROCESSING SYSTEMS

TOPIC 1 SMCDAT — User Requirements

Sub-topic 1.1 SMCDAT — Controller requirements

Sub-topic 1.2 SMCDAT — Trajectories, Prediction and Calculation

Sub-topic 1.3 SMCDAT — Ground Safety Nets

Sub-topic 1.4 SMCDAT — Decision Support

Subject 13: SURVEILLANCE — DATA PROCESS

TOPIC 1 SMCDAT — Hardware Platform

Sub-topic 1.1 SMCDAT — Equipment Upgrade

Sub-topic 1.2 SMCDAT — COTS

Sub-topic 1.3 SMCDAT — Interdependence

Subject 14: SURVEILLANCE — DATA

TOPIC 1 SMCDAT — Data Essentials Features

Sub-topic 1.1 SMCDAT — Data Significance

Sub-topic 1.2 SMCDAT — Data Configuration Control

Sub-topic 1.2 SMCDAT — Data Standards