DOCUMENT CONTROL

<table>
<thead>
<tr>
<th>Document Title</th>
<th>NM Flight Planning Requirements</th>
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</tbody>
</table>

APPROVAL TABLE

<table>
<thead>
<tr>
<th>Authority</th>
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<tbody>
<tr>
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<td>All</td>
</tr>
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<td>1.3</td>
<td>01.07.2020</td>
<td>All</td>
</tr>
</tbody>
</table>
# TABLE OF CONTENT

<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>DOCUMENT CONTROL</strong></td>
<td>I</td>
</tr>
<tr>
<td></td>
<td><strong>APPROVAL TABLE</strong></td>
<td>I</td>
</tr>
<tr>
<td></td>
<td><strong>EDITION HISTORY</strong></td>
<td>II</td>
</tr>
<tr>
<td>1</td>
<td>GENERAL PROVISIONS</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>NETWORK AIRSPACE CHARACTERISTICS</td>
<td>4</td>
</tr>
<tr>
<td>2.1</td>
<td>Purpose</td>
<td>4</td>
</tr>
<tr>
<td>2.2</td>
<td>Significant Point</td>
<td>4</td>
</tr>
<tr>
<td>2.2.1</td>
<td>Definitions</td>
<td>4</td>
</tr>
<tr>
<td>2.2.2</td>
<td>NMOC System expression</td>
<td>5</td>
</tr>
<tr>
<td>2.3</td>
<td>Aerodrome / Airport</td>
<td>7</td>
</tr>
<tr>
<td>2.3.1</td>
<td>Definition</td>
<td>7</td>
</tr>
<tr>
<td>2.3.2</td>
<td>NMOC System expression</td>
<td>7</td>
</tr>
<tr>
<td>2.4</td>
<td>Route</td>
<td>9</td>
</tr>
<tr>
<td>2.4.1</td>
<td>En-route</td>
<td>9</td>
</tr>
<tr>
<td>2.4.2</td>
<td>Terminal Procedure Properties</td>
<td>10</td>
</tr>
<tr>
<td>2.5</td>
<td>Airspace</td>
<td>13</td>
</tr>
<tr>
<td>2.5.1</td>
<td>Definition</td>
<td>13</td>
</tr>
<tr>
<td>2.5.2</td>
<td>NMOC System expression</td>
<td>13</td>
</tr>
<tr>
<td>2.6</td>
<td>Direction of cruising levels</td>
<td>16</td>
</tr>
<tr>
<td>2.6.1</td>
<td>Definition</td>
<td>16</td>
</tr>
<tr>
<td>2.6.2</td>
<td>ATS Route</td>
<td>16</td>
</tr>
<tr>
<td>2.6.3</td>
<td>DCT</td>
<td>16</td>
</tr>
<tr>
<td>2.6.4</td>
<td>FRA significant points</td>
<td>17</td>
</tr>
<tr>
<td>2.6.5</td>
<td>NMOC System expression</td>
<td>17</td>
</tr>
<tr>
<td>3</td>
<td>AIRSPACE UTILIZATION RULES AND AVAILABILITY (AURA)</td>
<td>18</td>
</tr>
<tr>
<td>3.1</td>
<td>Purpose</td>
<td>18</td>
</tr>
<tr>
<td>3.2</td>
<td>AURA Restrictions Parameters</td>
<td>18</td>
</tr>
<tr>
<td>3.2.1</td>
<td>Restriction Identifier</td>
<td>18</td>
</tr>
<tr>
<td>3.2.2</td>
<td>Operational Goal</td>
<td>20</td>
</tr>
<tr>
<td>3.2.3</td>
<td>Flow Routings</td>
<td>20</td>
</tr>
<tr>
<td>3.2.4</td>
<td>Flow Conditions</td>
<td>23</td>
</tr>
<tr>
<td>3.2.5</td>
<td>Dependent Applicability based on Route availability</td>
<td>28</td>
</tr>
<tr>
<td>3.2.6</td>
<td>Dependent Applicability based on Airspace Activation</td>
<td>28</td>
</tr>
<tr>
<td>3.2.7</td>
<td>Deferred Applicability</td>
<td>29</td>
</tr>
<tr>
<td>3.3</td>
<td>RAD</td>
<td>30</td>
</tr>
<tr>
<td>3.3.1</td>
<td>Purpose</td>
<td>30</td>
</tr>
<tr>
<td>3.3.2</td>
<td>Creation</td>
<td>30</td>
</tr>
<tr>
<td>3.3.3</td>
<td>Publication</td>
<td>30</td>
</tr>
</tbody>
</table>
3.3.4 Usage ........................................................................................................... 30
3.4 FRA DCT Restriction ................................................................................. 66
3.4.1 Purpose ....................................................................................................... 66
3.4.2 Creation ....................................................................................................... 66
3.4.3 Publication .................................................................................................. 66
3.4.4 Usage ........................................................................................................... 66
3.5 DCT Limitation Restriction ......................................................................... 75
3.5.1 Purpose ....................................................................................................... 75
3.5.2 Creation ....................................................................................................... 75
3.5.3 Publication .................................................................................................. 75
3.5.4 Usage ........................................................................................................... 75
3.6 Profile Tuning Restriction (PTR) ................................................................. 77
3.6.1 Purpose ....................................................................................................... 77
3.6.2 Creation ....................................................................................................... 78
3.6.3 Publication .................................................................................................. 78
3.6.4 Usage ........................................................................................................... 78
3.7 EU / EURO Restriction ................................................................................ 81
3.7.1 Purpose ....................................................................................................... 81
3.7.2 Creation ....................................................................................................... 82
3.7.3 Publication .................................................................................................. 82
3.7.4 Usage ........................................................................................................... 82
3.8 Aerodrome Flight Rule Restriction ............................................................. 83
3.8.1 Purpose ....................................................................................................... 83
3.8.2 Creation ....................................................................................................... 83
3.8.3 Publication .................................................................................................. 83
3.8.4 Usage ........................................................................................................... 83
3.9 Flight Property Restriction on Terminal Procedures .................................... 84
3.9.1 Purpose ....................................................................................................... 84
3.9.2 Creation ....................................................................................................... 84
3.9.3 Publication .................................................................................................. 84
3.9.4 Usage ........................................................................................................... 84
3.10 No Planning Zone/s (NPZ) ........................................................................ 85
3.10.1 Purpose ..................................................................................................... 85
3.10.2 Creation ..................................................................................................... 85
3.10.3 Publication ................................................................................................ 86
3.10.4 Usage ........................................................................................................ 86
3.10.5 Identification of No Planning Zone (NPZ) .................................................... 86
4 AIRSPACE MANAGEMENT ............................................................................. 88
4.1 Purpose .......................................................................................................... 88
4.2 FUA Concept ............................................................................................... 88
4.3 Airspace Structures ...................................................................................... 89
4.3.2 ATS Routes ............................................................................................... 89
<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.3.3</td>
<td>Areas (RSA)</td>
<td>93</td>
</tr>
<tr>
<td>4.4</td>
<td><strong>FUA/EU Restrictions</strong></td>
<td>98</td>
</tr>
<tr>
<td>4.4.1</td>
<td>Purpose</td>
<td>98</td>
</tr>
<tr>
<td>4.4.2</td>
<td>Creation</td>
<td>98</td>
</tr>
<tr>
<td>4.4.3</td>
<td>Publication</td>
<td>99</td>
</tr>
<tr>
<td>4.4.4</td>
<td>Usage</td>
<td>99</td>
</tr>
<tr>
<td>4.4.5</td>
<td>Specificities in Restriction Types</td>
<td>99</td>
</tr>
<tr>
<td>4.4.6</td>
<td>Implementation of FUA / EU Restrictions in CACD and usage in CIAM</td>
<td>101</td>
</tr>
<tr>
<td>4.4.7</td>
<td>Multiple AS/RT for Restriction Dependent Applicability</td>
<td>102</td>
</tr>
<tr>
<td>4.5</td>
<td><strong>Flight Buffer Zone (FBZ)</strong></td>
<td>104</td>
</tr>
<tr>
<td>4.5.1</td>
<td>Flight Planning Procedures around Active Reserved/Restricted Airspace</td>
<td>104</td>
</tr>
<tr>
<td>4.5.2</td>
<td>Publication</td>
<td>105</td>
</tr>
<tr>
<td>4.5.3</td>
<td>FBZ Identification</td>
<td>107</td>
</tr>
<tr>
<td>4.5.4</td>
<td>Flight Planning</td>
<td>109</td>
</tr>
<tr>
<td>4.5.5</td>
<td>No Planning Zone/s (NPZ) - see Chapter 3</td>
<td>110</td>
</tr>
<tr>
<td>4.6</td>
<td><strong>FUA Process</strong></td>
<td>111</td>
</tr>
<tr>
<td>4.6.1</td>
<td>Airspace Use Plan/Updated Airspace Use Plan</td>
<td>111</td>
</tr>
<tr>
<td>4.6.2</td>
<td>Preparation, Publication and Distribution of the AUP/UUP</td>
<td>119</td>
</tr>
<tr>
<td>4.6.3</td>
<td>Early Access to Weekend (EAW)</td>
<td>124</td>
</tr>
<tr>
<td>4.6.4</td>
<td>Extended and Public Holiday</td>
<td>124</td>
</tr>
<tr>
<td>4.7</td>
<td><strong>Notification Process</strong></td>
<td>125</td>
</tr>
<tr>
<td>4.7.1</td>
<td>European AUP/European UUP</td>
<td>125</td>
</tr>
<tr>
<td>4.7.2</td>
<td>EAUP/EUUP Publication</td>
<td>126</td>
</tr>
<tr>
<td>4.7.3</td>
<td>ASM Booklet – Conditional Routes (CDRs) Catalogue</td>
<td>127</td>
</tr>
<tr>
<td>4.8</td>
<td><strong>Contingency</strong></td>
<td>127</td>
</tr>
<tr>
<td>4.8.1</td>
<td>Contingency procedure</td>
<td>127</td>
</tr>
<tr>
<td>4.8.2</td>
<td>eAMI</td>
<td>128</td>
</tr>
<tr>
<td>5</td>
<td><strong>NMOC FLIGHT PLANNING</strong></td>
<td>129</td>
</tr>
<tr>
<td>5.1</td>
<td>Purpose</td>
<td>129</td>
</tr>
<tr>
<td>5.2</td>
<td><strong>Integrated Initial Flight Planning System (IFPS)</strong></td>
<td>129</td>
</tr>
<tr>
<td>5.2.1</td>
<td>General Description</td>
<td>129</td>
</tr>
<tr>
<td>5.2.2</td>
<td>IFPS processing features</td>
<td>130</td>
</tr>
<tr>
<td>5.3</td>
<td><strong>Route and Profile Analysis process</strong></td>
<td>133</td>
</tr>
<tr>
<td>5.3.1</td>
<td>Route Analysis</td>
<td>137</td>
</tr>
<tr>
<td>5.3.2</td>
<td>Route Extraction</td>
<td>138</td>
</tr>
<tr>
<td>5.3.3</td>
<td>Route processing</td>
<td>138</td>
</tr>
<tr>
<td>5.3.4</td>
<td>Aerodrome of departure</td>
<td>139</td>
</tr>
<tr>
<td>5.3.5</td>
<td>Aerodrome of destination</td>
<td>139</td>
</tr>
<tr>
<td>5.3.6</td>
<td>Terminal Procedure (TP)</td>
<td>140</td>
</tr>
<tr>
<td>5.3.7</td>
<td>Speed / Level</td>
<td>142</td>
</tr>
<tr>
<td>5.3.8</td>
<td>Point / Significant Point</td>
<td>142</td>
</tr>
<tr>
<td>5.3.9</td>
<td>Airway / ATS route / Route</td>
<td>143</td>
</tr>
</tbody>
</table>
TABLE OF FIGURES

Figure 1: Expression of Combinations and Conditions ........................................... 27
Figure 2: Exemplary trajectory which fulfils a “departure airspace” condition .......... 37
Figure 3: Exemplary trajectory which fulfils a “arrival airspace” condition .......... 37
Figure 4: Exemplary trajectory which fulfils an “Overfly airspace” condition constant level with lateral entry and exit ................................................................. 38
Figure 5: Exemplary trajectory which fulfils an “Overfly airspace” condition with intermediate descent with lateral entry and exit ................................................................. 38
Figure 6: Exemplary trajectory which fulfils an “Overfly airspace” condition with intermediate climb with lateral entry and exit................................. 39
Figure 7: Exemplary trajectory which fulfils an “Overfly airspace” condition with lateral entry and vertical exit .............................................................. 39
Figure 8: Exemplary trajectories which fulfils a “Overfly airspace” condition with vertical entry and vertical exit......................................................... 40
Figure 9: Exemplary trajectory which fulfils a “ATS route / DCT” level condition........ 44
Figure 10: Exemplary trajectory which does not fulfil a “ATS route / DCT” level condition. 44
Figure 11: Airspace Vertical Cross Section................................................................ 47
Figure 12: Example of mandatory FRA Departure and/or Arrival Connecting Routes ...... 59
Figure 13: Example of AUA FRA area border proximity violation.................................. 61
Figure 14: Example of FRA crossings flows at ATC Sector boundary.............................. 62
Figure 15: Example of mandatory FRA Intermediate point............................................ 63
Figure 16: Example of FRA available options expression............................................. 64
Figure 17: Example of Special Area avoidance and allowance in FRA ............................... 65
Figure 18: Example of FRA point different vertical relevance ........................................ 70
Figure 19: Example of FRA / non-FRA transition via specified FRA (D)/(A) point........... 71
Figure 20: Example of FRA / non-FRA transition via specified FRA (I) point.................... 72
Figure 21: Example of FRA / non-FRA transition “laterally” off defined FRA points ........... 72
Figure 22: Example of FRA / non-FRA transition “below” defined FRA points................. 73
Figure 23: Example of FRA / non-FRA ARR/DEP transition for close proximity FRA area airports.................................................................................. 73
Figure 24: Example of FRA (AUA) border “clipping” rejection........................................... 74
Figure 25: Example of PTR avoiding Airspace Volume ...................................................... 80
Figure 26: Example of PTR avoiding Airspace Volume...................................................... 81
Figure 27: Example of FUA RS tab...................................................................................... 101
Figure 28: Example of FUA restriction with dependent applicability............................... 102
Figure 29: Example of FUA restriction with dependent applicability............................... 103
Figure 30: Example of FUA Airspace Activation ............................................................... 104
Figure 31: Example of FBZ publication ............................................................................ 105
Figure 32: Example of ATS / ASM / ATFM pre-tactical timetable .................................. 120
Figure 33: Example of ATS / ASM / ATFM tactical timetable ......................................... 120
Figure 34: Example of NOTAM ....................................................................................... 124
Figure 35: Example of EAUP............................................................................................. 125
Figure 36: IFPS Zone........................................................................................................ 129
Figure 37: Example of CDRU .......................................................................................... 145
Figure 38: Example – why tolerance is needed in CDRU .................................................. 146
Figure 39: Example of maximum length in climb/descent parameter.............................. 146
Figure 40: Example of maximum length of cruise of segment parameter......................... 147
Figure 41: Example trajectory of DCT in close proximity to AUA border - FPL is invalidated................................................................. 150
Figure 42: Example trajectory of DCT in close proximity to AUA border - no error........ 150
Figure 43: Example trajectory of DCT in close proximity to AUA border - no error........ 151
Figure 44: Example of FRA DCT replacement by co-located ATS route designator ........ 152
Figure 45: Example of FRA DCT non-replacement by co-located ATS route designator .. 153
Figure 46: Example trajectory of departing traffic in FRA area with ATS route network entering via airway .......................................................... 156
Figure 47: Example trajectory of departing traffic in FRA area with ATS route network entering via SID ......................................................... 157
Figure 48: Example trajectory of arriving traffic in FRA with ATS route network exiting via airway .......................................................... 157
Figure 49: Example trajectory of arriving traffic in FRA with ATS route network existing via STAR .......................................................... 157
Figure 50: Example trajectory of overflying traffic in FRA area with ATS route network .. 158
Figure 51: Example trajectory of departing and overflying traffic in FRA area without ATS route network with AUA DCT xxxNM .......................................................... 159
Figure 52: Example trajectory of arriving and overflying traffic in FRA area without ATS route network with AUA DCT xxxNM .......................................................... 160
Figure 53: Example trajectory of departing and overflying traffic in FRA without ATS route network with AUA DCT 0NM .......................................................... 161
Figure 54: Example trajectory of arriving and overflying traffic in FRA without ATS route network with AUA DCT 0NM .......................................................... 161
Figure 55: Example of how the maximum allowed distance is calculated .......................................................... 161
Figure 56: Example of how the maximum allowed distance is calculated .......................................................... 162
Figure 57: Example of the reason of the distance check .......................................................... 163
Figure 58: Example of constant distance at all levels between FRA area with straight vertical border (wall) and FRA (EX) .......................................................... 164
Figure 59: Example of calculations for correct and incorrect trajectory of entering traffic in FRA area .......................................................... 164
Figure 60: Example of FRA "balcony effect” in AUA FRA area with delegated airspace .. 165
Figure 61: Example of calculations of FRA "balcony effect” in AUA FRA areas with delegated airspace .......................................................... 165
Figure 62: Example of calculations of FRA “balcony effect” in AUA FRA areas with delegated airspace .......................................................... 166
Figure 63: Example of FRA “balcony effect” in FRA areas with delegated airspace and FRA points position .......................................................... 166
Figure 64: Example of FRA “balcony effect” in FRA areas with delegated airspace and FRA points position .......................................................... 167
Figure 65: Example of FRA “balcony effect” in AUA FRA areas with delegated airspace and FRA points positions .......................................................... 168
Figure 66: GRRT tool proposed solution (green - path generator result, red - filed flight plan) .......................................................... 169

TABLE OF TABLES

| Table 1: NM CACD CDR Categories | .......................................................... 10 |
| Table 2: NM AURA Naming Convention for Restriction Identifiers | .......................................................... 19 |
| Table 3: NM AURA Naming Convention for Restriction Identifiers | .......................................................... 20 |
Table 4: Flight Property Conditions Group - Aircraft type classifications ........................................... 26
Table 5: Example of RAD Logical Conjunction (AND operator) ............................................................. 31
Table 6: Example of RAD Logical Conjunction (OR operator) ............................................................... 32
Table 7: Example of RAD Logical Negation (NOT operator) ................................................................. 32
Table 8: Example of RAD Line Expression ............................................................................................... 33
Table 9: Example of RAD Line Expression ............................................................................................... 33
Table 10: Example of RAD Paragraphs ................................................................................................... 33
Table 11: Example of RAD Paragraphs .................................................................................................... 34
Table 12: Example of RAD flow elements separation by slash or comma .............................................. 34
Table 13: Example of RAD square brackets usage .................................................................................. 34
Table 14: Example of RAD reference location .......................................................................................... 35
Table 15: Example of RAD Random Route .............................................................................................. 36
Table 16: Example of RAD Level Conditions ......................................................................................... 41
Table 17: Example of RAD RFL reference ............................................................................................... 42
Table 18: Example of RAD RFL reference ............................................................................................... 42
Table 19: Example of RAD ATS route Time Applicability .................................................................. 48
Table 20: Example of RAD DCT Time Applicability ............................................................................. 48
Table 21: Example of RAD Departure Airport Time Condition .............................................................. 48
Table 22: Example of RAD Arrival Airport Time Condition .................................................................. 49
Table 23: Example of RAD Time Expression ......................................................................................... 50
Table 24: Abbreviations in RAD Time Expression .................................................................................. 51
Table 25: Day Time Expression ............................................................................................................... 51
Table 26: Week Time Expression ........................................................................................................... 51
Table 27: Every Day Time Expression .................................................................................................... 52
Table 28: Every Week Time Expression .................................................................................................. 52
Table 29: Every Night Time Expression ................................................................................................ 52
Table 30: Same Day Time Expression ..................................................................................................... 53
Table 31: Same Week Time Expression .................................................................................................. 53
Table 32: Day Time Expression ............................................................................................................... 54
Table 33: Extended Weekend Time Expression ...................................................................................... 54
Table 34: Weekend Time Expression ..................................................................................................... 54
Table 35: Same Day Time Expression ..................................................................................................... 55
Table 36: Same Day During the WeekTime Expression ......................................................................... 55
Table 37: Example of RAD Route Dependent Applicability ................................................................. 56
Table 38: Example of RAD Route Dependent Applicability ................................................................. 56
Table 39: Example of RAD Route Dependent Applicability ................................................................. 56
Table 40: Example of RAD Airspace Dependent Applicability ............................................................. 57
Table 41: Example of RAD Airspace Dependent Applicability ............................................................. 57
Table 42: Example of RAD Airspace Dependent Applicability ............................................................. 57
Table 43: Example of “local” FRA DCT Limits ....................................................................................... 58
Table 44: Example of “cross-border” FRA DCT Limits ......................................................................... 59
Table 45: Example of RAD Appendix 5 expression of FRA DEP Connecting Route/s ...................... 60
Table 46: Example of RAD Appendix 5 expression of FRA ARR Connecting Route/s ....................... 60
Table 47: Example of RAD Pan-Europe Annex expression of FRA DEP Connecting Route/s

Table 48: Example of RAD Pan-Europe Annex expression of FRA ARR Connecting Route/s

Table 49: Example of RAD Appendix 4 expression of forbidden DCTs close to FRA border

Table 50: Example of RAD Pan-Europe Annex expression of forbidden DCTs close to FRA border

Table 51: Example of the RAD Pan-Europe Annex point based expression

Table 52: Example of the RAD Pan-Europe Annex volume based expression

Table 53: Example of the RAD Pan-Europe Annex expression of mandatory FRA Intermediate point

Table 54: Example of the RAD Pan-Europe Annex expression of FRA significant point direction usage

Table 55: Example of RAD Appendix 7 “full avoidance” of Special Area

Table 56: Example of RAD Appendix 7 “partial avoidance” of Special Area and FRA avoidance points expression

Table 57: TSA/TRA identification with letters “TSA/TRA”

Table 58: TSA/TRA identification with letters “TS/TR”

Table 59: TSA/TRA identification with letter “T”

Table 60: Comparison between AMA and NAM in terms of management in NM System

Table 61: FBZ identification for TSA/TRA with letters “TSA/TRA”

Table 62: FBZ identification for TSA/TRA with letters “TS/TR”

Table 63: FBZ identification for TSA/TRA with letter “T”

Table 64: AUP Header

Table 65: List ALPHA to FOXTROT

Table 66: UUP Header

Table 67: UUP Airspace Structure

Table 68: Example of ATS / ASM / ATFM pre-tactical WINTER timetable

Table 69: Example of ATS / ASM / ATFM pre-tactical SUMMER timetable

Table 70: PBN Specifications

Table 71: Acronyms table
1 General Provisions

(1) This document outlines the necessary steps needed to be taken in order to ensure the required level of compatibility with NMOC systems for flight planning procedures. These provisions cover the most significant aspects that shall be known by the NM Operational Stakeholders in support to flight planning.


(3) Any new abbreviations, terms or definitions appearing in this Document different from ICAO are used only and exclusively by the Network Manager for the purposes described. All examples given in this Document shall be considered as fictitious.

(4) This Document supersedes the following existing NM Documents:
   - RAD Definition of Terms;
   - Free Route Airspace (FRA) Application in NMOC - Guidelines.

(5) The Document is a property of the Network Manager.
2   Network Airspace Characteristics

2.1   Purpose

(6) The purpose of this Chapter is to describe the expression in NM systems of the main network airspace elements used for flight plan processing.

(7) This Chapter covers the following network airspace elements their characteristics, available features and definitions:

- Significant Points;
- Aerodrome / Airport;
- Route - en-route and terminal;
- Airspace Volumes;
- FL orientation scheme.

2.2   Significant Point

2.2.1   Definitions

(1) Significant point is a specified geographical location used in defining an ATS route or the flight path of an aircraft and for other navigation and ATS purposes. There are three categories of significant points: ground-based navigation aid, intersection and waypoint. In the context of this definition, intersection is a significant point expressed as radials, bearings and/or distances from ground based navigation aids.

(2) Significant point is defined as point in space. The geographic position is defined by geographical coordinates while a vertical position does not necessarily need to be defined.

(3) A Significant point may be projected from the earth’s surface to unlimited level by drawing a perpendicular line to and extending from the earth’s surface at the defined coordinate.

(4) Within ATS route network environment a significant point does not have vertical limits which are considered for trajectory planning. Vertical limits for trajectory planning are implicitly defined by the segments or airspace that uses that particular significant point.

(5) Example: A significant point is part of an ATS route in the upper airspace (vertical limits FL245 - FL660). Due to the vertical limits of the ATS route, the trajectory can use this significant point only within these vertical limits of the ATS route. Similarly is with FRA area defined with its vertical limits.

(6) Within Free Route Airspace environment a significant point has vertical limits which are considered for trajectory planning. Vertical limits for trajectory planning are implicitly defined by the FRA area definition and depend on FRA significant point relevance.

(7) Example: A significant point is part of FRA area definition (vertical limits FL175 - FL660). Due to the vertical limits of the FRA area, the trajectory can use this significant point only within these vertical limits within the FRA area.

(8) The term “published significant point” refers to a significant point that is defined in AIP.
The term “unpublished point” refers to a significant point that is not in AIP and expressed by geographical coordinates or by bearing and distance.

Beside the geographical coordinates of the significant point, the State AIP publication contains more information on this significant point (e.g. name-code designator, type of significant point, in case of waypoint its type, geographical coordinates of the position, etc.).

2.2.2 NMOC System expression

The significant point in NMOC system is a basic element in FPL Processing.

The significant point in NMOC system is a point used in FPL Item 15 or associated NMOC message. Based on definitions this point can be:

- The Published Point type comprises all the Points that are published as separate lists of points in the AIP (e.g. in AD, ENR 4);
- The Unpublished Points are mainly points that are not published as separate lists of points in the AIP but are allowed in FPLs and associated messages. They can be used in FPL Item 15 without previously being created in the database, as long as their Identifier is syntactically correct. Not every State allows utilisation of unpublished points. For more detail, see State AIP.

The main Significant Point Types in NMOC are as follows:

- Waypoint (PWP):
  - It is a “published significant point” type which includes all published 5 LNCs - designators of significant points not marked by the site of a radio navigation aid;
  - NM system supports Waypoint defined with 5 alphanumeric characters (e.g. helicopter route point - LS103)

- Navigation Aid (NVA):
  - It is a “published significant point” type which includes all published NAVAIDs - 2 or 3 LNCs - designators of significant points marked by the site of a radio navigation aid.
  - Each navigation aid significant point is defined with the technical type of the navigation aid (e.g. VOR/DME).
  - The type NVA is divided in 14 sub-types (DME, VOR, VOR-DME, VORTAC, ILS, MLS, ILS-DME, LOC, LOC-DME, NDB-MKR, MKR, NDB, NDB-DME, TACAN).

- Coord point (COR):
  - It is an “unpublished point” type where a significant point is only defined by its geographical co-ordinates.
  - Coord points are generally created in NMOC system to be used in other entities (e.g. in Routes). Their creation also permits to associate other properties than a position (e.g. Entry/Exit flags, Capacities).
  - Coord Point does not require to be defined in the CACD to be recognised by IFPS in FPLs.
  - Examples: 30N025W or 3930N01500W
Geographical co-ordinates in FPLs shall consist of either 2 degrees latitude followed by 3 degrees longitude, or 2 degrees and 2 minutes latitude followed by 3 degrees and 2 minutes longitude or by 2 degrees, 2 minutes and 2 seconds latitude followed by 3 degrees, 2 minutes and 2 seconds longitude.

Examples

46N078W
4620N05805W
462013N0580503W

The IFPS will automatically accept those coordinates where one digit is missing, and will add a 0 (zero) to the front of the incomplete coordinate, provided that the first digit present is not a 0 (zero).

Examples

4N40W and 04N40W accepted as 04N040W
4N04W and 04N04W rejected
400N4000W and 0400N4000W accepted as 0400N04000W
400N0400W and 0400N0400W rejected

Reference Point (RFP) (intersection):

- It is an “unpublished point” type where a significant point is defined by reference to an existing Navigation Aid.
- Reference Points are generally created in NMOC to be used in other entities (e.g. in Terminal Procedures).
- Reference Point does not require to be defined in the CACD to be recognised by IFPS in FPLs.
- In order to calculate the geographical position of a Reference Point in reference to a directional Navigation Aid, the NMOC system needs to convert this magnetic bearing into a true bearing. Therefore, any change of the Magnetic variation in the region where the Navigation Aid is located will affect the true bearing which is used to calculate the geographical position of the Reference Point, and thus it will affect the geographical position of the Reference Point itself. For that reason together with Navigation Aid, magnetic variation characteristic of its geographical position is also defined.

Example: “BUB284007” which means “magnetic bearing 284º of BUB, at a distance of 7 NM.”

Terminal Point (TER):

- In majority of cases, it is a “published significant point” type where a significant point defines a certain Terminal Procedures, in particular RNAV Terminal Procedures.
- Includes all published five alpha numeric name-codes (5ANNCs) used for terminal/aerodrome PBN SID/STAR purposes.
- It might be also an “unpublished point” for which a Runway Direction of an Aerodrome is taken as reference.
- Terminal Points are used in the published definition of certain Terminal Procedures.

Examples: Terminal Point for ENGM with sequence number 501 is assigned the Identifier: “GM501” or Terminal Point - *2FFM
2.3 Aerodrome / Airport

2.3.1 Definition

(1) Aerodromes are defined area on land or water (including any buildings, installations and equipment) intended to be used either wholly or in part for the arrival, departure and surface movement of aircraft. An airport is an aerodrome with extended facilities, mostly for commercial air transport.

(2) The departure aerodrome / airport is the first geographic location of a trajectory.

(3) The arrival aerodrome / airport is the last geographic location of a trajectory.

2.3.2 NMOC System expression

(1) Aerodromes in CACD systems are defined with NM designator:

- ICAO ID;
- IATA ID if ICAO is blank;
- If both are blank, artificial 4-alphanumeric ID, which consists of:
  - A country/region code – 1 or 2 characters long;
  - An alphanumeric 2 or 3 digits value is used.
  (E.g. EB01 for Belgian AD or K123 for US AD).

(2) Aerodrome types in NMOC systems are:

- Aerodrome (AD);
- Aerodrome Heliport (AH);
- Heliport (HP);
- Landing surface (LS);
- OTHER.

(3) Other aerodrome properties are Aerodrome Name, Category, Control Type, Elevation, Aerodrome reference point, Type, and properties to specify if aerodrome is private, uncontrolled, abandoned or water.

(4) Additionally to all required aerodrome properties, the following are defined in NMOC systems:

- Aerodrome Terminal Procedures Usage - defines the period of time during which the approach/departure FPL (AP/DP FPL) inclusion parameters apply. For all Aerodromes that have Terminal Procedures, the usage is H24 for all validity periods.
- Capacities - defined as the maximum number of flights due to take-off from and/or land at the Aerodrome during a determined period (one hour).

(5) For each aerodrome runway properties are also defined in NMOC systems as follows:

- Runway Direction
  It corresponds to the QFUs (magnetic bearing of the runway) as published in the AIP. A Runway Direction includes taxi time attributes. The two opposite directions of the same physical runway are considered as different Runway Directions (e.g. 08 / 26). Parallel runways are also regarded as different Runway Directions and distinguished by the “Relative Position” attribute.
The Runway Direction is composed of:

- Direction (01 - 36);
- Relative Position (one of L-Left, R-Right, C-Centre, and other alphabetic characters e.g. T-Tarmac, G - Grass);
- Default Runway (one of Arrival, Departure, Default, None);
- Runway Type: ‘Runway’ or ‘Heli’.

All Terminal Procedure are associated with corresponding Runway Direction.

- Standard (default) Taxi Time

  It is defined as the average elapsed time in minutes for a departing aircraft to taxi from the off-block position to the take-off position.

  The Standard Taxi Time is a unique value (between 0 and 40 min) of taxi time for an Aerodrome. This attribute is mandatory for Aerodromes where no Runway Direction may be defined and thus no Runway Usage attributes.

  It is a forbidden attribute for Aerodromes for which the taxi time attributes, shall be implemented in the Runway Usage attributes.

- Runway Usage

  It is defined for each Runway Direction and includes the following attributes:

  - Default Taxi Time - defined as the average elapsed time in minutes for a departing aircraft to taxi from the off-block position to the take-off position. It is used to calculate the take-off time based on the EOBT of the FPL. The Default Taxi Time must be a value between 0 and 40 min (default value - 10 min).

  - Default Insert Time - also known as TIS: The purpose of TIS is to ensure that a CTOT improvement cannot be sent at short notice as the aerodrome requires some time to introduce an aircraft in the departure sequence (clock time + TIS + taxi time). The Default Insert Time must be a value between 0 and 30 min (default value = 10 min.).

  - Default Remove Time - also known as TRS: The purpose of TRS is to avoid changes in the CTOT for flights already in departure sequence. The value of the TRS specifies the time before which the CTOT will no longer be modified by the ETFMS (CTOT - taxi time - TRS). The Default Remove Time must be a value between 0 and 20 min (default value - 5 min.).

  - Permanent Runway Taxi Times - for specific periods of time, the implementation of Runway Usage Attributes (Taxi Time, Insert Time, Remove Time) different from the Default values. For the time periods when they are defined, these Permanent values overrule the Default values.

NOTE: Default values will be used if others are not specified.

Example of calculations involving Runway Usage attributes:

Aerodrome EDDF, Runway Direction 25 (default) has the following Runway Usage attributes:

  Default Taxi Time: 15
Flight XYZ1234 departing EDDF has a CTOT of 13:00. Any better CTOT for this flight will be sent by ETFMS ahead of: TIS + Taxi Time = 10 + 15 = 25 min. In other words any better CTOT will be sent with at least 25 min. notice. No improvement of CTOT for this flight will be sent by ETFMS after: CTOT - TRS - Taxi Time = 13:00 - 20 - 15 = 12:25

At 12:25, the CTOT = 13:00 is frozen; it will not be changed anymore by ETFMS.

The Permanent Runway Taxi Times timetable allows, for specific periods of time, the implementation of Runway Usage Attributes (Taxi Time, Insert Time, Remove Time) different from the Default values. For the time periods when they are defined, these Permanent values overrule the Default values.

This timetable may therefore be used in two cases:
- To assign different Runway Usage Attribute values at certain times of the day (e.g. a longer Taxi Time value during peak hours);
- To overrule a default Runway Usage Attribute value in a live update (default Runway Usage Attribute values cannot be updated in a live update)

(6) A set of Aerodromes is defined in NMOC system to designate, under one name, a collection of Aerodromes that will be used in the definition of other entities such as Reference Locations or Flows. Sets of Aerodromes are used in Reference Locations and Flows (Traffic Volume domain), as well as in Restrictions.

2.4 Route

2.4.1 En-route

(1) A route is generally defined as the great circle connection of significant points.

In NM systems, a route segment is a straight line on an equidistant projection. Beside the geographic location of a route, implied by the significant points which the particular ATS route connects, an ATS route can have more characteristics. These characteristics are defined by the various types of ATS routes.

(2) The term “ATS routes” refers to a published ATS route which is further defined in the AIP of the respective State. Beside the sequence of significant points which this ATS route connects, the AIP contains more important information which has to be considered for flight planning. Amongst others, these are the ATS route designator, vertical limits of each ATS route segment, time applicability, flight level orientation scheme (ODD / EVEN) and the direction in which the ATS route can be used (unidirectional / bidirectional).

(3) The term “Direct” abbreviated as “DCT” refers to a direct connection of two significant points used for flight planning purposes in accordance with provisions of ICAO Doc 4444 PANS-ATM. In NM systems, DCT segments are approximated by great circle curves (interpolated at least each 4 degrees of longitude). Due to this definition, a DCT cannot have any intermediate significant points. Such connections are not published in any AIP and thus generally have less defining parameters. However, when using DCTs in a flight plan, the general
rules of the respective airspace, in which the DCT is used, have to be considered. This refers to the flight level orientation scheme (ODD / EVEN rules) and the vertical limits of the respective airspace.

(4) NMOC internal route naming convention

In the NM CACD all routes are defined in categories. Table below gives overview of categories used:

<table>
<thead>
<tr>
<th>Category</th>
<th>Abbreviation</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 0 Route</td>
<td>CDR 0</td>
<td>Indicates a normal ATS route, always available</td>
</tr>
<tr>
<td>Category 1 Conditional Route</td>
<td>CDR 1</td>
<td>Indicates a route that may be available for flight planning during times published in the relevant National AIP. The AUP/UUP(s) shall notify closures of CDR1 routes (see Chapter 4)</td>
</tr>
<tr>
<td>Category 2 Conditional Route</td>
<td>CDR 2</td>
<td>Indicates a route that may not be available for flight planning. Flights may only be planned on a CDR2 in accordance with conditions published daily in the AUP/UUP(s). (see Chapter 4)</td>
</tr>
<tr>
<td>Category 3 Conditional Route</td>
<td>CDR 3</td>
<td>Indicates a route that shall not be available for flight planning at all. Flights shall not be planned on these routes but ATC may issue tactical clearances on such route segments (see Chapter 4)</td>
</tr>
<tr>
<td>Category N</td>
<td>CDR N</td>
<td>An internal NM route category naming convention indicating that no flight levels are available in a defined direction within a defined level band</td>
</tr>
<tr>
<td>Category MIXED CDR</td>
<td>CDR M</td>
<td>Indicates a route for which, inside its vertical limits, there is more than one CDR availability.</td>
</tr>
<tr>
<td>Category UNDEFINED</td>
<td>CDR U</td>
<td>This indicates a route which is not defined H24 7/7. When the route is undefined it means that it does not exist</td>
</tr>
</tbody>
</table>

Table 1: NM CACD CDR Categories

The CDR/Route track portions provide a description of each segment of the Route/Terminal Procedure.

The CDR/Route track portions are a directional definition.

A CDR/Route portion is defined by a From PT and a To PT. In an Arrival Procedure, the last ‘To PT’ is in fact the connected Aerodrome. In a Departure Procedure, the first ‘From PT’ is in fact the connected Aerodrome.

2.4.2 Terminal Procedure Properties

(1) In NMOC systems the Terminal Procedures (TP) are classified in two sub-types:
   - Departure Procedures (SID) - a designated instrument flight rule (IFR) departure route linking the aerodrome or a specified runway of the aerodrome with a specified significant point, normally on a designated ATS route, at which the en-route phase of a flight commences;
   - Arrival Procedures (STAR) - a designated instrument flight rule (IFR) arrival route linking a significant point, normally on an ATS route, with a point from which a published instrument approach procedure can be commenced.

(2) Apart from this distinction, Arrival and Departure Procedures have common properties:
   - Terminal Procedure Identifier
     Both the Terminal Procedure ICAO Identifier and the Terminal Procedure Non-ICAO Identifier are optional, but one of the two Identifiers is mandatory.
- **ICAO Identifier**
  The Terminal Procedure ICAO ID is an ICAO compliant identifier published by the States. In NMOC system the non-ICAO Identifier might be used either:
  - When the identifier published by the State is not compliant with ICAO naming conventions, or
  - When the Terminal Procedure is not published officially but is exceptionally required for correct profile calculations (“dummy” TP).
  
  In practice, published non-ICAO compliant identifiers may appear in FPLs; when such an identifier is defined as a Synonym of a Terminal Procedure in the CACD, the corresponding Terminal Procedure is recognised by the NM systems and used for the profile calculation.

- **Route Type**
  Defined upon creation of a Terminal Procedure and cannot be modified thereafter. For Terminal Procedures, the Route Type takes one of:
  - “STAR” (Standard Instrument Arrival) for an Arrival Procedure;
  - “SID” (Standard Instrument Departure) for a Departure Procedure.

- **Length**
  Attribute of a Terminal Procedure is automatically calculated by the system. It corresponds to the length in NM of the whole Terminal Procedure (from the first point to the Aerodrome for an Arrival Procedure, from the Aerodrome to the last point for a Departure Procedure). For each segment of the Terminal Procedure, a straight distance (so called ‘Great Circle’ distance) is followed.

- **Synonym Identifiers**
  They are either:
  - the published non-ICAO compliant Identifier(s) of a Terminal Procedure, or
  - the ICAO compliant Identifier(s) of other Terminal Procedures that have a similar track.

  Sometimes States do not comply with ICAO provisions and publish identifiers for Terminal Procedures in a format that is non-ICAO compliant, or publish synonym identifiers for procedures that also have an ICAO compliant identifier. The identifier is also published as the name of the procedure in plain text (e.g. SPYKERBOOR DEPARTURE). In this case, the purpose of the Synonym ID is to be able to capture these non-ICAO compliant identifiers from FPL Item 15.

  Synonyms are kept to a minimum, and if possible not used at all, for the following reasons:
  - Necessity to define explicitly any TP involved in a Restriction;
  - Difficulties to match CPRs with TP when TP description is inaccurate. Impact: loss of CPR information;
  - Inconsistencies with DPI information when TP is not explicitly defined. Impact: Loss of DPI information which may lead to unnecessary suspension of flights;
  - EAD does not have the concept of synonym. Impact: Impossible to electronically download TP information from EAD;
o Poor quality of NM profiles (indicated in several studies and surveys) in the take-off phase because of the inaccurate description of the SIDs where synonyms are concerned: wrong distance, different level restrictions, etc. The inaccuracies at the beginning of a profile have repercussions over the whole profile. NOTE: Note: To enable data download from the EAD the synonym concept for TPs is removed. It is not possible to use a synonym when creating a new TP. TP already in CACD can remain with synonyms. CACD supports definition of Instrument approach procedures (STAR must be connected to one or more instrument approach procedures).

- **Connects to AD**
  Used to specify the Aerodrome for which the terminal Procedure is published and applies. Exactly one Aerodrome must be specified.

- **Virtual Length**
  It is automatically calculated by the system, taking into account the eventual Virtual length(s) specified in the segments of the Route Track portions definition. It corresponds to the real (operational) length in NM of the whole Terminal Procedure (from the first point to the Aerodrome for an Arrival Procedure, from the Aerodrome to the last point for a Departure Procedure). For each segment of the Terminal Procedure, the system considers:

  o the straight distance (“Great Circle”) when no Virtual length is specified for that segment;
  o a longer distance, the segment’s Virtual length, when a value is specified.

  It follows that if none of the segments has a Virtual length value specified in the Route track portions, the Virtual length of a Terminal Procedure is equal to its Length.

- **Restriction on Aircraft**
  Automatically derived by the system and indicates whether there exists a restriction on the category of aircraft that is allowed to take the Terminal Procedure. If not, all aircraft types can use the Terminal Procedure. Such a Restriction is implemented as an Aircraft Type Restriction on Terminal Procedure.

- **Initial Approach Fix (IAF)**
  Only applicable to STARs. It is a point that connects the Arrival Procedure and the instrument approach procedure, as published in the AIP. Note that IFPS does not calculate TTLEET up to IAF but up to touchdown, IAF has no effect in IFPS or ETFMS.

- **Connecting point**
  Specified in a Terminal Procedure are the published Significant Points of the Complete Route Track that may serve as connecting point to the en-route network. It means that a flight may join an Arrival Procedure or leave a Departure Procedure only at one of these Points. The first point of an Arrival Procedure and the last Point of a Departure Procedure must be defined as Connecting points.
• **Connected Runways**
The Runway Directions specified under Connect runway(s) are those corresponding to the Terminal Procedure and its eventual Synonym Identifiers. At least one Runway Direction must be connected to a Terminal Procedure.

• **Complete Route Track**
The layout of the Terminal Procedure as a list of all the Significant Points that compose it, plus the Connected Aerodrome. For an Arrival Procedure, it ends with the Connected Aerodrome. For a Departure Procedure it starts with the Connected Aerodrome.

• **Vertical limits**
The Vertical Limits are the FL ranges and time applicability specifying the existence of the Route for each Route Segment. Outside the Vertical Limits (FL range and time applicability), the Route does not exist, it is "undefined".

  Note: CACD allows to define vertical limits of SIDs, STARs and IAPs on the Point.
  Note: A DCT that would be rejected by IFPS if the concerned segment was defined as closed (CDR N) in the Route track portions may be accepted by IFPS if this segment is "undefined" in the Vertical Limits.

The Vertical Limits are used in the context of Free Route Airspace to specify the existence of a Route (or a certain FL range of a Route) only during certain days/times. E.g. an Air Route could exist only during day time, and not during night time when Free Route Airspace is active.

The Vertical Limits apply to the whole Route Segment and are specified in a single direction, the one of the Terminal Procedure: from the first point to the last point of the Complete route track.

There must be no overlap in FL range and applicability.

### 2.5 Airspace

#### 2.5.1 Definition

1. Airspace is any specific three-dimensional (3D) portion (volume) of the atmosphere.

2. This volume is defined by lateral and vertical boundaries.

#### 2.5.2 NMOC System expression

1. The airspaces defined in NMOC system have an essential role in ATM because they are used to create a virtual description of the real Airspace. As an example, these airspaces are used to represent the relevant active ATC sectors, the areas of responsibility, the restricted areas, and other areas as required for NM activities.

2. Airspace in NMOC system can be built by defining airblocks (horizontal polygon) and vertical boundaries, or they are composed of airspaces of another type. An airblock is not airspace as such, but it is the initial construction element to build up Airspace. It is in fact a set of geographical positions (Significant Point or Geographical Co-ordinates), representing a surface.
(3) As in NMOC system the airspaces are used for different purposes, they are classified into three distinct categories, which determine the airspace usage.

(4) Administrative airspace

This airspace includes the following sub-types:

- **Information Region (IR)**

  It represents a part of the airspace within which Flight Information Service and Alerting Service are provided. It is the regional subdivision of a country’s national airspace. Airspace type IR is used to represent Flight Information Regions (FIRs), Upper Information Regions (UIRs), Part of Flight Information Region [FirP], Part of Upper Flight Information Region [UirP], Oceanic Transition Area [OTA] and No FIR [FIRN]. An IR is composed of one or more Airblocks (AB). It does not take into account any airspace delegation between ATC units. Every Information Region (IR) has to be part of a single National Airspace (NAS), except Part of Flight Information Region [FirP] or Part of Upper Flight Information Region [UirP] at the condition that they are associated with an FIR or UIR. In this case the FirP or UirP is a part of and overlaps with the associated FIR or UIR.

- **National Airspace (NAS)**

  It is an Airspace Volume composed of one or more IRs. This Airspace represents a complete country, taking into account the real national boundaries, or at least an approximation of these boundaries. A National Airspace is associated to a system unit corresponding to the country that is responsible for that Airspace. National Airspaces are used in the FUA concept to make the link between the country (NAS) and the appropriate Unit of type AMC. The National Airspace is also used to derive the link between a country and several other NMOC entities (significant points, aerodromes, airspaces etc.).

- **Area**

  An Area is composed of zero or more NAS and of zero or more IRs. There must be at least one element NAS or one element IR. The client systems (e.g. IFPS, ETFMS, RSO etc.) need pre-defined geographical Areas in order to know how to treat a flight, based on the area where it is located, or has departed, or has arrived. The Area concept also enables definition of the geographical 3D Area and to associate it automatically via the geometrical properties to the NMOC entities (e.g. AD, PT, AS). An IR element of an Area is not owned by a NAS element of the same Area. An Area cannot be used as a ‘Count Area’ in ETFMS.

(5) Operational airspace

It represents the division of the Airspace for the provision of air traffic control and includes the following sub-types:

- **Elementary Sector (ES)**

  An Elementary Sector is an Airspace Volume, built up from one or more Airblocks (AB) to which a vertical dimension is added by means of FLs. An Elementary Sector is identified by up to 10 (ten) characters, starting with Location Indicator - ATC Unit 4 (four) letter ICAO code followed by an Airspace Indicator - combination of maximum 6 (six) alphanumeric characters indicating a further specification, e.g. EDGGGIN, EISNA.
• **Collapsed Sector (CS)**
  A Collapsed Sector is a combination of Elementary Sectors. It is built up of two or more distinct Elementary Sectors, usually belonging to the same AUA.

  Exceptionally, it is also possible to create a Collapsed Sector composed of Elementary Sectors belonging to different AUAs. This covers the operational requirement of monitoring sectors that belong to more than one AUA. Such Collapsed Sectors cannot be used in the Sector Configurations of an AUA. However, they may be used as Reference Location of Traffic Volumes (which may not be “M0”).

• **Cluster**
  A Cluster is composed of one or more Elementary Sectors (ES).

• **ATC Unit Airspace (AUA)**
  An ATC Unit Airspace (AUA) is a volume built up of one or more Elementary Sectors. It is the type of Airspace representing the complete Airspace for which a particular unit is responsible.

  ATC Unit Airspaces are essential NMOC system entities as they are the link between the Airspace and Addressing and are also used to reflect the dynamic operational organisation of the Airspace through the Sector Configurations.

  Following sub-types exist: ATZ (Air Traffic Zone), CTA (Control Area), CTR (Control Zone), HTZ (Helicopter Traffic Zone), OCA (Oceanic Control Area), TMA (Terminal Area), UTA (Upper Control Area).

  Each AUA is linked to exactly one Unit (UT) of type ACC, APP, OAC, or UAC. This is reflected in the Unit (UT) types that are connected to the AUA.

  Example: The AUA ENOBOCA (type OCA) is connected to the UT OACENOB of UT type OAC.

  Each AUA linked to a Unit of type ACC, OAC, or UAC have at least one Sector Configuration.

  An AUA can be partitioned into Clusters. A maximum of 9 Clusters is allowed for each AUA. Each Cluster is composed of at least one (but usually more) of the Elementary Sectors of the AUA. Altogether, the Elementary Sectors of the Clusters correspond to the Elementary Sectors of the AUA. When an AUA is partitioned into Clusters, it cannot have Sector Configurations. Instead, the Sector Configurations are defined and activated in each of its Clusters.

• **ATC Unit Airspace Group (AUAG)**
  An ATC Unit Airspace Group (AUAG) is a volume built up of:
  o one or more AUAs; or
  o different AUAGs.

  An AUAG can be used to group AUAs that correspond to a given IR. The difference between an AUAG and a relevant IR is that the AUAG also comprises the possible cross border Airspace delegations.

• **Region**
  Region is an internal concept, unknown as such outside the NM.
A Region is a volume built up of one or more ATC Unit Airspace Groups (AUAG), ATC Unit Airspaces (AUA), or Elementary Sectors (ES). An ES element of a Region may not be owned by an AUA element of the same Region and an AUA element may not be owned by an AUAG element of the same Region. There is consequently no overlap between the elements that compose a Region. Presently, Regions are used to represent Airspaces with particular 8.33 kHz radio equipment requirements, for the Mode-S implementation, or for CCAMS (Centralised Code Assignment and Management System) implementation. A Region cannot be used as a ‘Count Area’ in ETFMS.

(6) Reserved / Restricted airspace

Reserved / Restricted Airspaces (RSA) represent a part of the Airspace where General Air Traffic (GAT) can be restricted (in future also OAT not using RSA). In practice, it corresponds in most cases with airspace where military operations may take place.

For more details see also Chapter 4.

(7) The airspace classification and naming conventions in NMOC system are at least partly aligned with AIXM (Aeronautical Information Exchange Model) in view of the exchange of data with EAD.

2.6 Direction of cruising levels

2.6.1 Definition

(1) The Flight Level Orientation Scheme (FLOS) applicable within each State’s airspace corresponds to the Table of Cruising levels in accordance with Annex 2, Appendix 3, a) and State AIP ENR 1.7.

(2) For expression of the direction of cruising levels the terms ODD / EVEN are used with the following meaning:

- "ODD" are considered those FLs which are within magnetic track margin of either 000° - 179° or 090° - 269° (FL010, FL030 ..., FL310, FL330 ...FL410...etc.);
- "EVEN" are considered those FLs which are within magnetic track margin of either 180° - 359° or 270° - 089° (FL020, FL040 ..., FL300, FL320 ...FL430...etc.).

2.6.2 ATS Route

(1) The each ATS route has mandatorily defined direction of cruising levels in State AIP ENR 3.

(2) It is possible the direction of cruising levels for a particular ATS route or ATS route segment published in ENR 3 to be different from ENR 1.7 FLOS.

2.6.3 DCT

(1) The direction of cruising levels used along relevant DCT segment is described in Column "Direction of Cruising Levels" in RAD Appendix 4.

(2) This data is for information purposes only, not mandatory and is included if provided by the States / FABs / ANSPs.
The FLOS applicable via DCTs in some State is different and overrides ENR 1.7.

2.6.4 FRA significant points

(1) In FRA, regardless of the existence of the ATS route network, there are flights towards a relevant FRA significant point from different directions; however they are in accordance with the published FLOS.

(2) Deviations from the published direction of cruising levels are necessary in several cases for operational reasons related to ATC unit responsibility of the same FL (ODD or EVEN) over a FRA significant point.

(3) Currently all FRA significant points and direction of cruising levels are published in State AIPs as part of either ENR 4.1 or ENR 4.4 remarks.

2.6.5 NMOC System expression

(1) The ATS route direction of cruising levels is included in NMOC system.

(2) The DCT direction of cruising levels is NOT included in NMOC system.

(3) The FRA point direction of cruising levels is NOT included in NMOC system as part of the FRA definitions.

(4) NMOC system is not hard checking the compatibility between the direction of cruising levels and flight plans filed.
3 Airspace Utilization Rules and Availability (AURA)

3.1 Purpose

(1) The purpose of this Chapter is to describe the use of airspace utilisation rules and availability (AURA) restrictions for expression and flight plan processing. The Chapter also contains the definition of terms used in the RAD to describe and express the utilization of the European airspace.

(2) This Chapter covers the following AURA restrictions and their available features:

- RAD restrictions;
- FRA (Free Route Airspace) DCT Restriction;
- DCT Limitation Restriction;
- Profile Tuning Restriction (PTR);
- EU / EURO restrictions;
- Aerodrome Flight Rule Restriction;
- Flight property Restriction on Terminal Procedure.
- AURA FUA including FBZ and NPZ (for description see chapter 4)

3.2 AURA Restrictions Parameters

3.2.1 Restriction Identifier

It is a unique and clear identification of the Restriction that serves through the RAD as a common reference for the NM, EAD, the ANSPs and the various flight planning systems. A Restriction Identifier is composed of an Origin ID + a Group ID + a sub-group ID. If a given Restriction expression requires the creation of several ‘sub’ Restrictions, they are imperatively kept together by allocating the same Origin and Group ID and by giving them a different subgroup ID.

Example: EH2010A = ‘EH’ + ‘2010’ + ‘A’

The tables below represent the NM AURA Naming Convention for Restriction Identifiers.
<table>
<thead>
<tr>
<th>Restriction type</th>
<th>Restriction subtype</th>
<th>RAD publishable</th>
<th>Info Source</th>
<th>Specific Request</th>
<th>Origin ID</th>
<th>Group ID</th>
<th>Subgroup ID</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traffic Flow</td>
<td>City pair level capping</td>
<td>YES</td>
<td>RAD DOC</td>
<td>NO</td>
<td>Country/FAB code ID(s)</td>
<td>4000 to 4999</td>
<td>A, B, C...</td>
</tr>
<tr>
<td></td>
<td>RAD European Annex</td>
<td>YES</td>
<td>RAD DOC</td>
<td>NO</td>
<td>Country/FAB code ID(s)</td>
<td>2000 to 3999</td>
<td>A, B, C...</td>
</tr>
<tr>
<td>Military Restrictions</td>
<td></td>
<td>YES</td>
<td>RAD DOC</td>
<td>NO</td>
<td>Country/FAB code ID(s)</td>
<td>7000 to 7499</td>
<td>A, B, C...</td>
</tr>
<tr>
<td></td>
<td>RAD European Annexes cross border restrictions</td>
<td>YES</td>
<td>RAD DOC</td>
<td>NO</td>
<td>Country/FAB code ID(s)</td>
<td>1000 to 1499</td>
<td>A, B, C...</td>
</tr>
<tr>
<td>Plain text notes</td>
<td></td>
<td>YES</td>
<td>NEC/NM</td>
<td>YES</td>
<td>&quot;EU&quot; + 0 to 2 alphanumeric</td>
<td>1 to 5 alphanumeric (no leading &quot;0&quot;)</td>
<td>A, B, C...</td>
</tr>
<tr>
<td>Scenarios</td>
<td></td>
<td>YES</td>
<td>NEC/AIP</td>
<td>YES</td>
<td>&quot;EURO&quot;</td>
<td></td>
<td>A, B, C...</td>
</tr>
<tr>
<td>Unavailable Terminal Procedures</td>
<td></td>
<td>YES</td>
<td>NEC</td>
<td>YES</td>
<td>Aerodrome ID</td>
<td>3000 to 3999</td>
<td>A, B, C...</td>
</tr>
<tr>
<td>Conditions on DCT segments Point-Point</td>
<td></td>
<td>YES</td>
<td>RAD DOC</td>
<td>NO</td>
<td>Country/FAB code ID(s)</td>
<td>5000 to 5499 and 50000 to 54999</td>
<td>A, B, C...</td>
</tr>
<tr>
<td>Conditions on consecutive DCT segments Point-Point</td>
<td></td>
<td>YES</td>
<td>RAD DOC</td>
<td>NO</td>
<td>Country/FAB code ID(s)</td>
<td>6100 to 6499</td>
<td>A, B, C...</td>
</tr>
<tr>
<td>Conditions on DCT segments to/from AD</td>
<td></td>
<td>YES</td>
<td>RAD DOC</td>
<td>NO</td>
<td>Country/FAB code ID(s)</td>
<td>5500 to 5999</td>
<td>A, B, C...</td>
</tr>
<tr>
<td>FUA restrictions</td>
<td></td>
<td>YES</td>
<td>AMC/RAD DOC</td>
<td>YES</td>
<td>RSA ID as per AIP</td>
<td>R, S, Y*</td>
<td>A, B, C...</td>
</tr>
<tr>
<td>Special event or military activity/exercise</td>
<td></td>
<td>YES (except politically sensitive: No)</td>
<td>NEC/NM Strategic/MILD/AMC</td>
<td>YES</td>
<td>&quot;EU&quot; + 0 to 2 alphanumeric</td>
<td>1 to 5 alphanumeric (no leading &quot;0&quot;)</td>
<td>A, B, C...</td>
</tr>
<tr>
<td>No Planning Zone (NPZ)</td>
<td></td>
<td>YES</td>
<td>AIP</td>
<td>NO</td>
<td>Country ID(s) or &quot;EC&quot;, if zone is located across two or more State borders</td>
<td>NPZ followed by 1 to 999</td>
<td>A, B, C...</td>
</tr>
<tr>
<td>Profile tuning</td>
<td>LOA std. agreed levels</td>
<td>On request</td>
<td>NEC/LEC/RAD DOC Appendix</td>
<td>YES</td>
<td>Country/FAB code ID(s) or IR ID</td>
<td>8000 to 8999</td>
<td>A, B, C... + &quot;AO&quot; if Airborne only</td>
</tr>
<tr>
<td></td>
<td>Particular IR</td>
<td>On request</td>
<td>NEC</td>
<td>YES</td>
<td>IR ID</td>
<td>1500 to 5999</td>
<td>A, B, C...</td>
</tr>
<tr>
<td></td>
<td>AD or TMA/CTR</td>
<td>On request</td>
<td>NEC</td>
<td>YES</td>
<td>Aerodrome ID</td>
<td>1500 to 2999</td>
<td>A, B, C...</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>On request</td>
<td>NEC</td>
<td>YES</td>
<td>Country/FAB code ID(s) or IR ID</td>
<td>9000 to 9999</td>
<td>A, B, C...</td>
</tr>
<tr>
<td>DCT limitations</td>
<td>AUA/AUAG</td>
<td>YES</td>
<td>RAD DOC</td>
<td>NO</td>
<td>AUA/AUAG first 2 or 4 characters or FAB ID</td>
<td>1 to 99</td>
<td>A, B, C...</td>
</tr>
<tr>
<td></td>
<td>AD</td>
<td>YES</td>
<td>RAD DOC</td>
<td>NO</td>
<td>Aerodrome ID</td>
<td>5 (AURA@CON ECT)</td>
<td>A, B, C...</td>
</tr>
<tr>
<td></td>
<td>Cross-Border</td>
<td>YES</td>
<td>RAD DOC</td>
<td>NO</td>
<td>Country code ID(s)</td>
<td>400</td>
<td>A, B, C...</td>
</tr>
<tr>
<td>FRA DCT Restrictions</td>
<td>AUA/AUAG</td>
<td>YES</td>
<td>AIP/AIC</td>
<td>YES</td>
<td>AUA/AUAG first 2 or 4 characters or FAB ID</td>
<td>100 to 499</td>
<td>A, B, C...</td>
</tr>
<tr>
<td></td>
<td>Cross-Border</td>
<td>YES</td>
<td>AIP/AIC</td>
<td>YES</td>
<td>Country code ID(s)</td>
<td>500 to 5999</td>
<td>A, B, C...</td>
</tr>
<tr>
<td>Aerodrome flight rule</td>
<td></td>
<td>YES</td>
<td>AIP</td>
<td>YES</td>
<td>Aerodrome ID</td>
<td>200</td>
<td>A, B, C...</td>
</tr>
<tr>
<td>Flight property on terminal procedure</td>
<td>Normal</td>
<td>YES</td>
<td>AIP</td>
<td>YES</td>
<td>Aerodrome ID</td>
<td>300</td>
<td>A, B, C...</td>
</tr>
<tr>
<td></td>
<td>Not Flight-plannable (wrong ENVI CADC data)</td>
<td>YES</td>
<td>NEC/NOTAM</td>
<td>YES</td>
<td>Aerodrome ID</td>
<td>700</td>
<td>A, B, C...</td>
</tr>
</tbody>
</table>

Table 2: NM AURA Naming Convention for Restriction Identifiers

* Note: In case of more than 8 FUA restrictions per RSA the NM RAD Team in coordination with relevant NRC/s and/or other NMOC Team/s is authorised to use other letters starting with Q on reversed order (Q, P, N, M, etc. with no use of letters "O" and "I").
### 3.2.2 Operational Goal

(1) The Operational Goal describes briefly the operational goal the originator wants to achieve through the Restriction.

(2) Stating the Operational Goal of a restriction is not mandatory. However, such information is considered as valuable additional information (background, origin, etc.).

(3) When provided the Operational Goal the originator shall not include any part of the restriction’s condition.

### 3.2.3 Flow Routings

(1) A restriction is either Forbidden (or “Not allowed” (N) for a DCT Limitation or a FRA DCT restriction), Mandatory (or “Allowed” (Y) for a DCT Limitation or a FRA DCT restriction) or Closed for Cruising/Closed for DCT for the selected traffic flow. Forbidden and Mandatory Traffic flow restrictions must have at least one flow routing element. Closed for Cruising/Closed for DCT Traffic flow restrictions cannot have flow routing element, and the closed object is the reference location. A Flow Routing can consist of a single or of several elements.

(2) For each separate element a level range can be specified which narrows down vertically the selected flow of traffic. The different Flow Routing Sequences are bound by the Operand “OR”. The different Routing Elements within a Flow Routing Sequence are bound with the operand “AND THEN”.

(3) For most types of Restrictions, different possible Flow Routing Elements are the following:

a) **Significant Point / Point Sequence**
   - When a Significant Point is used as a Flow Routing Element, then overflying that point is either forbidden or mandatory at the specified level range.
   - When a sequence of Significant Points is used as a Flow Routing Element then overflying is either forbidden or mandatory in the same sequence as the points are listed, at the specified level range regardless which intermediate points are overflown, if any at all.
• For Traffic Flow Restrictions only significant points shall be used.

Example: KOK NIK (any route between KOK and NIK)

b) Airspaces
• When Airspace is used as a Flow Routing Element then its penetration is either forbidden or mandatory at the specified level range.
• All values are allowed for the vertical limits except if the vertical range is completely outside the Airspace (vertical range must strictly be inside the vertical limits of the airspace to avoid redundant and confusing limits).

c) Terminal Procedures
• When a Terminal Procedure is used as a Flow Routing Element then it is the ID string as such which is restricted. It means that the use of the Terminal Procedure is restricted regardless which of the points is used as transition point (Point where the en-route structure is joined/left).
• For mandatory Flow Routings (DCT Segments, Terminal Procedures and Route Portions) ending at an Aerodrome, the minimum level for NMOC system purposes is set to GND.
• For forbidden Flow Routings ending at an Aerodrome the maximum level for NMOC system purposes is set to UNL.
• Vertical Limits may not be defined for Flow Routings originating from an Aerodrome. Only Terminal Procedures with an ICAO compliant Identifier can serve as a Flow Routing Element.

d) DCT Segment
• If a DCT segment is used as a Flow Routing Element then it is the string as such which is meant. The DCT segment has the same value as a route portion with Route ID Relevant except that the route ID is DCT.

Example: KOK DCT NTM is forbidden, then the flight may still route KOK UL123 NTM or KOK DCT NIK DCT NTM (DCT needs to appear in the FPL).

e) Route Portion - ID Relevant
• If a Route Portion is mentioned as a Flow Routing Element then it is not the string as such but the Route ID and the segments it represents. The FPL must also mention the route ID. This can be as well a segment of a Terminal Procedure. The complete route portion can be restricted at one specified level.

Example 1:
KOK UL607 NTM is forbidden with Route ID Relevant in a Traffic Flow Restriction:
- A flight compliant with the conditions cannot fly along this specific route from KOK to NTM but is allowed to fly part of this route portion;
- A flight compliant with the conditions can still fly KOK G1 NTM or KOK UN123 NTM (fictitious) although it is concurrent with UL607.

Example 2:
KOK UL607 NTM is mandatory with Route ID Relevant in a Traffic Flow Restriction:
o A Flight compliant with the conditions must fly this sequence of segments at least from KOK to NTM along the UL607. It is known to the client systems if the FPL joins before the FROM point of the portion and/or leave it after the TO point of the portion.

f) Route Portion - Point List

- If a Route Portion is mentioned as a Flow Routing Element then it is not the string as such but the segments resulting from the expansion of the portion. These route portions do not expand Terminal Procedures anymore. The complete route portion can be restricted at a specified level range. It is a necessary to insert exactly concurrent routes because sometimes upper and lower routes are not the same (M725 VLM - TABEM - OKF and UM725 VLM - OKF).

Example 1:
KOK UL607 NTM is forbidden with Route portion-point list in a Traffic Flow Restriction:
- A flight compliant with the conditions cannot fly along this sequence of points from KOK to NTM but is allowed to fly part of this route portion.
- A flight compliant with the conditions cannot fly KOK G1 NTM or KOK L607 NTM (fictitious) if they are 2D concurrent with UL607 (exactly the same sequence of points).

Example 2:
KOK UL607 NTM is mandatory with Route portion-point list in a Traffic Flow Restriction:
- A flight compliant with the conditions must fly this sequence of points at least from KOK to NTM along any route.
- It is known to the client systems if the FPL joins before the FROM point of the portion and/or leave it after the TO point of the portion.

g) Combination of Flow Routing Elements

- Several Route Portions can be combined (Example: KOK UG1 NTM UL607 KRH).
- Route portions can be combined with a Significant Point or a sequence of Significant Points (Example: KOK UG1 NTM RUWER WRB).
- SIDs/STARs can be combined with a Significant Point or a sequence of Significant Points and/or a Route portion (Examples: EBBR DIK3C DIK / EBBR DIK3C DIK UG109 KRH / EBBR DIK3C DIK, MMD, GTQ).

h) Flow Routing Element Level Range

- A Separate Level range can be specified per Element of the Flow Routing. The level Range will be expressed as a FL (F + 3 numeric). GND, UNL, FLR and CEL are additionally accepted values but only for NMOC system purposes. FLR and CEL can only be used for Airspaces.
- A level range attached to a SID/STAR will be valid for the complete Terminal Procedure, meaning for a SID from the Aerodrome to the connecting point and for a STAR from the connecting point to the Aerodrome.
- For mandatory Flow Routings (DCT Segments, Terminal Procedures and Route Portions) ending at an Aerodrome the minimum level for NMOC system purposes is set to GND.
For forbidden Flow Routings ending at an Aerodrome the maximum level for NMOC system purposes is set to UNL. Vertical Limits may not be defined for Flow Routings originating from an Aerodrome. Each Flow element within a sequence can have different level ranges.

Examples:
- EBBR DIK3C GND\F195
- EBBR DIK3C GND\F195, DIK F120\F195, RUWER F195\240
- KOK UG1 NTM F195\280, KRH F280\UNL
- EBURUIR F290\F410
- BHD 260\UNL, ARE F195\F260

### 3.2.4 Flow Conditions

(1) For most types of Restrictions, Flow Conditions can be expressed as one or several Locations and/or a Flight Property. One of the conditions (that has to be repeated if several location conditions are 'OR') must serve as the Reference Location for the applicability of the Restriction.

a) **Location Condition**

- Departing Location Condition can be:
  - Aerodrome(s);
  - Sets of Aerodromes;
  - Airspace(s) representing all Aerodromes situated within the lateral limits of the Airspace projection at ground level;
  - Combination of above elements.

  The different elements within a Departing Location Condition Cell are bound by the logical operand ‘OR’. If Airspace is used, it shall contain at least one Aerodrome in its projection at ground level.

- Crossing Location Condition - can be:
  - Significant point(s);
  - Airspace(s);
  - Airspace Border;
  - Route Portion(s), Point List;
  - Route Portion(s), route ID relevant;
  - SID / STAR;
  - DCT segment(s).

Airspace Border is the curtain-like surface which occurs where one Airspace abuts another with the same category (Administrative Airspace, Operational Airspace and Restricted Airspace (RSA)). It is thus NOT the 2D borderline made out of the two adjacent Airspaces horizontal projections.

The ID of a border will consist of the two relevant Airspaces. **Example:** The border between Brussels CTA and Reims CTA will be EBBUCTA LFEECTA.

Direction is implied by the order of the Airspaces i.e. EB / ED means traffic coming from the Belgian Airspace to the German Airspace.

The different elements within one Crossing Condition Cell are bound by the logical operand ‘OR’.
A Maximum of 4 Crossing Conditions Cells bound by an ‘AND THEN’ operand are allowed in the included Location condition group.

- Arriving Location Condition can be:
  - Aerodrome(s);
  - Sets of Aerodromes;
  - Airspace(s) representing all Aerodromes situated within the lateral limits of the Airspace projection at ground level;
  - Combination of above elements.

The different elements within an Arriving Location Condition Cell are bound by the logical operand ‘OR’. If Airspace is used, it shall contain at least one Aerodrome in its projection at ground level.

b) Included Location Conditions Group

- At least one Included Condition Element shall be specified. Between the different included Location groups, an ‘AND THEN’ relationship exists. This means that only the flights that are compliant with the sequence of conditions will be selected. The sequenced Crossing Location Condition Cells allow selecting specific flows of traffic. The sequence of the elements must be specified in the correct flight direction according to the flow of traffic that the Restriction intends to capture.

c) Second Location Conditions Group

- A Second Location Conditions Group can be combined with the Included Location Conditions Group by an ‘OR’, ‘AND’ or ‘AND NOT’ operand.
  - Between the Departing, Crossing and Arriving Location Conditions within this group a global logical operand has to be inserted if necessary. The Operands ‘AND THEN’ and ‘OR’ are allowed, but not a combination of these two.
  - Only two Crossing Locations Conditions Cells are available.

- Typical usages of the Second Location Condition group are the following:
  - Linked with an ‘OR’ to the Included Location Condition group, it represents a single constraint (the Flow Routing) for two different Flows of Traffic (the Included Location Condition group and the Second Location Condition group); in this case, the Reference Location (including its vertical limits) has to be the same in each group;
  - Linked with an ‘AND’ to the Included Location Condition group, it represents Flow conditions that could either not be inserted in the Included Location Condition group due to lack of space, or that needed to be inserted without an indication of sequence (e.g. ‘AND Crossing Airspace XYZ’ instead of ‘AND THEN Crossing Airspace XYZ’);
  - Linked with an ‘AND NOT’ (meaning ‘except’) to the Included Location Condition group, it represents a constraint of the type ‘Only available for’, which is implemented as Forbidden (Flow Routing) AND NOT (Second Location Condition group), with
the Included Location Condition group containing an element of the Flow Routing as Reference Location.

d) **Location Conditions Elements Level Range**

- A Level range can be specified for each element of a Crossing Location Condition Cell separately except:
  - If the Cell is the Reference Location;
  - Within any group of Reference Locations where the elements are not all Airspaces, if a vertical limit is defined for any Location, the same vertical limit must be explicitly defined for each of the others;
  - For Crossing Locations (DCT Segments, Terminal Procedures and Route Portions) originating from an Aerodrome.

Level range can be expressed as a FL (F + 3 numeric). Additional values GND, UNL, FLR and CEL are allowed. If values FLR or CEL are used, they define an extended Airspace Slice. They can only be used when defining a slice of an existing Airspace i.e. not for Points, Segments, Routes, Airspace Borders, etc.

e) **Reference Location**

- One of the Conditions (all elements within one Cell) must serve as date and time reference for the applicability of the Restriction. The Reference Location has this role: the entry into and exit from the Reference Location is where the applicability of the Restriction will apply. In addition, in case Special Dates are used in the basic applicability, the Reference Location is also the reference to determine which country has to be considered.
- If the operand ‘OR’ is used between the Included Location Condition group and the Second Location Condition group, the Reference Location (including its vertical limits) has to be the same in each group.
- The Restriction’s applicability will apply:
  - For Departing Locations: to the E/CTOT;
  - For Crossing Locations of type Point: to the time over the Point;
  - For Crossing Locations of type Airspace, Route Portions, Terminal Procedures, DCT Portions: to the entry time into and exit time from the Airspace, the DCT or the first segment of the Route portion or Terminal Procedure;
  - For Arriving Locations: to the landing time.

f) **Flight Property Conditions Group**

- This Condition group is composed of Flight Type, Aircraft Classification/Type, Aircraft equipment.
- Flight Type Condition element can be:
  - General;
  - Military;
  - Non Scheduled;
  - Scheduled;
  - Other.
The division here is not related to flight rules (OAT / GAT etc.), but to the operating agency derived from the FPL Item 8b (i.e. ‘G’ for general, ‘M’ for military, ‘N’ for non-scheduled, ‘S’ for scheduled).

- **Aircraft Classification/Type**
  The Aircraft type ID or Aircraft type classification is according to ICAO Doc 8643, which indicates the Aircraft’s propulsion system and the kind of aeroplane in general. Wildcards, which group some of the categories below, are allowed.

  **Allowed Values:**
  A Valid Aircraft ICAO ID or a valid Aircraft type classification or wildcard thereof.

  Three characters are used to compose the description of Aircraft type classifications:

<table>
<thead>
<tr>
<th>First Character</th>
<th>Second Character</th>
<th>Third Character</th>
</tr>
</thead>
<tbody>
<tr>
<td>L = Landplane</td>
<td>1, 2, 3, 4, 6, 8</td>
<td>P = Piston Engine</td>
</tr>
<tr>
<td>S = Seaplane</td>
<td></td>
<td>T = Turbo Engine</td>
</tr>
<tr>
<td>A = Amphibian</td>
<td></td>
<td>J = Jet Engine</td>
</tr>
<tr>
<td>H = Helicopter</td>
<td></td>
<td></td>
</tr>
<tr>
<td>G = Gyrocopter</td>
<td></td>
<td></td>
</tr>
<tr>
<td>T = Tilt-wing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>aircraft</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Table 4: Flight Property Conditions Group - Aircraft type classifications**

- **Examples**
  - L2T = a Landplane with two turboprop engines.
  - **J = all Jet aircraft.
  - Departing: EBBR
  - AND
  - Flight Property: **J
  - FORBIDDEN
  - DURING: H24
  - Restriction Routing: EBBR DIK 1C

- **Aircraft equipment** - all equipment information can be specified.
g) **Combination of Conditions**

- Within one Conditions Cell, several elements can be combined. Each element can carry a FL band. At least one element must be present in the Included Location Conditions Group.

- The three Condition Groups can be combined as follows:

  \[
  \text{[ (Included Location Conditions Group) OR/AND/AND NOT (Second Location Conditions Group) ] AND/AND NOT (Flight Property Condition Group)}
  \]

  The different conditions within the included Location Conditions Group are bound as follows:

  \[
  \text{[ (Departing cell) AND THEN (First Crossing cell) AND THEN (Second Crossing cell) AND THEN (Third Crossing cell) AND THEN (Fourth Crossing cell) AND THEN (Arriving cell)]}
  \]

  The different conditions within the Second Location Conditions Group are bound as follows: If the second Location Conditions group is bound by the operand

  \[
  \text{OR [(Departing cell) AND THEN (Crossing cell) AND THEN (First Crossing cell) AND THEN (Second Crossing cell) AND THEN (Arriving cell)]}
  \]

  If the second Location Conditions group is bound by the operand AND/AND NOT either

  \[
  \text{[(Departing cell) AND THEN (Crossing cell) AND THEN (Arriving cell)]}
  \]

  or

  \[
  \text{((Departing cell) OR (Crossing cell) OR (Arriving cell)])}
  \]

  The different conditions within any cell of the Location Conditions Groups are bound as follows:

  \[
  \text{[(Element) OR (Element) OR (Element)]}
  \]
h) **Applicability**

- **Overall Applicability**
  The overall Applicability of the Restriction is derived from the intersection of the temporality of the Flow Restriction, the Basic Applicability and the Dependent Applicability.

- **Basic Applicability**
  It is defined based on days of the week and time intervals. It can also contain Special Dates: Holiday-1, Holiday, Holiday+1, Busy Fridays. To determine when a day is Holiday or Busy Friday, the algorithm looks at the country code of the Reference Location and reads the Special Dates defined for the corresponding Country.

  The set of Reference Locations of a Restriction must have a single reference Country, otherwise Special Dates must not be used in the applicability time table. The Basic Applicability can be set to:
  
  - Yes, meaning the Restriction is applicable during given days and periods;
  - No, meaning the Restriction is applicable all times EXCEPT the given times and periods (“negative applicability”).

- **Dependent Applicability**
  The Dependent Applicability triggers the period(s) of time when the Restriction is applicable (exists). It can be based on Route Availability or Airspace Activation.

  **3.2.5 Dependent Applicability based on Route availability**

  (1) A Route portion and Vertical limits have to be indicated in the Restriction. The route portion can be composed of more than one segment. Dependant applicability base on a ROUTE can be:

  - DURING availability: the Restriction exists if the Route Portion is Available. For the Restriction model, ONE level OPEN along the route segment(s) within the vertical limits means that the ROUTE is available.

  - OUTSIDE availability: the Restriction exists if the Route Portion is not available. For the Restriction model, OUTSIDE AVAILABILITY means when ALL levels within the vertical limits are CLOSED in AT LEAST one of the route segments.

  **3.2.6 Dependent Applicability based on Airspace Activation**

  (1) An RSA has to be indicated in the Restriction Dependent Applicability, NO vertical limits can be provided.

  (2) RSA in Dependent Applicability is not the Reference Location

  - DURING ACTIVATION: the Restriction exists if the Airspace is Activated. For the Restriction model, Airspace ACTIVATED for AT LEAST ONE LEVEL within the vertical limits means that the Airspace IS ACTIVATED, and the Restriction is applicable.
OUTSIDE ACTIVATION: the Restriction exists if the Airspace is not Activated. For the Restriction model, OUTSIDE ACTIVATION means when NO LEVEL within the vertical limits is activated.

*RSA in Dependent Applicability is also the Reference Location (“FUA Restriction”)*

The same Restricted Airspace (RSA) has to be indicated in the Restriction as Reference Location and in the Dependent Applicability. The vertical limits will be derived by NMOC system from the RSA Activation.

- DURING Airspace Activation: the Restriction applies for traffic calculated inside the RSA during the times and within the FL Range where the RSA is activated.
- OUTSIDE Airspace Activation: the Restriction applies for traffic calculated inside the RSA during the times and within the FL Range where the RSA is NOT activated.

**Example:**

RSA Vertical Limits = [GND, FL245]
RSA Activation = 08:00 - 12:00 [GND, FL195]

Outside Airspace Activation means the Restriction is applicable for traffic entering the RSA
00:00 - 08:00 at a calculated Level between [GND, FL245]
08:00 - 12:00 at a calculated Level between [195, FL245]
12:00 - 00:00 at a calculated Level between [GND, FL245]

### 3.2.7 Deferred Applicability

1. Restrictions with dependent applicability apply at IFPS for traffic calculated at the Restriction Reference Location exactly at the time given by the dependent applicability.

2. For mandatory Traffic Flow Restrictions, this sometimes creates a conflict in IFPS: the original routing filed in the FPL is invalidated by the RAD mandatory Restriction, but updating the FPL to follow the mandated route gives a Route availability problem (Route not available). So for a period of time (usually a few minutes) both routings are invalidated by IFPS. This often happens when the mandatory Route is a CDR (not H24 available).

3. To overcome this problem, two buffers are available in Traffic Flow Restriction Dependent Applicability:
   - Offset Start (Minutes): duration (+ 90 min to - 90 min). This is the time required to add or subtract to the start of the dependent applicability.
   - Offset End (Minutes): duration (+ 90 min to - 90 min). This is the time required to add or subtract to the end of the dependent applicability.

   The two buffers are independent, they can have different values.

4. These values depend on the speed and performance of aircraft. For this reason, they have to be determined in coordination with the FMP, who knows the most common traffic in the area of conflict.

5. FRA restriction is only active when the complete trajectory within the FRA fully overlaps the restriction applicability period, while for a non-FRA DCT the restriction is active when these periods partially overlap (this to allow switches between FRA and non-FRA restrictions without having both or neither applying to the same segment).
3.3 RAD

(1) The RAD basic principles, document structure, restrictions structure, publication and all other features are described in ERNIP Part 1, Chapter 8.

3.3.1 Purpose

(1) The RAD is a common reference document containing the policies, procedures and description for route and traffic orientation. It also includes route network and free route airspace utilisation rules and availability.

(2) The RAD is also an Air Traffic Flow and Capacity Management (ATFCM) tool that is designed as a sole-source flight-planning document, which integrates both structural and ATFCM requirements, geographically and vertically.

3.3.2 Creation

(1) RAD restrictions are created in CACD by the NM RAD Team based on proper request by relevant State / FAB / ANSP National RAD Coordinator (NRC). The whole process of RAD creation is defined by ERNIP Part 4.

(2) To classify the strength of the requirements in regards to the RAD, the following conventions are used in restrictions definition:

- The word "shall" denotes a mandatory requirement and is used only in RAD restriction definition;
- The word "should" denotes a preferred requirement and is used only in Operational Goal definition. The words "may" - an optional requirement and "will" - a statement of intent to implement a requirement are not used in RAD.

3.3.3 Publication

(1) RAD restrictions are published as xls file via NOP RAD Portal, RAD Home in accordance of ERNIP Part 1, Chapter 8 and ERNIP Part 4 provisions. The xls file of any Appendix, the Network wide Pan-European Annex and any separate Annex for special events is the only official publication containing the correct information to be used in flight planning.

(2) RAD “Annex for Special Event/s” contains restrictions of temporary nature. For the establishment of temporary areas (e.g. military exercise/activity) for which a temporary restrictions are required, those shall be published in “Annex for Special Event/s” dedicated to the specific event. In these cases, the Annex can be published/updated up to D-2 before the event/s. “Last minute” changes will be managed through the “Increment File”.

(3) RAD restrictions as all other AURA restrictions / limitations are also available via B2B in AIXM 5.1 format. Due to NMOC system capabilities to incorporate the structure of the RAD not all data available in xls files is available via B2B.

3.3.4 Usage

(1) RAD restrictions are used by IFPS to validate/invalidate Flight Plans and by the Path Finder to generate valid routes.
3.3.4.2 Specificities in Restriction Types

3.3.4.2.1 Restriction Design

a) **Restricted Object**
   - It specifies the geographic location where the restriction is applied.
   - It is a mandatory section of each restriction and uses flow elements.

b) **Condition / Utilization**
   - It is a mandatory section of each restriction and uses flow elements, level expressions, time conditions and special terms to specify parameters, which flights have to match in order to be subject to the restriction.

c) **Restriction Applicability**
   - For each RAD restriction, the period of applicability has to be defined.

3.3.4.2.2 Logical Operators

a) **Logical Conjunction (AND operator)**
   - The trajectory has to fulfil all expressions of the condition in order to be subject to the restriction.
   - If the condition consists of more than one expression, represented by separate lines in the document, a logical conjunction is connecting these expressions.
   - If at least one expression of the condition is not fulfilled by the trajectory, the restriction is not applicable to it.

<table>
<thead>
<tr>
<th>AIRWAY</th>
<th>FROM</th>
<th>TO</th>
<th>Utilization</th>
</tr>
</thead>
<tbody>
<tr>
<td>UN869</td>
<td>LERGA</td>
<td>OLRAK</td>
<td>Not available for traffic Above FL275</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>With DEP LSGG</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>With ARR LFBO</td>
</tr>
</tbody>
</table>

Table 5: Example of RAD Logical Conjunction (AND operator)

**Explanation**: The restricted object UN869 LERGA - OLRAK cannot be used by flights which depart from airport LSGG **AND** have LFBO as arrival airport **AND** are using the restricted object above FL275.

b) **Logical Disjunction (OR operator)**
   - The trajectory needs to fulfil only one expression of the condition in order to be subject to the restriction.
   - If the condition consists of more than one expression, represented by separate paragraphs in the document, a logical disjunction is connecting the respective paragraphs. The beginning of a paragraph is either marked by a numeration of letters (a, b, c ...) or by numbers (1, 2, 3, ...).
   - The restriction is also applicable if more than one expression is fulfilled by the trajectory.
Table 6: Example of RAD Logical Conjunction (OR operator)

<table>
<thead>
<tr>
<th>AIRWAY</th>
<th>FROM</th>
<th>TO</th>
<th>Utilization</th>
</tr>
</thead>
<tbody>
<tr>
<td>UL976</td>
<td>OBATO</td>
<td>RONAX</td>
<td>Not available for traffic</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1. ARR LFPG</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2. Via MMD</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3. Via CHW</td>
</tr>
</tbody>
</table>

Explanation: The restricted object UL976 OBATO - RONAX cannot be used by flights which have LFPG as arrival airport OR by flights crossing the significant point MMD OR by flights crossing the significant point CHW.

c) Logical Negation (NOT operator)

- In order to exclude a particular flow element from a larger set of flow elements (e.g. exclude one airport from an airport group), the term “except” can be used. This term refers to a logical negation of the status of the particular flow element.

Table 7: Example of RAD Logical Negation (NOT operator)

<table>
<thead>
<tr>
<th>AIRWAY</th>
<th>FROM</th>
<th>TO</th>
<th>Utilization</th>
</tr>
</thead>
<tbody>
<tr>
<td>UL976</td>
<td>OBATO</td>
<td>RONAX</td>
<td>Not available for traffic</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>ARR Paris Group except LFPO</td>
</tr>
</tbody>
</table>

Explanation: The restricted object UL976 OBATO - RONAX can NOT be used by flights landing at an airport belonging to the Paris Group except if the arrival airport is LFPO.

- The use of a logical negation can also change the restriction type for the particular traffic flow. In case a traffic flow is excluded from a “Not Available” restriction, it means that the restricted object is available for the specific traffic flow. In case a traffic flow is excluded from an “Only Available” restriction, it means that the restricted object is not available for the specific traffic flow. In case a traffic flow is excluded from a “Compulsory” restriction, it means that the restricted object is not mandatory to be used by the specific traffic flow.

3.3.4.2.3 Design of restriction conditions

a) Lines

- Every line of the condition represents a separate expression of the restriction. Each line is connected by a logical conjunction (AND) to other lines.
- If a line consists of a flow element, the trajectory has to contain this flow element in order to fulfil this expression.
- If a line contains an expression related to flight properties, the particular aircraft for which the trajectory is generated has to fulfil this expression.
- If a line contains a time or level condition, without any reference to a specific flow element, the reference location where the time or level condition is validated is the restricted object.
- If a line contains a time or level condition, with direct reference to a specific flow element, the reference location where the time or level condition is validated is not the restricted object but the explicitly
mentioned flow element condition. To properly indicate the reference location, the term AT can be used.

- If the time or level condition is fulfilled by the trajectory at the corresponding reference location, the condition is fulfilled.

<table>
<thead>
<tr>
<th>Point or Airspace</th>
<th>Utilization</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPL</td>
<td>Not available for traffic DEP LDDU Via PEVAL Above FL285</td>
</tr>
</tbody>
</table>

Table 8: Example of RAD Line Expression

**Explanation:** The level condition is specified in a single line. In this case, the condition refers to the restricted object SPL. Hence, the significant point SPL is not available above FL285 if the flight is departing from airport LDDU and crossing significant point PEVAL at any level.

<table>
<thead>
<tr>
<th>Point or Airspace</th>
<th>Utilization</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPL</td>
<td>Not available for traffic DEP LDDU Above FL285 at PEVAL</td>
</tr>
</tbody>
</table>

Table 9: Example of RAD Line Expression

**Explanation:** The level condition is specified in the same line as the flow element PEVAL. In this case, the condition refers to the flow element PEVAL. Hence, the restricted object SPL is not available at any altitude if the flight is departing from airport LDDU and crossing significant point PEVAL above FL285.

b) **Paragraphs**

- If a condition is enumerated i.e. contains more than one paragraph, a trajectory only has to fulfil one of these paragraphs in order to be affected by the restriction.
- The paragraphs are connected by a logical disjunction (OR) to each other. Within a paragraph, all expressions are connected by a logical conjunction (AND) as defined above. The beginning of a paragraph is marked by a numeration of letters (a, b, c, ...) or by numbers (1, 2, 3, ...).

<table>
<thead>
<tr>
<th>Point or Airspace</th>
<th>Utilization</th>
</tr>
</thead>
<tbody>
<tr>
<td>SULUS</td>
<td>Not available for traffic</td>
</tr>
<tr>
<td></td>
<td>1. DEP EDDF with ARR EDDN</td>
</tr>
<tr>
<td></td>
<td>2. DEP EDDN via SULUS L/UL604</td>
</tr>
</tbody>
</table>

Table 10: Example of RAD Paragraphs

**Explanation:** The restricted object SULUS cannot be used by flights with departure airport EDDF **AND** arrival airport EDDN **OR** flights with departure airport EDDN **AND** via the ATS routes L604 / UL604 after significant point SULUS.

- If further level of detail is required within a paragraph, the numeration of the lower level should be different from the numeration of the higher level.


### Table 11: Example of RAD Paragraphs

**Explanation:** The restricted object UL607 MOMUK - XEBIX is not available for flights via the ATS routes Y740 to TIRUL **OR** flights via N871 / UN871 to KOGOL except if the arrival airport is LOWS or the departure airport is LFST with an arrival to LOWW.

c) **Separation of flow elements by slash or comma**

- If an expression of the condition contains more than one flow element, a slash or comma can be used to separate between the individual flow elements.
- This separator represents a logical disjunction (OR) which means that the trajectory only has to contain one of these flow elements in order to fulfil this expression.

<table>
<thead>
<tr>
<th>Point or Airspace</th>
<th>Utilization</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALIVO / BUSET / GORPA / ROKSA / SABAD</td>
<td>Not available for traffic ARR EDDM, EDM*, LOWI, LOWL, LOWS, LOWW Above FL345</td>
</tr>
</tbody>
</table>

### Table 12: Example of RAD flow elements separation by slash or comma

**Explanation:** All restricted objects (ALIVO **OR** BUSET **OR** GORPA **OR** ROKSA **OR** SABAD) are not available above FL345 if flights are arriving at airport EDDM **OR** airports of which the location indicator starts with the letters EDM **OR** arriving at airports LOWI **OR** LOWL **OR** LOWS **OR** LOWW.

d) **Routes in square brackets**

- The square bracket itself does not represent a logical operator.

<table>
<thead>
<tr>
<th>Point or Airspace</th>
<th>Utilization</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASTOS</td>
<td>Not available for traffic</td>
</tr>
<tr>
<td></td>
<td>DEP EKCH</td>
</tr>
<tr>
<td></td>
<td>Except</td>
</tr>
<tr>
<td></td>
<td>Via ASTOS [Z490 KEMAX] / [T408 OTVEB] / [Q44 IDPAL]</td>
</tr>
</tbody>
</table>

### Table 13: Example of RAD square brackets usage

**Explanation:** The condition contains three routes of which one has to be used by the trajectory in order to fulfil this expression of the condition. Flights from airport EKCH are not allowed to cross significant point ASTOS except if the trajectory contains the route ASTOS Z490 KEMAX **OR** ASTOS T408 OTVEB **OR** ASTOS Q44 IDPAL.

e) **Sequence of flow elements**

- The sequence of flow elements in lines from left to right or from top to bottom does not reflect the sequence in which a trajectory has to cross these flow elements.
In order to make the sequence clear, additional terms like “FROM”, “TO”, “AND THEN”, “AFTER” or “BEFORE” shall be used to indicate the direction of the flight. Especially, conditions which are only based on significant points can be fulfilled in two (both) directions.

f) **Reference Location**

- The reference location is a geographic reference for the applicability of the RAD restriction or for validation of specific condition expressions which do not apply to the complete trajectory.
- A reference location is explicitly mentioned if a RAD restriction is only applicable within a specific region. Especially for city-pair specific restrictions, the differentiation of the restriction’s applicability for different regions has significant influence on the various traffic flows (e.g. city-pair level capping restrictions).

<table>
<thead>
<tr>
<th>City Pair</th>
<th>FL Capping</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDDF to LIMC if via LS</td>
<td>Below FL325</td>
</tr>
</tbody>
</table>

**Table 14: Example of RAD reference location**

**Explanation:** The maximum level on the city-pair from EDDF to LIMC is FL325 if the route is planned via Switzerland to Italy. Alternate routes via Austria to Italy shall not be affected.

- Reference locations are also used to specify conditions based on level expressions.

### 3.3.4.3 Specificities related to Flow Elements

#### 3.3.4.3.1 Airport

(1) In the RAD document, an airport can be indicated as follows:

- Explicitly by naming the ICAO location indicator, OR
- Implicitly by:
  
  a) **Airport Area / Group:**
  
  The airport is part of an airport area / group as specified in RAD Appendix 2 “Area Definitions”.
  
  b) **Aggregation by location indicator:**
  
  The ICAO location indicator of the referred airport starts with a particular sequence of letters. The positions which can have variable values are marked by (*) asterisks, e.g., EH** refers to all airports of which the ICAO location indicator starts with the letter E followed by letter H. Here, the third and fourth position of the location indicator can have any value.

  **Note:** *The aerodrome aggregations defined this way do not necessarily cover all airports located in a country, e.g., ED** does not refer to all airports located in Germany as there are airports with location indicators starting with ET located in this country too.*

  c) **Reference to geographic boundaries:**
  
  The airport is located within the projection at ground level of the area defined by geographic boundaries. These boundaries can be defined by State borders, FIR borders or the borders of operational airspaces such as
ACC / UAC. If an airspace volume which has different lateral boundaries depending on the level shall be used, it must be specified which lateral projection at which level is used.

3.3.4.3.2 Random Route

(1) Some restrictions refer to random routes, which are not covered, by ATS routes or a DCT connection published in RAD Appendix 4.

(2) The term “random route” refers to a connection of two significant points which might have intermediate significant points at the same time. A random route is hence not necessarily a great circle connection between two significant points. As it can have intermediate significant points, a random route consists of several DCT connections in sequence.

(3) When using random routes in a flight plan, the general rules of the respective airspace, in which the random route is used, have to be considered. This refers to the flight level allocation (ODD / EVEN rules) and the vertical limits of the respective airspace.

(4) At the same time, the restrictions on DCT usage as specified in RAD Appendix 4 have to be considered for random routes, too.

<table>
<thead>
<tr>
<th>Point or Airspace</th>
<th>Utilization</th>
</tr>
</thead>
<tbody>
<tr>
<td>BEPAN</td>
<td>Not available for traffic</td>
</tr>
<tr>
<td></td>
<td>DEP EIDW</td>
</tr>
<tr>
<td></td>
<td>Via BANBA - CRK</td>
</tr>
</tbody>
</table>

Table 15: Example of RAD Random Route

Explanation: Flights departing from EIDW are not allowed to fly via BEPAN if using any route from significant point BANBA to significant point CRK. The connection from BANBA to CRK may be a great circle connection, which is equal to the DCT (if this is available due to the general DCT rules of the respective airspace). It is also possible to cross any intermediate significant point between BANBA and CRK, which is defined as a random route between these significant points (considering the general DCT rules or other restrictions on intermediate significant points).

3.3.4.3.3 SID and STAR

(1) SID and STAR are routes connecting airports and significant points. Such routes are also referred to as “Terminal Procedures”. The significant point where the SID ends or where the STAR begins is referred to as “Connecting Point” of the respective aerodrome with the ATS route network.

(2) In addition to published SIDs and STARs, airports and the routes can also be connected by a DCT. The rules defining the availability of additional Connecting Points, which can be reached by DCT, are also defined in the RAD.

3.3.4.3.4 Airspace

a) General Issues

- If airspace is mentioned as a Flow Element then the penetration of it is either forbidden or mandatory at the specified level range.
- The point where the lateral or vertical airspace boundary is crossed first is referred to as entry point.
- The point where the lateral or vertical boundary (wall) is crossed second is referred to as exit point.
- Entry and exit points must not necessarily be published significant points i.e. they can be any geographical coordinate of the trajectory.
- Entry and exit points must not necessarily be crossed at the same level.

b) **Departure Airspace**
- A trajectory complies with a “departure airspace” condition if the departure airport is located within the projection at ground level of the respective airspace. Hence, the lower vertical limit of the departure airspace must not necessarily be GND level.

![Figure 2: Exemplary trajectory which fulfils a "departure airspace" condition](image)

**c) Arrival Airspace**
- A trajectory complies with an “arrival airspace” condition if the arrival airport is located within the projection at ground level of the respective airspace. Hence, the lower vertical limit of the arrival airspace must not necessarily be GND level.

![Figure 3: Exemplary trajectory which fulfils a "arrival airspace" condition](image)
d) Overfly Airspace

- A trajectory complies with an “Overfly airspace” condition if at least one portion of the trajectory is located within the volume of the respective airspace and the respective airspace is not a departure or arrival airspace of the particular flight.
- If the flight is departing from or landing in the volume of the respective airspace, the “Overfly airspace” condition is not fulfilled and the flight is subjected to fulfil the “Via Airspace” condition.

![Figure 4](image1)

**Figure 4:** Exemplary trajectory which fulfils an “Overfly airspace” condition constant level with lateral entry and exit

![Figure 5](image2)

**Figure 5:** Exemplary trajectory which fulfils an “Overfly airspace” condition with intermediate descent with lateral entry and exit
Figure 6: Exemplary trajectory which fulfils an "Overfly airspace" condition with intermediate climb with lateral entry and exit

Figure 7: Exemplary trajectory which fulfils an "Overfly airspace" condition with lateral entry and vertical exit
e) Via Airspace

- A trajectory complies with a “Via airspace” condition if at least one portion of the trajectory is located within the volume of the respective airspace or the respective airspace is a departure or arrival airspace.
- The trajectory can completely be located within the volume of the respective airspace. The trajectory can also enter or exit the respective airspace by crossing at least one lateral or vertical airspace boundary.
- Due to this extensive definition, all trajectories, which fulfil a “Departure airspace”, “Arrival airspace” or “Overfly airspace” condition, also fulfil the “Via airspace” condition. This conclusion is however not invertible.

f) Within Airspace

- The term “Within Airspace” is used as reference to the geographical location where a RFL condition is applied to. The RFL must necessarily be located between the lower and the upper vertical limited of the referred airspace volume.

3.3.4.4 Specificities related to the Vertical Profile

3.3.4.4.1 General Level conditions

a) General Issues

- For all RAD restrictions, it must be specified at which location a condition with reference to level has to be evaluated. The location can be a single published significant point or a coordinate along the trajectory as well as a route segment (ATS route, DCT, SID or STAR procedure) or an airspace volume, which is crossed by the trajectory.
- If the level condition refers to more than one point in space (e.g. level condition based on a route segment or an airspace volume), all points of the specific flow element have to fulfil the level condition at the same time.
Table 16: Example of RAD Level Conditions

<table>
<thead>
<tr>
<th>AIRWAY</th>
<th>FROM</th>
<th>TO</th>
<th>Utilization</th>
</tr>
</thead>
<tbody>
<tr>
<td>M189</td>
<td>LYD</td>
<td>HASTY</td>
<td>Not available for traffic</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>DEP London Group Above FL175</td>
</tr>
</tbody>
</table>

Explanation: Flights departing from any airport belonging to the London Group have to fulfil the level condition at any point along the restricted object M189 LYD - HASTY. This means, the trajectory has to be planned in a way that the beginning of the restricted object (significant point LYD) and the end of it (significant point HASTY) as well as any intermediate point (published significant point or geographical coordinates) are not crossed above FL175. Climbing to a higher level after LYD and descending back to the original level before reaching HASTY is not allowed.

- The RAD mainly uses either VFR FL expression or number representing the layer / intermediate level between IFR FL, to define level ranges (e.g. above FL195). The objective is to be distinct between the level range and which discrete IFR FLs it includes.

b) At Level
- A trajectory fulfils an “at level” condition if the level of the trajectory is equal to the specified level of the condition at a defined location in space.

c) Above Level
- A trajectory fulfils an “above level” condition if the level of the trajectory is greater than (not including) the specified level of the condition at a defined location in space.

d) Below Level
- A trajectory fulfils a “below level” condition if the level of the trajectory is lower than (not including) the specified level of the condition at a defined location in space.

e) Between Level
- A trajectory fulfils a “between levels” condition if the level of the trajectory is at the same time greater than (not including) the lower level limit of the condition and lower than (not including) the upper level limit of the level condition at a defined location in space.

3.3.4.4.2 Requested Flight Level

(1) In accordance with ICAO Doc 8400 PANS-ABC the only abbreviation with “Flight Level” term used is the FL while in accordance with ICAO Doc 4444 PANS-ATM in FPL Item 15 the planned cruising level for the first or the whole portion of the route to be flown shall be inserted. The cruising level is a level maintained during a significant portion of a flight.

(2) The term Requested FL (RFL) is used for RAD purposes and refers to the actual requested cruising level as specified in the ICAO FPL Item 15. A flight plan can have a single RFL, which refers to a single requested cruising level that is
indicated by the initial speed/level group in FPL Item 15. A flight plan can also have several RFL, which represent different requested cruising levels at different locations during the flight. Each RFL is indicated by a speed/level group in FPL Item 15, which marks the point where the transition from the previous RFL to the new RFL is commenced. Due to the limited content of FPL Item 15, the exact length, which is required for the transition from the previous to the new RFL, is not transparently available to all users of the flight plan. Hence, the RAD must consider that the new RFL is not reached at the point where the change of speed/level is indicated but somewhere downstream of the flight path (In accordance with the ICAO Doc 4444 PANS-ATM each point at which either a change of speed and/or level is planned to commence, or a change of ATS route, and/or a change of flight rules is planned shall be indicated in the ITEM 15 of FPL).

(3) RAD is checked against the IFPS calculated profile. In the climb/descend phase the profile FL may not be the same as the RFL in the FPL. Therefore a FPL could be invalidated which will be checked by an IFPO who will then check the use of RFL if published in the RAD restriction. If the use of RFL is in the RAD restriction and is respected in the FPL, the IFPO may ignore the error caused by the FPL profile. For that reason, NMOC systems are capable to distinguish if RAD will be checked against the RFL or calculated FL (this feature is selected by RAD owner).

(4) In RAD restrictions, where this term is used, the RFL is checked for all portions of the trajectory, which are located within any relevant ATC unit of the applicable State / FAB / ANSP (unless otherwise specified).

<table>
<thead>
<tr>
<th>AIRWAY</th>
<th>FROM</th>
<th>TO</th>
<th>Utilization</th>
<th>ATC Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>UM601</td>
<td>BKP</td>
<td>LESTA</td>
<td>Not available for traffic</td>
<td>EGTT</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>DEP EGSC</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>With RFL below FL295</td>
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</tr>
</tbody>
</table>

Table 17: Example of RAD RFL reference

Explanation: Flights from departure airport EGSC are not allowed to use the restricted object UM601 BKP - LESTA if the RFL is less than FL295 in the relevant airspace of ATC Unit EGTT.

If the RFL shall apply at a particular reference location only, the respective flow element has to be defined in the condition of the restriction.

<table>
<thead>
<tr>
<th>AIRWAY</th>
<th>FROM</th>
<th>TO</th>
<th>Utilization</th>
<th>ATC Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>UM601</td>
<td>BKP</td>
<td>LESTA</td>
<td>Not available for traffic</td>
<td>EGTT</td>
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<tr>
<td></td>
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<td></td>
<td>DEP EGSC</td>
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<td></td>
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<td></td>
<td>With RFL below FL295 in EGTTS99</td>
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</tbody>
</table>

Table 18: Example of RAD RFL reference

Explanation: Flights from departure airport EGSC are not allowed to use the restricted object UM601 BKP - LESTA if the RFL is less than FL295 in the ATC sector EGTTS99. The RFL may be lower than FL295 before or after the specified significant point.
Where the filed FPL does not include aircraft operator provided profile information, the IFPS calculated profile may differ from that of the aircraft operator in the climb/descend phase. Due to these differences, IFPS might incorrectly invalidate a FPL. For this reason, IFPS can manually accept FPLs where the climbing/descending profile is compliant with the vertical limits of a segment at entry or at exit point and also fulfils the RFL requirements after/before the respective location. This procedure must explicitly be approved for IFPS.

3.3.4.4.3 Climb and Descent profile

a) **Restriction related to Significant points**
   
   - If a level restriction is related to a significant point, the profile has to be planned in a way that this restriction is fulfilled when reaching the respective significant point (or even earlier).
   - After having passed the significant point, this level restriction is not applicable anymore.

b) **Restriction related to ATS routes / DCTs**
   
   - An ATS route portion or a DCT segment are considered as single restriction routing elements when it comes to defining restrictions on the vertical profile. The ATS route is split into segments when processed. The level restriction applies to all the sub-segments of a restricted ATS route portion in the same way.
   - If a level restriction is related to an ATS route portion or a DCT segment, the profile has to be planned in a way that this restriction is fulfilled when reaching the first significant point of the restricted ATS route portion / DCT segment (or even earlier).
   - Along the restricted ATS route portion / DCT segment, the restriction has to be fulfilled until the last significant point of the restricted ATS route portion / DCT segment is reached.
   - After having passed the last significant point of the restricted ATS route portion / DCT segment, the level restriction is not applicable anymore.
   - A trajectory complies with an ATS route or a DCT level condition if it is:
     - cruising; and/or
     - climbing or descending:
       - before/at the ATS route / DCT start significant point; and
       - after/at the ATS route / DCT end significant point; and
       - inside ATS route / DCT vertical limits.
A trajectory does not comply with an ATS route or a DCT level condition if the flight is climbing above or descending below the restricted level range between the start and end significant point of the restricted ATS route portion / DCT segment.

**c) Restriction related to Airspace**

- If a level restriction is related to an airspace volume, the profile has to be planned in a way that this restriction is fulfilled when the entry point of the respective airspace is reached (or even earlier).
- While within the airspace volume, the restriction has to be fulfilled until the exit point of the airspace is reached.
- After having passed the exit point of the airspace, the level restriction is not applicable anymore.
- A separate level range is specified per sub-element of the Flow Element.
- The level range is expressed as Flight Level, as F followed by 3 figures (e.g. F085; F335), with GND and UNL also being accepted values. Additionally when the level range relates to an airspace volume for system purposes the ceiling and floor of the airspace can serve as bounding level expression.
- Level ranges must be an either subset of the vertical dimension when attached to Flow Element like ATS route / DCT segments, SIDs, STARs or can be fully inside or outside when attached to Airspace volumes.
- Conceptually airspace slices conform to the following principles:
A trajectory complies with an Airspace Condition or Flow Routing Element without vertical limits if it penetrates:

*The volume of the airspace.*

A trajectory complies with an Airspace Condition or Flow Routing Element with vertical limits if it penetrates:

*The volume created from the airspace’s ground projection and the lower and upper numerical bound of the explicitly defined vertical limits.*

A trajectory complies with an Airspace Condition or Flow Routing Element with vertical limits if it penetrates:

*The volume created from the airspace’s ground projection and the lower and upper numerical bound of the explicitly defined vertical limits even if this volume is actually no part of the original airspace.*
A trajectory complies with an Airspace Condition or Flow Routing Element with vertical limits if it penetrates:

*The volume created from the airspace’s ground projection and the lower and upper numerical bound of the explicitly defined vertical limits even if this volume is actually no part of the original airspace.*

---

**Airspace Vertical Cross Section**

![Diagram of airspace vertical cross section with FL095, FL075, FL185, and FL125 levels.](image)

**Vertical Limits FL095 / FL185**

---

A trajectory complies with an Airspace Condition or Flow Routing Element with vertical limits if it penetrates:

*The volume created from the airspace’s ground projection and the lower and upper numerical bound of the explicitly defined vertical limits even if this volume is actually no part of the original airspace.*

---

**Airspace Vertical Cross Section**

![Diagram of airspace vertical cross section with FL125 and FL075 levels.](image)

**Vertical Limits FL075 / FL185**

---

A trajectory complies with an Airspace Condition or Flow Routing Element with vertical limits if it penetrates:

*The volume created from the airspace’s ground projection and the lower explicitly defined numerical bound and the upper limit of the airspace.*
A trajectory complies with an Airspace Condition or Flow Routing Element with vertical limits if it penetrates:

The volume created from the airspace’s ground projection, the lower limit of the airspace and the upper explicitly defined numerical bound even if this volume is actually no part of the original airspace.

Figure 11: Airspace Vertical Cross Section
d) **SID / STAR**

- A level range attached to a portion of a SID or STAR is valid for the complete portion: for a SID from the aerodrome to the connecting point and for a STAR from the connecting point to the aerodrome.

### 3.3.4.5 Specificities related to Time Conditions

#### 3.3.4.5.1 Restriction Applicability

1. The time of restriction applicability is specified for each RAD restriction. The reference location for this time period is the restricted object of the restriction.
2. If the restricted object of the restriction is a DCT segment, and none of the points is particularly defined as the reference location, then the time applicability is measured at both points of the DCT segment.

<table>
<thead>
<tr>
<th>AIRWAY</th>
<th>FROM</th>
<th>TO</th>
<th>Utilization</th>
<th>Restriction Applicability</th>
</tr>
</thead>
<tbody>
<tr>
<td>UL186</td>
<td>HON</td>
<td>BIG</td>
<td>Not available for traffic DEP EGNX</td>
<td>07:00..16:00</td>
</tr>
</tbody>
</table>

**Table 19: Example of RAD ATS route Time Applicability**

**Explanation:** Flights from departure airport EGNX are not allowed to use the restricted object UL186 HON - BIG if the flight is using this segment between 07:00 UTC and 16:00 UTC.

<table>
<thead>
<tr>
<th>FROM</th>
<th>TO</th>
<th>Utilization</th>
<th>Time Availability</th>
<th>Operational Goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>HON</td>
<td>BIG</td>
<td>Not available for traffic DEP EGNX</td>
<td>07:00..16:00</td>
<td>Time refers to time at HON.</td>
</tr>
</tbody>
</table>

**Table 20: Example of RAD DCT Time Applicability**

**Explanation:** The DCT segment from HON to BIG does only exist from 07:00 UTC until 16:00 UTC. During the time availability of the segment, flights from departure airport EGNX are not allowed to use the DCT segment if the flight is crossing HON between 07:00 UTC and 16:00 UTC.

#### 3.3.4.5.2 Airport

a) **Departure Airport**

- A trajectory fulfils a “departure airport time condition” if the planned take-off time is a proper subset of the time-frame defined by the respective time condition.
- The estimated take-off time is calculated based on the estimated off-block time of the flight (derived from ICAO flight plan item 13) plus the planned taxi time at the departure airport.

<table>
<thead>
<tr>
<th>AIRWAY</th>
<th>FROM</th>
<th>TO</th>
<th>Utilization</th>
</tr>
</thead>
<tbody>
<tr>
<td>UL186</td>
<td>HON</td>
<td>BIG</td>
<td>Not available for traffic DEP EGNX between 06:00..12:00</td>
</tr>
</tbody>
</table>

**Table 21: Example of RAD Departure Airport Time Condition**

**Explanation:** Flights from departure airport EGNX are not allowed to use the restricted object UL186 HON - BIG if the planned take-off time at departure airport EGNX is between 06:00 UTC and 12:00 UTC. If the take-off
time is exactly 06:00UTC or exactly 12:00UTC, the time condition is still fulfilled. Assuming that the taxi time of departure airport EGNX is 5 minutes, the estimated off-block time can be between 05:55UTC and 11:55UTC (including the boundary values) in order to fulfil the time condition.

b) **Arrival Airport**

- A trajectory fulfils an “arrival airport time condition” if the planned landing time is a proper subset of the time-frame defined by the respective time condition.
- The estimated landing time is calculated based on the estimated off-block time of the flight (derived from ICAO flight plan item 13) plus the planned taxi time at the departure airport plus the estimated en-route time.

<table>
<thead>
<tr>
<th>AIRWAY</th>
<th>FROM</th>
<th>TO</th>
<th>Utilization</th>
</tr>
</thead>
<tbody>
<tr>
<td>UN857</td>
<td>BEGUY</td>
<td>PPN</td>
<td>Not available for traffic</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>DEP EHAM</td>
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<tr>
<td></td>
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<td></td>
<td>With ARR LEMD between 11:40..14:20</td>
</tr>
</tbody>
</table>

**Table 22: Example of RAD Arrival Airport Time Condition**

Explanation: Flights departing from airport EHAM are not allowed to use the restricted object UN857 BEGUY - PPN if the planned landing time at arrival airport LEMD is between 11:40UTC and 14:20UTC. If the landing time is exactly 11:40UTC or exactly 14:20UTC, the time condition is still fulfilled. Assuming that the taxi time of departure airport EHAM is 15 minutes and the planned en-route time between EHAM and LEMD is 01:45UTC, the estimated off-block time can be between 09:40UTC and 12:20UTC (including the boundary values) in order to fulfil the time condition.

c) **Significant point**

- A trajectory fulfils a “significant point time condition” if the estimated time when the flight crosses the respective significant point is a proper subset of the time-frame defined by the respective time condition.
- The estimated time of the flight at a particular significant point calculated based on the estimated off-block time of the flight (derived from ICAO flight plan item 13) plus the planned taxi time at the departure airport plus the estimated en-route time from the departure airport to the respective significant point.

d) **Route**

- A trajectory fulfils a “route time condition” if the estimated time-frame when the flight crosses the respective route segment is an intersection of the time-frame defined by the respective time condition.
• The estimated crossing time-frame of the particular route segment is defined as the difference between the time at the first significant point and the last significant point of the respective route segment. The calculation is based on the estimated off-block time of the flight (derived from ICAO flight plan item 13) plus the planned taxi time at the departure airport plus the estimated en-route time from the departure airport to the first significant point or the last significant point of the specific route segment.

e) Airspace

• A trajectory fulfils an “airspace time condition” if the estimated time-frame when the flight crosses the respective airspace is an intersection of the time-frame defined by the respective time condition.

• The estimated crossing time-frame of the particular airspace is defined as the difference between the time at the entry significant point and the exit significant point of the respective airspace segment. The calculation is based on the estimated off-block time of the flight (derived from ICAO flight plan item 13) plus the planned taxi time at the departure airport plus the estimated en-route time from the departure airport to the entry significant point or the exit significant point of the specific airspace.

3.3.4.6 Time availability expression

3.3.4.6.1 Time expressions

(1) The time periods are in Co-ordinated Universal Time (UTC) used by air navigation services and in publications issued by the AIS. The [:] colon is used to separate the time elements “hour” and “minutes”.

(2) The expression “summer period” indicates that part of the year in which “daylight saving time” is in force. The other part of the year is named the “winter period”. Times applicable during the “summer period” are given in brackets.

(3) If “winter period” and “summer period” is the same during the whole year there is no time given in brackets.

<table>
<thead>
<tr>
<th>Period</th>
<th>Term</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distinction between winter and summer periods</td>
<td>23:00..05:00 (22:00..04:00)</td>
</tr>
<tr>
<td>One common period throughout the year</td>
<td>23:00..05:00.</td>
</tr>
</tbody>
</table>

**Table 23: Example of RAD Time Expression**

(4) Daylight saving time is UTC plus 1 hour. The “summer period” in Europe is introduced every year on the last Sunday in MAR at 01:00 UTC and ceases on the last Sunday in OCT at 01:00 UTC. For detailed description in each State the relevant AIP shall be checked.

(5) In accordance with ICAO Doc 8126 - AIS Manual, paragraph 5.5.2. f) “When describing periods of activity, availability or operation, use of the term “weekday” should be avoided and the day or days in question should be specified; where “weekend” is used, this should always be qualified by specific dates/days and times to remove any possibility of doubt.”

(6) As prescribed by [ICAO Doc 8400 PANS-ABC](#) the following abbreviations for the week days and months are used in RAD and decoded as follows:
Table 24: Abbreviations in RAD Time Expression

(7) Day (reference ISO8601) is a period of time of 24 hours starting at 0000 and ending on 2400 (which is equal to the beginning of 0000 at next day).

(8) Period (reference ISO8601) is a duration of time specified:
   a) As a defined length of time (e.g. hours, days, months, years);
   b) By its beginning and end points.

3.3.4.6.2 Period expression

a) Periods within the daytime

   During the same day: **MON 07:00..23:00 (06:00..22:00)**

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<th>00</th>
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</table>

Table 25: Day Time Expression

Explanation: Period covers every Monday from 07:00 UTC until 23:00 UTC during winter period (during summer period, this example covers every Monday from 06:00 UTC until 22:00 UTC).

During the week same time: **MON..WED 07:00..23:00 (06:00..22:00)**

Table 26: Week Time Expression

Explanation: Period covers every Monday, Tuesday and Wednesday from 07:00 UTC until 23:00 UTC during winter period (during summer period, this example covers every Monday, Tuesday and Wednesday from 06:00 UTC until 22:00).
Every day same time: 07:00..23:00 (06:00..22:00)

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Table 27: Every Day Time Expression

Explanation: Period covers every day Monday from 07:00 UTC until 23:00 UTC, Tuesday from 07:00 UTC until 23:00 UTC etc. until Sunday from 07:00 UTC until 23:00 UTC during winter period (in summer period, this example covers every day Monday from 06:00 UTC until 22:00 UTC, Tuesday from 06:00 UTC until 22:00 UTC etc. until Sunday from 06:00 UTC until 22:00 UTC).

b) Periods overnight

Before midnight

During the week same time: MON..WED 23:00..05:00 (22:00 - 04:00)

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Table 28: Every Week Time Expression

Explanation: Period covers every night from Monday 23:00 UTC until Tuesday 05:00 UTC, from Tuesday 23:00 UTC until Wednesday 05:00 UTC and from Wednesday 23:00 UTC until Thursday 05:00 UTC during winter period (during the summer period, this example covers every night from Monday 22:00 UTC until Tuesday 04:00 UTC, from Tuesday 22:00 UTC until Wednesday 04:00 UTC and from Wednesday 22:00 UTC until Thursday 04:00 UTC).

Every night same time: 23:00..05:00 (22:00..04:00)

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Table 29: Every Night Time Expression

Explanation: Period covers every night from Monday 23:00 UTC until Tuesday 05:00 UTC; from Tuesday 23:00 UTC until Wednesday 05:00 UTC etc. until from Sunday 23:00 UTC until Monday 05:00 UTC during winter period (during summer period, this example covers every night from Monday 22:00 UTC until Tuesday 04:00 UTC; from Tuesday 22:00 UTC until Wednesday 04:00 UTC etc. from Sunday 22:00 UTC until Monday 04:00).
After midnight

During the “same” day: **TUE 00:01..23:00 (MON 23:01..TUE 22:00)**

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Table 30: Same Day Time Expression

Explanation: Period covers every Tuesday from 00:01 UTC until 23:00 UTC during winter period (during summer period, this example covers every Monday from 23:01 UTC until every Tuesday 22:00 UTC).

During the week “same” time: **TUE..THU 00:01..05:00 (MON..THU 23:01 - 04:00)**

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Table 31: Same Week Time Expression

Explanation: Period covers every night from Tuesday 00:01 UTC until Wednesday 05:00 UTC and from Wednesday 00:01 UTC until Thursday 05:00 UTC during winter period (during the summer period, this example covers every night from Monday 23:01 UTC until Tuesday 04:00 UTC, from Tuesday 23:01 UTC until Wednesday 04:00 UTC and from Wednesday 23:01 UTC until Thursday 04:00 UTC).
c) Continuous periods - during daytime and over night

Before midnight

Week day/night: MON 07:00 (06:00) .. WED 23:00 (22:00)

| D / h | 00  | 01  | 02  | 03  | 04  | 05  | 06  | 07  | 08  | 09  | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18  | 19  | 20  | 21  | 22  | 23  |
|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| MON  |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| TUE  |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| WED  |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| THU  |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| FRI  |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| SAT  |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| SUN  |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |

Table 32: Day Time Expression

Explanation: Period covers from Monday 07:00 UTC until Wednesday 23:00 UTC during winter period (during summer period, this example covers from Monday 06:00 UTC until Wednesday 22:00 UTC).

Extended Weekend: FRI 23:00 (22:00) .. MON 07:00 (06:00)

| D / h | 00  | 01  | 02  | 03  | 04  | 05  | 06  | 07  | 08  | 09  | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18  | 19  | 20  | 21  | 22  | 23  |
|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| MON  |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| TUE  |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| WED  |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| THU  |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| FRI  |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| SAT  |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| SUN  |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |

Table 33: Extended Weekend Time Expression

Explanation: Period covers from Friday 23:00 UTC until Monday 07:00 UTC during winter period (during summer period, this example covers from Friday 22:00 UTC until Monday 06:00 UTC).

Weekend: SAT .. SUN

| D / h | 00  | 01  | 02  | 03  | 04  | 05  | 06  | 07  | 08  | 09  | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18  | 19  | 20  | 21  | 22  | 23  |
|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| MON  |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| TUE  |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| WED  |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| THU  |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| FRI  |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| SAT  |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| SUN  |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |

Table 34: Weekend Time Expression

Explanation: Period covers from Saturday 00:00 UTC until Sunday 24:00 UTC during winter period and during summer period.
After midnight

During the “same” day: **TUE 00:01..23:00 (MON 23:01..TUE 22:00)**

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</table>

Table 35: Same Day Time Expression

**Explanation:** Period covers every Tuesday from 00:01 UTC until 23:00 UTC during winter period (during summer period, this example covers every Monday from 23:01 UTC until every Tuesday 22:00 UTC).

During the week “same” time: **TUE..THU 00:01..05:00 (MON..THU 23:01 - 04:00)**

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</tbody>
</table>

Table 36: Same Day During the Week Time Expression

**Explanation:** Period covers every night from Tuesday 00:01 UTC until Wednesday 05:00 UTC and from Wednesday 00:01 UTC until Thursday 05:00 UTC during winter period (during the summer period, this example covers every night from Monday 23:01 UTC until Tuesday 04:00 UTC, from Tuesday 23:01 UTC until Wednesday 04:00 UTC and from Wednesday 23:01 UTC until Thursday 04:00 UTC).

d) **Seasonal period at AIRAC date (inclusive expression)**

Every year within the same AIRAC cycles:

First AIRAC APR..First AIRAC SEP

**Explanation:** Period covers each year from the FIRST day of the first AIRAC in the month of April until the LAST day of the first AIRAC in the month of September.
Every year within seasonal event limited by AIRAC cycles:

**Ski Season (First AIRAC DEC..Last AIRAC MAR)**

Explanation: Period covers ski season that goes from the **FIRST day** of the first AIRAC in the month of December until the **LAST day** of the last AIRAC in the month of March.

(2) The terms “First” and “Last” before term “AIRAC” shall be used only to eliminate ambiguity for months that have two AIRAC cycles.

(3) Each year has 13 AIRAC cycles and only 12 months. One of the months will have 2 AIRAC cycles and they are as follows: 2021 - **DEC**, 2022 - **DEC**, 2023 - **NOV**, 2024 - **OCT**, 2025 - **OCT**. Exception is for year 2020 with 14 AIRAC cycles and 2 months (JAN and DEC) with 2 AIRAC cycles.

### 3.3.4.7 Dependent Applicability

#### 3.3.4.7.1 Route Dependent Applicability

(1) The availability of the restricted object can be dependent on the availability or non-availability of one or several ATS route portion/s.

(2) The strategic availability of the referred ATS route is published through AIS of the respective state in which the route is located (e.g. definition of CDR status in the AIP).

(3) Tactical availability or other deviations from the strategic availability are published by the EAUP (and updates contained in the EUUP) or through other AIS publications (e.g. NOTAM).

<table>
<thead>
<tr>
<th>AIRWAY</th>
<th>FROM</th>
<th>TO</th>
<th>Utilization</th>
</tr>
</thead>
<tbody>
<tr>
<td>UN867</td>
<td>GARM</td>
<td>VASUX</td>
<td>Not available for traffic ARR (az:MIDLANDS_GROUP, ad:EGGW/NE/SC/SH/SS/TC/UL/UN) When M184 is available</td>
</tr>
</tbody>
</table>

**Table 37: Example of RAD Route Dependent Applicability**

Explanation: The restricted object UN867 is not available from GARM to VASUX for traffic arriving to MIDLANDS_GROUP/EGGW/NE/SC/SH/SS/TC/UL/UN if the nearby route M184 is available.

<table>
<thead>
<tr>
<th>AIRWAY</th>
<th>FROM</th>
<th>TO</th>
<th>Utilization</th>
</tr>
</thead>
<tbody>
<tr>
<td>N14</td>
<td>PEMOB</td>
<td>LANPI</td>
<td>Only available for traffic When STU M17 VATRY is not available</td>
</tr>
</tbody>
</table>

**Table 38: Example of RAD Route Dependent Applicability**

Explanation: The restricted object N14 is only available from PEMOB to LANPI if the nearby route M17 is unavailable from STU to VATRY.

<table>
<thead>
<tr>
<th>AIRWAY</th>
<th>FROM</th>
<th>TO</th>
<th>Utilization</th>
</tr>
</thead>
<tbody>
<tr>
<td>L919</td>
<td>DINRO</td>
<td>GOSLO</td>
<td>Compulsory when available for traffic ARR LBWN via DINRO</td>
</tr>
</tbody>
</table>

**Table 39: Example of RAD Route Dependent Applicability**
Explanation: For flights arriving to LBWN via DINRO is compulsory to file the route L919 from DINRO to GOSLO if this segment is available.

3.3.4.7.2 Airspace dependent applicability

(1) The availability of the restricted object can be dependent on the activation of a given airspace.

(2) The strategic activity of the airspace is published through AIS of the respective State in which the airspace is located (e.g. definition of scheduled activity in the AIP).

(3) Tactical availability or other deviations from the strategic availability are published by the EAUP (and updates contained in the EUUP) or through other AIS publications (e.g. NOTAM).

<table>
<thead>
<tr>
<th>AIRWAY</th>
<th>FROM</th>
<th>TO</th>
<th>Utilization</th>
</tr>
</thead>
<tbody>
<tr>
<td>UN26</td>
<td>MANIG</td>
<td>GOBUR</td>
<td>Not available for traffic when LFTSA6 is active</td>
</tr>
</tbody>
</table>

Table 40: Example of RAD Airspace Dependent Applicability

Explanation: The restricted object UN26 from MANIG to GOBUR is not available when the nearby military airspace LFTSA6 is active.

<table>
<thead>
<tr>
<th>AIRWAY</th>
<th>FROM</th>
<th>TO</th>
<th>Utilization</th>
</tr>
</thead>
<tbody>
<tr>
<td>T282</td>
<td>POGIB</td>
<td>GAVDU</td>
<td>Only available for traffic ARR ad:EPLB when as:EPD26 is active</td>
</tr>
</tbody>
</table>

Table 41: Example of RAD Airspace Dependent Applicability

Explanation: The restricted object T282 from POGIB to GAVDU is only available for traffic arriving to EPLB if the nearby military airspace EPD26 is active.

<table>
<thead>
<tr>
<th>AIRWAY</th>
<th>FROM</th>
<th>TO</th>
<th>Utilization</th>
</tr>
</thead>
<tbody>
<tr>
<td>UZ67</td>
<td>OMASI</td>
<td>KORED</td>
<td>Compulsory for traffic ARR EDDM Except LST200 is active</td>
</tr>
</tbody>
</table>

Table 42: Example of RAD Airspace Dependent Applicability

Explanation: For flights, arriving to EDDM is compulsory to file UZ67 from OMASI to KORED unless the military airspace LST200 is active.

3.3.4.7.3 FUA Restrictions

FUA restrictions are a specific usage of Traffic Flow Restrictions and special cases of dependent applicability restrictions. For further detail, see also Chapter 4.

3.3.4.8 FRA in the RAD

a) General Issues

- In accordance with the definition FRA is a specified airspace within which users may freely plan a route without reference to the ATS route network.
• The relevant parts of States / FABs / ANSPs RAD for FRA shall contain a list of restrictions valid only on specific:
  o Significant point/s; or
  o Airspace Volume/s (ATC Unit, AoR of relevant ATC Unit - CTA/UTA, TMA, CTR or individual control sector/s within an ATC unit).

When a relevant RAD restriction is based on airspace volume the States / FABs / ANSPs shall provide the NM RAD Team with evidence of when the relevant airspace/s is/are available.

• The requirement for a FRA expression in the RAD shall be initially considered in accordance with ERNIP Part 1, Chapter 6, Section 6.5.2 when States / FABs / ANSPs provide RAD restrictions for FRA operational validation with NM (Operations Planning and Network Operations).

b) FRA DCT Limitation

• The RAD gives possibility via Appendix 4 to describe any FRA area en-route DCT (Direct) flight plan filing limitation imposed by each State / FAB or ATC Unit in accordance with provisions of ICAO Doc 4444 PANS-ATM. The restriction structure allows representation of DCT horizontal limit inside each ATC Unit respectively, FRA area or in several ATC Units respectively in a cross-border FRA area.

• “Local” FRA area
  o DCT horizontal limit - shall be defined as “FRA”;
  o Cross-border DCT limits - shall be defined as “Not Allowed”.

This is required in order for NMOC systems to correctly process flight plans within the “local” FRA environment avoiding cross-border operations.

<table>
<thead>
<tr>
<th>ATC Unit Name</th>
<th>ATC Unit Vertical Limit</th>
<th>DCT Horizontal Limit</th>
<th>Cross-border DCT Limits</th>
</tr>
</thead>
<tbody>
<tr>
<td>L _ _ _ ACC</td>
<td>Above FL245 Free Route Airspace 23:00..05:00 (22:00..04:00)</td>
<td>FRA</td>
<td>Not Allowed</td>
</tr>
<tr>
<td>E _ _ _ ACC</td>
<td>Above FL105 Free Route Airspace 23:00..05:00 (22:00..04:00)</td>
<td>FRA</td>
<td>Not Allowed</td>
</tr>
</tbody>
</table>

Table 43: Example of “local” FRA DCT Limits

c) “Cross-border” FRA area

• DCT horizontal limit - shall be defined as “FRA”;

• Cross-border DCT limits - shall be defined as “Allowed to/from … ” relevant:
  o ATC Unit/s part of cross-border FRA area; or
  o FAB; or
  o FRA area.

This is required in order for NMOC systems to correctly process flight plans within the “cross-border” FRA environment allowing cross-border operations.
### Table 44: Example of “cross-border” FRA DCT Limits

<table>
<thead>
<tr>
<th>ATC Unit Name</th>
<th>ATC Unit Vertical Limit</th>
<th>DCT Horizontal Limit</th>
<th>Cross-border DCT Limits</th>
</tr>
</thead>
<tbody>
<tr>
<td>L ___ ACC</td>
<td>Above FL245 Free Route Airspace 23:00..05:00 (22:00..04:00)</td>
<td>FRA</td>
<td>Allowed to/from E ___ ACC or FAB or FRA area</td>
</tr>
<tr>
<td>E ___ ACC</td>
<td>Above FL105 Free Route Airspace 23:00..05:00 (22:00..04:00)</td>
<td>FRA</td>
<td>Allowed to/from L ___ ACC or FAB or FRA area</td>
</tr>
</tbody>
</table>

- In FRA, RAD Appendix 4 shall contain only the vertically defined DCTs with availability “No” for the purposes described in the sections below. In FRA any vertically defined DCTs with availability “Yes” shall not be accepted by the NM RAD Team in parallel with FRA procedures. Acceptance is possible in exceptional cases or due to special circumstances following coordination and confirmation at FRA planning level.

**d) FRA Connecting Routes**

- The RAD gives the possibility, either via Appendix 5 or via Pan-Europe Annex, to describe any FRA Connecting Route. The restriction structure allows representation of defined mandatory FRA Departure and/or Arrival Connecting Routes.
- The example below (see Figure 12) shows possible organisation of FRA Departing or Arriving Connecting Routes that can be defined in the RAD.

![Figure 12: Example of mandatory FRA Departure and/or Arrival Connecting Routes](image)

- RAD Appendix 5  
  States / FABs / ANSPs may define additional compulsory FRA Departure (D) / Arrival (A) Connecting point/s from/to a certain TMA/airport and indications on their use for departures / arrivals from / to specific aerodromes.

  The examples below show the description of FRA Departing or Arriving Connecting Routes.
### Table 45: Example of RAD Appendix 5 expression of FRA DEP Connecting Route/s

<table>
<thead>
<tr>
<th>DCT DEP PT</th>
<th>DEP Restrictions</th>
</tr>
</thead>
<tbody>
<tr>
<td>MMMMM</td>
<td>Not available below FL065 for DEP L _ _ _ except via:</td>
</tr>
<tr>
<td></td>
<td>1. MMMMM L1 PPPPP DCT [EEEEE / TTTTT]</td>
</tr>
<tr>
<td></td>
<td>2. MMMMM M1 JJJJJ DCT SSSSS</td>
</tr>
</tbody>
</table>

### Table 46: Example of RAD Appendix 5 expression of FRA ARR Connecting Route/s

<table>
<thead>
<tr>
<th>DCT ARR PT</th>
<th>ARR Restrictions</th>
</tr>
</thead>
<tbody>
<tr>
<td>MMMMM</td>
<td>Not available above FL075 for ARR L _ _ _ except via:</td>
</tr>
<tr>
<td></td>
<td>1. TTTTT DCT PPPPP L1 MMMMM</td>
</tr>
<tr>
<td></td>
<td>2. [SSSSS / LLLLL] DCT JJJJJ M1 MMMMM</td>
</tr>
</tbody>
</table>

### RAD Pan-Europe Annex

States / FABs / ANSPs may define restrictions valid for significant point/s or ATC sector/s and also include any specific conditions for the utilisation of FRA significant point/s.

The examples below show the description of FRA Departing or Arriving Connecting Routes.

<table>
<thead>
<tr>
<th>Point</th>
<th>Utilisation</th>
</tr>
</thead>
<tbody>
<tr>
<td>HHHHH</td>
<td>Compulsory for traffic DEP E _ _ _ via:</td>
</tr>
<tr>
<td></td>
<td>1. BBBBB / CCCCC</td>
</tr>
<tr>
<td></td>
<td>2. NNNNN below FL135</td>
</tr>
</tbody>
</table>

### Table 47: Example of RAD Pan-Europe Annex expression of FRA DEP Connecting Route/s

<table>
<thead>
<tr>
<th>Point</th>
<th>Utilisation</th>
</tr>
</thead>
<tbody>
<tr>
<td>FFFFFF</td>
<td>Compulsory for traffic ARR E _ _ _ via:</td>
</tr>
<tr>
<td></td>
<td>1. AAAAA / CCCCC</td>
</tr>
<tr>
<td></td>
<td>2. NNNNN above FL145</td>
</tr>
</tbody>
</table>

### Table 48: Example of RAD Pan-Europe Annex expression of FRA ARR Connecting Route/s

e) **AUA FRA area border - close proximity DCT protection**

- Currently the NM system is not checking the proximity of DCTs close to the AUA FRA area border other than ±0.5NM on both sides of the relevant AUA border.

- The RAD gives the possibility, either via Appendix 4 or Pan-Europe Annex, to describe forbidden DCTs. Before using the RAD for that purpose States / FABs / ANSPs shall cross-reference the existing AoR of their ACCs/UACs and relevant AUAs in CACD. The chosen FRA implementation, with or without allowance of FRA Intermediate points, shall also be considered. All this is required in order to avoid undesired and an unnecessary number of RAD restrictions.
- **RAD Appendix 4**
  States / FABs / ANSPs may include vertically defined DCTs with availability "No" which are not allowed to be filed by the AOs due to the close proximity to an AUA FRA area border.

  The example below shows the expression of unacceptable FRA DCTs. Only the relevant “direct” connections are forbidden any other possible connection between the pair of points is permitted. TTT DCT ZZZZZ is forbidden while TTT DCT PPPPP DCT ZZZZZ is available.

<table>
<thead>
<tr>
<th>FROM</th>
<th>TO</th>
<th>Lower Vertical Limit (FL)</th>
<th>Upper Vertical Limit (FL)</th>
<th>Availabe (Y) Not available (N)</th>
<th>Utilisation</th>
<th>Time Availability</th>
<th>ID Number</th>
<th>Operational Goal</th>
<th>Remark/s</th>
<th>Direction of Cruising Levels</th>
<th>ATC Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>TTT</td>
<td>JJJJJ</td>
<td>315</td>
<td>660</td>
<td>No</td>
<td>H24</td>
<td>To avoid DCT filing close to FRA area boundary</td>
<td>E_ _ _ ACC</td>
<td>TTT</td>
<td></td>
<td></td>
<td>TTT</td>
</tr>
<tr>
<td>TTT</td>
<td>ZZZZZ</td>
<td>315</td>
<td>660</td>
<td>No</td>
<td>H24</td>
<td>To avoid DCT filing close to FRA area boundary</td>
<td>E_ _ _ ACC</td>
<td>TTT</td>
<td></td>
<td></td>
<td>TTT</td>
</tr>
</tbody>
</table>

 **Table 49: Example of RAD Appendix 4 expression of forbidden DCTs close to FRA border**

- **RAD Pan-Europe Annex**
  States / FABs / ANSPs may define restrictions valid for significant point/s to certain significant point/s in order to forbid all possible FRA DCTs in close proximity to a FRA area border.

  The example below shows the expression of unacceptable FRA DCTs. All possible connections between the pair of points are forbidden. No flights allowed between TTT and JJJJJ / ZZZZZ on any DCT combination.

<table>
<thead>
<tr>
<th>Point</th>
<th>Utilisation</th>
</tr>
</thead>
<tbody>
<tr>
<td>TTT</td>
<td>Not available for traffic via JJJJJ / ZZZZZ.</td>
</tr>
</tbody>
</table>

 **Table 50: Example of RAD Pan-Europe Annex expression of forbidden DCTs close to FRA border**
- Depending on specific FRA requirement/s States / FABs / ANSPs may choose any of the above RAD expressions.

f) **FRA Flows Crossing Prevention**

- The RAD gives the possibility, either via Appendix 4 or via Pan-Europe Annex, to prevent traffic flows crossing at close proximity to the AUA border. This can be used in cases where two successive FRA Entry or Entry / Exit points are separated by a boundary of two different ATC sectors and border flow crossing is not acceptable.

![Figure 14: Example of FRA crossings flows at ATC Sector boundary](image)

- **RAD Appendix 4**
  States / FABs / ANSPs may include vertically defined DCTs with availability “No” which are not allowed to be filed by AOs due to the AUA sector border being in close proximity to crossing traffic flows. Where the number of possible DCTs might be too big this option may be considered as inappropriate.

- **RAD Pan-Europe Annex**
  States / FABs / ANSPs may define restrictions forbidding flight/s (FRA DCT/s):
  - From a significant point to other significant point/s;
  - Via an adjacent ATC sector.

The example below (see Table 51) shows the expression of unacceptable FRA DCTs avoiding undesired crossing based on a FRA significant point. All possible connections between the pair of points, including those which might not have a real operational impact, are forbidden.

<table>
<thead>
<tr>
<th>Point</th>
<th>Utilisation</th>
</tr>
</thead>
<tbody>
<tr>
<td>LLLLL</td>
<td>Not available for traffic via ZZZZZ / XXXXX / DDDDD / TTTTT.</td>
</tr>
</tbody>
</table>

**Table 51: Example of the RAD Pan-Europe Annex point based expression**

The example below (see Table 52) shows the expression of unacceptable FRA DCTs avoiding undesired crossing based on airspace volume. Only the relevant “direct” connections are forbidden, any other possible connection
between the pair of points is permitted. LLLL DCT ZZZZZ DCT NNNNN is forbidden while LLLL DCT NN DCT NNNNN is available.

<table>
<thead>
<tr>
<th>Airspace</th>
<th>Utilisation</th>
</tr>
</thead>
<tbody>
<tr>
<td>L _ EUS</td>
<td>Not available for traffic via LLLLL.</td>
</tr>
</tbody>
</table>

Table 52: Example of the RAD Pan-Europe Annex volume based expression

- Depending on specific FRA requirement/s States / FABs / ANSPs may choose any of the above possible RAD expressions.

**g) Mandatory FRA Intermediate points**

- The RAD gives the possibility, via Pan-Europe Annex, to allow certain FRA Intermediate point as mandatory.

![Figure 15: Example of mandatory FRA Intermediate point](image)

- States / FABs / ANSPs may define a restriction, permitting only required traffic flows via certain FRA significant point from other to other significant point/s.
- The example below (see Table 53) shows the expression of mandatory FRA Intermediate point. All other possible connections between the pair of points LLLLL / CCCCC and LLLLL / NNNNN are forbidden the only possible connection is via RRRRR.

<table>
<thead>
<tr>
<th>Point</th>
<th>Utilisation</th>
</tr>
</thead>
<tbody>
<tr>
<td>RRRRR</td>
<td>Compulsory for traffic via LLLLL and then CCCCC / NNNNN.</td>
</tr>
</tbody>
</table>

Table 53: Example of the RAD Pan-Europe Annex expression of mandatory FRA Intermediate point

**h) FRA Entry / Exit point “directional” use**

- The RAD gives the possibility, via Pan-Europe Annex, to describe in which direction traffic will have to cross the AUA border considering that in CACD the borders are directional.
- States / FABs / ANSPs may define how to enter or leave the FRA area via certain FRA Entry / Exit point and use it as unidirectional in FRA, whilst keeping its bi-directional use for designated airports in FRA and ATS routes. It can also be used to segregate the traffic flows in relation to changes in FLOS over the FRA significant points.
Table 54: Example of the RAD Pan-Europe Annex expression of FRA significant point direction usage

- The expression in sub-restriction (1) above means that traffic is allowed to cross the border from AUA1 to AUA2, this is unidirectional above FL245. States / FABs / ANSPs can always use the Operational Goal to explain in detail the intention of the relevant RAD restriction.

i) FRA utilisation expression

- The RAD gives the possibility, via Pan-Europe Annex, to describe possible options allowed in relevant FRA area.

![](image1.png)

Figure 16: Example of FRA available options expression

- When used the term "and-then" defines multiple FRA options available between defined FRA relevant points, while the term "DCT" defines the only available option.

- The DCTs defined in utilisation as allowed option shall not be misled with RAD Appendix 4 DCTs, as there is no requirement to define them as fix DCTs.

Table 55: Example of the RAD Pan-Europe Annex expression of FRA utilisation

<table>
<thead>
<tr>
<th>Point</th>
<th>Utilisation</th>
</tr>
</thead>
<tbody>
<tr>
<td>✳️✳️✳️✳️</td>
<td>Not available for traffic via L _ _ _EASTUP, except:</td>
</tr>
<tr>
<td></td>
<td>1. via ✳️✳️✳️✳️ and-then PPPPP and-then TTTTT.</td>
</tr>
<tr>
<td></td>
<td>2. via ✳️✳️✳️✳️ and-then PPPPP DCT TTTTT.</td>
</tr>
<tr>
<td></td>
<td>3. via ✳️✳️✳️✳️ DCT PPPPP DCT TTTTT.</td>
</tr>
</tbody>
</table>

Avoidance of Special Areas

- The RAD gives the possibility, via Appendix 7, to describe how to flight plan across the active Special Areas.

- States / FABs / ANSPs may define the airspace restrictions (FUA restrictions) caused by restricted airspace (RSA) activation.
States / FABs / ANSPs may also include specific conditions for the utilisation of FRA significant points. The use of FRA intermediate points (I) for avoidance of a relevant RSA may be included as information and as part of the Operational Goal of a relevant restriction. The usage of such points in the flight plan is not mandatory and they are not checked by IFPS.

Figure 17: Example of Special Area avoidance and allowance in FRA

- The RAD Appendix 7 restriction structure and NMOC system capabilities allow expression and processing in two possible ways:
  - “Full avoidance” of Special Area - no flights allowed across;
  - “Partial avoidance” of Special Area - certain flights allowed across.

<table>
<thead>
<tr>
<th>RSA</th>
<th>RESTRICTION applied during times and within vertical limits allocated at EAUP/EUUP</th>
<th>ID Number</th>
<th>Operational Goal</th>
<th>Affected ATS route / DCT /s</th>
</tr>
</thead>
<tbody>
<tr>
<td>L_TRA52A</td>
<td>Not available for traffic during the times and within the vertical limits allocated at EAUP/EUUP.</td>
<td>L_TRA52AR</td>
<td>Traffic is not allowed to flight plan across active military area.</td>
<td>T746, FRA DCTs</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><strong>AND when necessary</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>For avoidance nearby FRA (I) points are: ZZZZZ, GGGGG, DDDDD.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 56: Example of RAD Appendix 7 “full avoidance” of Special Area

- “Partial avoidance” of Special Area - certain flights allowed across.

<table>
<thead>
<tr>
<th>RSA</th>
<th>RESTRICTION applied during times and within vertical limits allocated at EAUP/EUUP</th>
<th>ID Number</th>
<th>Operational Goal</th>
<th>Affected ATS route / DCT /s</th>
</tr>
</thead>
<tbody>
<tr>
<td>L_TRA52A</td>
<td></td>
<td>L_TRA52AR</td>
<td>Traffic is not allowed to flight plan across active military area.</td>
<td>LLLLL DCT DDDDD</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><strong>AND when necessary</strong></td>
<td>DDDD DCT XXXXX</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>For avoidance nearby FRA (I) points are: ZZZZZ, GGGGG, DDDDD.</td>
<td>LLLL DCT ZZZZZ</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>ZZZZZ DCT XXXXX</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>FRA DCTs</td>
</tr>
</tbody>
</table>

Table 57: Example of RAD Appendix 7 “partial avoidance” of Special Area and FRA avoidance points expression

- In the case of “Partial avoidance” of Special Area States / FABs / ANSPs may include, as allowed, one or a combination of the following traffic flows:
DEP or ARR or DEP/ARR or city pairs DEP → ARR from/to certain airport/s:
- with no other airspace reference;
- via certain significant point/s;
- via certain ATS route/s;
- via certain ATS route segment/s;
- via certain DCT/s;

- DEP outside IFPZ;
- Military GAT;
- Via certain:
  - significant point/s;
  - ATS route/s (N3);
  - ATS route segment/s (AAAAA N3 BBBBB);
  - DCT/s (CCCCC DCT DDDDD).

- Depending on specific FRA requirement/s States / FABs / ANSPs may choose any of the above RAD expressions. For further details see Chapter 4.

### 3.4 FRA DCT Restriction

#### 3.4.1 Purpose

1. The FRA DCT restriction defines the rules for flying direct (DCT) in the Free Route Airspace (FRA).

2. The FRA DCT restriction has the same features as a conventional DCT Limitation restriction, but enhanced with the possibility to define the FRA Entry / Exit points and the FRA Intermediate points.

#### 3.4.2 Creation

1. The FRA DCT restrictions are created in CACD by the NM Airspace Data Team based on State AIPs in order to implement the published FRA characteristics in NMOC systems.

#### 3.4.3 Publication

1. FRA DCT restrictions as all other AURA restrictions / limitations are available via B2B in AIXM 5.1 format.

#### 3.4.4 Usage

1. The FRA DCT restriction is used by IFPS to validate/invalidate Flight Plans and by the Path Finder to generate valid routes.

2. The FRA DCT restriction has the below parameters defining its usage.

   a) **Characteristics of a Free Route Airspace**

   - A Free Route Airspace is published by relevant State in accordance with ERNIP Part 1.
   - The FRA DCT Restrictions created to implement these characteristics can be:
     - Allowed or Not allowed;
     - En-route or Cross-border.
b) **Allowed En-route FRA DCT restriction**

- It identifies Airspace as Free Route Airspace and defines the conditions to cross it.
- This Restriction contains:
  - Reference Location: the Airspace (AUA or AUAG) where FRA is applicable;
  - Lateral Limits: the ones of the Airspace used as Reference Location;
  - Vertical Limits: can be implicit (all the AUA or an AUAG) or a subset of them (as defined by the State / FAB / ANSP);
  - FRA Intermediate points allowed or not: this is expressed by the DCT limit itself, which can have only 1 of these 2 values: **N/A = Unlimited (UNL)**; meaning that airspace can be crossed on a DCT via whatever FRA Intermediate point. **0NM**; meaning that outside the ATS route network the airspace can be crossed on a DCT only from FRA Entry point to a FRA Exit point or via the specifically allowed FRA Intermediate points. When specific FRA Intermediate points are allowed they are added in this Restriction as FRA Points - Intermediate Points.
  - FRA Entry / Exit points: visible in En-route FRA DCT Restriction as FRA Entry / Exit Points but they are actually implemented in the Cross-border FRA DCT Restriction.

c) **Allowed Cross-border FRA DCT restriction**

- It defines how to penetrate and leave the Free Route Airspace laterally or horizontally;
- The borders are directional and the Restriction Flow Routing Elements are the ENTRY and /or EXIT points. Exceptionally allowed DCT segments across the border can also be added as Flow Routing Elements, including DCT segments AD-PT or PT-AD (same as for conventional Cross-border DCT restrictions);
- The DCT limit is set to 0NM;
- In order to allow definition of how traffic shall enter the FRA from below airspace, or leave the FRA into below Airspace, the concept of horizontal border/floor is introduced. This is used mainly to implement Restrictions for Departing/Arriving traffic from/to Airspaces below the FRA;
- When needed an internal horizontal Airspace Border/floor can be used (Airspace Border Crossing Location with a horizontal border/floor inside a single Airspace). For this particular case a special convention has been adopted. The vertical Limit of the Reference Location is mandatory, and:
  - If the FRA border is bidirectional, vertical Limit = [border level, border level];
  - If the FRA border is from lower to upper, vertical Limit = [border level, Upper Limit];
  - If the FRA border is from upper to lower, vertical Limit = [Lower Limit, border level].
d) **Not allowed FRA DCT restriction**
   - It forbids specific DCT segments Across a FRA for all traffic it is possible to implement a Not Allowed En-route FRA DCT Restriction;
   - Same validation rules as for “conventional” forbidden En-route DCT restrictions apply: a Not allowed FRA DCT Restriction can exist only if an Allowed FRA DCT Restriction exists for the same airspace and its Flow Routing elements are specific DCT segments shorter than the DCT limit.
   *Note: It is also possible to implement Hard/Soft Traffic Flow Restrictions to obtain the same effect.*

e) **Operational Goal**
   - Its format depends on the type of FRA DCT restriction (En-route or Cross-border), and its elements (AUA or AUAG).

f) **DCT Segments**
   - Significant points defining the DCT, Vertical limits and information on whether relevant restriction is Allowed or Not Allowed.

g) **FRA Points**
   - FRA Entry / Exit points and FRA Intermediate points (in FRA-IP) including relevant vertical utilisation;
   *Important Note:*
   *Due to NMOC system capability FRA significant point relevance (A) and/or (D) is not coded separately and coincides with (I).*
   - Each FRA point can be defined either as part of an En-route FRA DCT restriction (all FRA Intermediate points) or a Cross-border FRA DCT restriction (all FRA border points - Entry, Exit and Entry / Exit);
   - FRA Intermediate Points can be defined in an En-route FRA DCT Restriction with DCT Distance Limitation 0NM, meaning the airspace can be crossed on a DCT segment only from FRA Entry point to FRA Exit point or via the specifically allowed FRA Intermediate points.
   *Important Notes:*
   1. Due to NMOC system coding and processing capabilities and requirements for majority of FRA significant points the FRA relevance is presented as “EX” regardless of States AIP publications.
   2. For FRA Intermediate points (I) the reason is representation of allowed “vertical” connection from / to the FRA area. When required “vertically” FRA (I) is presented as EX because from below the FRA area flight is entering and point is (E) while from above the FRA area flight is existing and point is (X).
   3. For unidirectional FRA Horizontal Entry or Exit points the main reason is representation of allowed “border” connection from one FRA area to another FRA area. “Border” FRA (E) or FRA (X) is presented as EX because theoretically any FRA point published as FRA Entry by one State is FRA Exit for the neighbouring one and vice-versa (E → X) / (X → E). The NMOC system automatically puts them as EX as any other cross-border restriction. Additionally depending on FRA area/s and for the same reason as FRA (I) some unidirectional FRA Entry or Exit points are “vertically” presented as EX.
   4. “Horizontally” FRA relevance is in accordance with State AIP publications only for unidirectional FRA / none FRA border points.

h) **Flow Conditions - Reference Location**
   - It is either “Crossing Airspace” (AUA - “Local” FRA area) - defined as En-route FRA DCT restriction or “Crossing Airspace Border” (adjacent
AUAs - “Cross-border” FRA area) which is defined as Cross-border DCT restriction;

- A Cross-border FRA DCT Restriction is made on the possible combinations of Airspace types: AUA / AUAG or AUA / AUAG / AUAG;
- The Airspaces defining the Airspace Border must be adjacent;
- Reference Locations in Cross-border FRA DCT Restrictions can only be OR'd with the same Airspaces (e.g. ‘EBDCT/EHDCT can only be OR’d with EHDCT/EBDCT).

i) **Flow Conditions - Vertical Limits**

- Either the default vertical limits of the Reference Location, or an explicitly defined subset of its vertical limits.

j) **Flow Conditions - Exception of Military Flights**

It is possible to exclude military flights from a DCT Limitation Restriction by three main possibilities:

- Civil and Military flights are restricted in the same way;
- Military flights are unrestricted for DCTs;
- Military flights are less restricted than Civil flights.

In addition, the following case could occur and requires the creation of Traffic Flow Restrictions in addition to the DCT Limitation Restriction: A DCT Distance Limitation applies to Civil flights only (not to Military flights) but DCT segments are forbidden for Civil and Military flights.

k) **Flow Conditions - DCT Distance Limitation**

- For an allowed En-route FRA DCT Restriction, the DCT Distance Limitation defines whether intermediate points are allowed or not: **N/A = Unlimited (UNL)**; meaning that airspace can be crossed on a DCT via whatever FRA Intermediate point.
- **0NM;** meaning that outside the ATS route network the airspace can be crossed on a DCT only from FRA Entry point to a FRA Exit point or via the specifically allowed FRA Intermediate points. When specific FRA Intermediate points are allowed they are added in this Restriction as FRA Points - Intermediate Points.
- For a not allowed En-route FRA DCT Restriction, the DCT Distance Limitation must be set to N/A, and the actual value is defined in the allowed En-route FRA DCT Restriction having the same Reference Location.
- For a Cross-border FRA DCT Restriction, the DCT Distance Limitation must be set to 0NM.

l) **Applicability**

- Start - End Date, Day/s of the week, Start - End Time;
- No Dependent Applicability can be defined.

3.4.4.2 **FRA significant points with different vertical utilisation rules and availability**

(1) At several FRA interfaces between States / FABs / ANSPs FRA significant points have specific conditions of use in addition to FRA general procedures as published in State AIP ENR 1.3.
(2) In most of the cases, the different vertical utilisation rules and availability of FRA significant points are applicable when they are located on boundaries where delegation of the responsibility for provision of ATS exists or on TMA boundaries or in the case of a “balcony” FRA area.

(3) Currently these vertical FL differences in utilisation are published in State AIPs as part of either ENR 4.1 or ENR 4.4 remarks and in CACD are expressed by a FRA DCT restriction.

(4) The example below (see Figure 18) shows different vertical FRA relevance expressed by FLs of point JJJJJ.

![Figure 18: Example of FRA point different vertical relevance](image)

(5) In CACD there are two possible ways for expression either by:
   - Inserting the vertical limits directly in FRA point relevance definition (Specific Properties - FRA points); or
   - Directly referencing FRA point to the relevant AUA representing the FRA area (Specific Properties - Flow Conditions).

(6) The differences in vertical FL utilisation of any FRA significant point shall be inside the general vertical limits of relevant FRA area.

(7) In the case of FRA significant point located on TMA boundary and used as (A) / (D) any vertical limitation published by States is overridden by the AUA definition in CACD and system uses the lower FRA limit as reference. This is done in order to allow proper and smooth climb/descend flight profile and avoid flight plan invalidation..

3.4.4.3 FRA Vertical Connectivity in FRA-IP

(1) The entry to or exit from any FRA area depends on the length of the “Direct” flight planning option allowed in it by States / FABs / ANSPs.

(2) When the FRA area DCT limit is 0NM, the DCT limit (xxxNM or 0NM) allowed within the AUA below the FRA area has no influence on flight plan processing, as relevant allowed cross-border FRA DCT restrictions override this DCT limit and it is ignored.
In order to allow definition of how traffic shall "vertically" enter the FRA area from the underlying airspace, or "vertically" leave the FRA area into the airspace below, the concept of horizontal border (floor) is introduced in CACD.

The borders are directional and the restriction Flow Routing Elements are relevant FRA significant points (I, A, D) which for FRA processing purposes only are used for “vertical” entry and/or exit. When a FRA significant point is mentioned as a Flow Routing Element, then overflying that point is either forbidden or mandatory at the specified level range. When a sequence of FRA significant points is mentioned as a Flow Routing Element then overflying is either forbidden or mandatory in the same sequence as the points are listed, at the specified level range regardless of which FRA Intermediate points are overflown, if any at all.

Exceptionally allowed DCTs across the FRA border can also be added as Flow Routing Elements, including DCTs aerodrome - point and vice-versa (same as for conventional Cross-border DCT restrictions).

In all cases presented below the vertical transition between the ATS route network and FRA area and vice-versa shall be reference in flight plan to any of the above defined in CACD FRA significant points.

The following cases are possible in FRA vertical boundary (wall) crossing:

a) Transition via FRA (D) / FRA (A) point

States / FABs / ANSPs might require transit when the SID/STAR maximum level is different from the FRA minimum level. If the relevant SID last point or STAR first point is clearly defined as FRA (D) or FRA (A) respectively, the gap is overridden by the FRA point definition. The relevant cross-border FRA DCT restriction can allow such “vertical” transition by artificially expanding the lower vertical limit of all required FRA (D) or (A) points. The example is presented below (see Figure 19).

b) Transition via certain FRA (I) point

States / FABs / ANSPs might require transit only via a limited or selected number of FRA Intermediate (I) points. The relevant cross-border FRA DCT restriction forbids cross-border operations between airspace with ATS
route network and FRA area and vice-versa except via explicitly defined FRA significant points. The example is presented below (see Figure 20).

Figure 20: Example of FRA / non-FRA transition via specified FRA (I) point

c) Transition “laterally” via FRA (I) point

States / FABs / ANSPs might require transit not via a defined/allowed FRA significant point but referenced to it (before or after) in order to allow a smooth flight profile. The relevant cross-border FRA DCT restriction can allow such “lateral” transition. It forbids cross-border operations between airspace with ATS route network and FRA area and vice-versa except via explicitly defined for that purpose FRA significant points (I). The example is presented below (see Figure 21).

Figure 21: Example of FRA / non-FRA transition “laterally” off defined FRA points

d) Transition “vertically” below FRA significant point

States / FABs / ANSPs might require transit below the lower vertical limit of a defined/allowed FRA significant point in order to allow a smooth flight profile. The relevant cross-border FRA DCT restriction can allow such “vertical” transition by:

- Artificially expanding the lower vertical limit of all required FRA Intermediate points (I). The cross-border operations between
airspace with ATS route network and FRA area and vice-versa are allowed when the trajectory upper limit is above the FRA (I) "expanded lower" limit. The example is presented below with "expanded lower" limit from FLyyy to FLxxx (see Figure 22).

- Forbidding cross-border operations between airspace with ATS route network and FRA area and vice-versa except via explicitly defined for that purpose FRA significant points (A, D, I).

**Figure 22: Example of FRA / non-FRA transition "below" defined FRA points**

e) Transition of flight to/from close proximity airports out of the FRA area

For certain airports located in close proximity out of the FRA area, the climb or descent profile at a FRA Entry / Exit point might be below the lower FRA limit. In this case the flight profile will not enter/exist FRA at the defined point and normally the flight plan shall be invalidated.

If States / FABs / ANSPs require flight plans to be accepted, they can achieve this via a FRA DCT restriction. The relevant cross-border FRA DCT restriction forbids cross-border operations between airspace with ATS route network and FRA area and vice-versa except via explicitly defined for that purpose FRA significant points (E, X, EX). The example is presented below (see Figure 23).

**Figure 23: Example of FRA / non-FRA ARR/DEP transition for close proximity FRA area airports**
3.4.4.4 FRA area border “clipping”

(1) The term “clipping” is used in the case when any planned DCT intends to exit and then re-enters the relevant FRA area.

(2) The relevant cross-border and en-route FRA DCT restrictions defining the FRA Entry / Exit points (how to penetrate and leave the FRA area laterally) as well as the conditions to cross the FRA area prevent such a DCT to be filed. The relevant DCT is unavailable as the flight attempts to cross the FRA area (AUA) border via non-defined FRA significant point.

(3) The example is presented below (see Figure 24). Both DCTs LLLLL - KKKKKK and XXXXX - NNNNN are rejected, as the relevant FRA DCT restriction prohibits to cross the FRA (AUA) border via “not allowed” FRA Exit points (points identified as “1”) and FRA Entry points (points identified as “2”).

Figure 24: Example of FRA (AUA) border “clipping” rejection

3.4.4.5 FRA significant points and direction of cruising levels in FRA area

(1) The FL orientation scheme (FLOS) applied by each State is normally published in AIP ENR 1.7. Without FRA, each ATS route (ENR 3.3) has a defined direction of cruising levels expressed in terms of ODD or EVEN levels. Cases where direction deviations from ENR 1.7 exist shall be reflected in ENR 3.3 with correct ODD or EVEN FLs.

(2) In FRA, regardless of the existence of the ATS route network, there are flights towards a relevant FRA significant point from different directions; however they are in accordance with the published FLOS. Deviations from the published direction of cruising levels are necessary in several cases for operational reasons related to ATC Unit responsibility of the same FL (ODD or EVEN) over a FRA significant point.

(3) Currently all FRA significant points and direction of cruising levels are published in State AIPs as part of either ENR 4.1 or ENR 4.4 remarks.

(4) This data is NOT included in CACD as part of the FRA definitions. NMOC systems are not checking the compatibility between the State FLOS and flight plans filed.
3.5 DCT Limitation Restriction

3.5.1 Purpose

(1) The DCT Limitation restriction defines DCT segment limits for AUAs (ATC Unit Airspaces) or AUAGs (ATC Unit Airspace Groupings), Cross-border DCT limits between AUAs or AUAGs, and DCT segment limits for Aerodromes.

(2) The DCT Limitation restriction covers requirements for conventional DCT Limitations.

3.5.2 Creation

(1) As being part of the RAD DCT Limitation restrictions are created in CACD by the NM RAD Team based on proper request by relevant State / FAB / ANSP National RAD Coordinator (NRC).

3.5.3 Publication

(1) DCT Limitation restrictions as all other AURA restrictions / limitations are available via B2B in AIXM 5.1 format.

(2) DCT Limitation restrictions are also published as xls file via NOP RAD Portal, RAD Home as part of the RAD Appendixes 4 and 5.

3.5.4 Usage

(1) The DCT Limitation restriction is used by IFPS to validate / invalidate Flight Plans and by the Path Finder to generate valid routes.

(2) The DCT Limitation restriction has the below parameters defining its usage.

a) Operational Goal
   - Its format depends on the elements of the Restriction and its format depends on the type of DCT Limitation restriction (En-route, Cross-border or Aerodrome), and its elements (AUA, AUAG, Aerodrome).

b) DCT Segments
   - The DCT Limitation restriction that contains the DCT Distance Limitation (in NM) is an Allowed Restriction. If flying “Direct”, it is mandatory that the DCT is shorter than the DCT Distance Limitation;
   - The DCT Distance Limitation value is thus the maximum allowed for a DCT segment in that particular Airspace, Cross-border or for departing from / arriving to an Aerodrome. The DCT Distance Limitation value is expressed in full NM. If the value is 0NM (zero) then no DCT segments are allowed in this Airspace, or across that border, or to depart from / arrive to this Aerodrome. The Cross-border DCT must be compatible with the Airspace (En-route) DCT limit;
   - The DCT segments that are allowed but longer than the DCT Distance Limitation condition shall be added as an “Allowed” (Y) DCT Segments;
   - The DCT segments that are not allowed, although they are shorter than the DCT Distance Limitation Condition will be subject to a separate, “Not Allowed” (N) DCT Restriction. Such a Restriction will have the same Restriction Group ID as the Mandatory one. The “Not Allowed” (N) Restriction can only exist if the “Allowed” (Y) one exists,
and it cannot contain a DCT Distance Limitation value (which is stored in the “Allowed” (Y) Restriction);

- In DCT Limitation restrictions, both vertical limits (lower / upper FL) are included.

c) Flow Conditions - Exception of Military Flights
- The same principles apply as for conventional FRA DCT restrictions (see 3.4.4).

d) Flow Conditions - Reference Location
- It is:
  - “Crossing Airspace”;
  - Departing / Arriving Aerodrome;
  - “Crossing Airspace Border”;
- A Cross-border DCT Limitation restriction is made on the possible combinations of Airspace types: AUA / AUAG or AUA / AUA or AUAG / AUAG;
- The Airspaces defining the Airspace Border must be adjacent;
- Each Flow Routing (allowed/forbidden DCT Segment) must cross the Airspace Border Reference Location;
- Reference Locations in cross-border DCT restrictions can only be OR’d with the same Airspaces (e.g. ‘EBDCT/EHDCT can only be OR’d with EHDCT/EBDCT).

e) Flow Conditions - Use of Slices as Reference Location
- A FL band can be defined for the Reference Location (Airspace or Airspace border) in order to define DCT Limitation restrictions with different values at different levels.

f) Applicability
- Start - End Date, Day/s of the week and Start - End Time;
- No Dependent Applicability can be defined.

g) Additional Rules for Cross-border DCTs
- The Cross-border DCT Limitation restrictions follow the same rules as the Airspace (En-route) and Aerodrome DCT Limitation restrictions:
  a. Any DCT Limit value is defined in an “Allowed” (Y) Restriction containing the exceptionally allowed DCT Segments (if any);
  b. An optional corresponding (same Reference Location) “Not Allowed” (N) Restriction can exist stating any additionally “Not Allowed” (N) DCT Segment;
  c. This means that if there are no general cross-border DCT constraints but a particular DCT Segment is to be forbidden:
    i. An “Allowed” (Y) Restriction is created with DCT Distance Limitation value and no Flow Routings;
    ii. A corresponding “Not Allowed” (N) Restriction is created with the forbidden segment as Flow Routing.
  d. CACD will enforce coherency between the Airspace/Aerodrome DCT limits and cross border constraints by:
    i. Ensuring that all DCT Segments explicitly “Allowed” (Y) or “Not Allowed” (N) in the cross-border DCT Limitation
restriction do not violate the DCT limits of each crossed AUA or AUAG, or are explicitly allowed.

ii. Ensuring that explicitly allowed DCT Segments mentioned in Airspace or Aerodrome DCT Limitation restriction do not violate, or are explicitly allowed in any Airspace Border it crosses.

iii. Ensuring that the DCT Distance Limitation in a cross-border DCT Limitation restriction is not higher than the lowest DCT Distance Limitation of all Airspaces crossed.

e. Explicitly “Not Allowed” (N) AUA/AUAG Cross-border DCT Segments may only be “Not Allowed” (N) in the cross-border DCT Limitation restriction for the AUA/AUAG crossed. They do not need to (and indeed should not) be “Not Allowed” (N) for the Airspace DCT Limitation Restriction of each crossed AUA/AUAG if it is an En-route DCT Segment (or the Aerodrome DCT if it is an Aerodrome DCT Segment), as this would result in too many IFPS error messages.

- A DCT Segment which is cross-border (from Airspace A to B) and defined as an “Allowed” (Y) in a DCT Limitation restriction with Airspace A as Reference Location, may not be longer than the DCT Distance Limitation value possibly imposed on Airspace B through a DCT Limitation restriction, unless it is defined as an allowed Flow Routing element in this DCT Limitation restriction as well.
- A DCT Segment which is cross-border (from Airspace A to B) and defined as a “Not Allowed” (N) in a DCT Limitation restriction with Airspace A as Reference Location, shall be longer than the DCT Distance Limitation value possibly imposed on Airspace B through a DCT Limitation restriction, or it shall be defined as a “Not Allowed” (N) DCT segment in this DCT Limitation restriction as well.

3.6 Profile Tuning Restriction (PTR)

3.6.1 Purpose

(1) The PTR influences the flight profile calculation in order to count the flight in certain operational airspaces in accordance with applicable letters of agreement. At a later stage, this flight profile is checked against the RAD. Additionally the PTRs might also be used to correct addressing in IFPS (where special conditions apply) and to better reflect controllers’ workload through fine-tuning of the profile.

(2) The PTR adapts the profile only vertically and intends to restrict a 3D profile, meaning that the flight is already on that particular 2D track but must be restricted in the 3D.

(3) PTRs cover two main cases:

- Transfer of control and co-ordination agreements between ATC units (Letters Of Agreement - LOAs);
- Fine-tuning of NM profiles in order to have correct counts in Traffic Volumes and/or correct FPM addressing.
3.6.2 Creation

(1) PTRs are created in CACD by the NM Airspace Data Team based on proper request by relevant State / FAB / ANSP National Environment Coordinator (NEC) or Local Environment Coordinator (LEC). PTRs can be live updated.

(2) PTRs are kept to a strict minimum. PTR shall not be created where a Traffic Volume with excluded Flow can have the same purpose, provided there is no need to avoid over-addressing of these flights in the IFPS processes.

(3) Three types of PTRs can be created in relation to further NM publication:
   - B2B = YES;
   - B2B = NOT and Airborne Only = NOT;
   - B2B = NOT and Airborne Only = YES.

The B2B flag remains Live Updatable in CACD.

3.6.3 Publication

(1) Based on States / FABs / ANSPs requirements only selected number of PTRs (B2B = YES see below) are published by NM for information and use by the Operational Stakeholders.

(2) PTRs as all other AURA restrictions / limitations are available via B2B in AIXM 5.1 format.

3.6.4 Usage

(1) The Profile Tuning Restriction has the below parameters defining its usage.

   a) Operational Goal
      - It is mandatory;
      - It contains a brief free text description on what is required to be achieved in order users to understand why the Restriction is defined.

   b) Textual Description
      - It is optional, which is supposed to facilitate checking the codification of the PTR;
      - It contains a textual resume of the coded PTR. For a complicated PTR it might happen that its codification is not fully in agreement with the intention of those having established the PTR.

   c) Enhanced Processing of PTRs
      - The three PTRs type usage is as follows:
        o B2B = YES
           PTR is used in profile calculations by the IFPS (IFPUV) and ETFMS at all profile calculations (FTFM, RTFM and CTFM);
        o B2B = NOT and Airborne Only = NOT
           PTR is used only by the ETFMS at all profile calculations (FTFM, RTFM and CTFM);
        o B2B = NOT and Airborne Only = YES
           PTR is used only by the ETFMS and only for CTFM profile calculation; this is, when the ETFMS gets notice that the flight is activated (flying).

      - The “Airborne Only” PTRs are those that are not applied at IFPS profile calculation but at ETFMS profile calculation only. In ETFMS,
“Airborne Only” PTRs are applied to a Flight Profile only when the flight is TACT Activated (Applied to Actual Profile).

d) Flow Routing

- Due to the PTR purposes the Flow Routing is a subset of the conditions as contrary a PTR will re-route the flight in 2D which would make it a Traffic Flow Restriction.
- It is the same as the Reference Location, except the vertical limits.
- The level range specified for the Flow Routing must be a subset of the level range defined for the Reference Location.
- Any type of significant point can be used;
- When Airspace is used as a Flow Routing element, then the penetration of it is either Forbidden or Mandatory at the specified level range.
  - If Forbidden, the profile is calculated that it is never inside the Airspace at the forbidden FL band;
  - If Mandatory, the profile is calculated that it is at some moment within the Airspace at the mandatory FL band. The fact that Airspace (at a given FL band) is mandatory in a PTR does not necessarily imply that the profile will avoid the Airspace above or below the given FL band.
- If a Route Portion with multiple segments is mentioned as a Forbidden or Mandatory Flow Routing, it is not necessary to split it into the individual segments (unlike for traffic Flow Restrictions).
- Flights using only an intermediate segment of the Route used as Flow Routing will be affected by the PTR.

e) Flow Conditions

- It is a fixed set of conditions;
- The Reference Location of a PTR has to be the same as the Flow Routing, except the vertical limits.

f) Flight Profiles

When flight profiles are required to be at a given level at a given place, or when they are required not to be at a given level somewhere, then several options are possible but they should not be used in all circumstances.

The NM flights’ profile incorporate PTRs and for that reason may be the indirect cause of invalidating an FPL (e.g. by pushing the flight profile to the RAD or other constrain).

- In case of State / FAB / ANSP requires that the FPL originator file his RFL according to certain level restriction(s) then these constrains should be expressed/published in the RAD and then implemented as a Traffic Flow Restriction causing the FPL to be rejected if it is not compliant.

If the insertion of an RFL in the filed FPL is not required then PTR is usually created. The FPL will thus not be rejected but the calculated flight profiles by the NM systems will be adjusted by the PTRs that impact the flight. The flight profile ‘adjustment’ takes the form of short level-offs. The PTR conditions 3D is based on the RFL. For example if flight is forced to be between FL(A) and FL(B) on a given ATS route segment then it has to be ensured that it will capture the ones which aim to reach FL(A) or higher (even higher than FL(B) or FL(B+) or FL(B++)). Selecting the flights should be done using the ATS route (lower) on which the Restriction
applies but use it as a Route Portion - Point List in order to allow the selection of a FL band FL(A) - UNL. This FL band would not be allowed if you use the lower route as Route Portion - Id Relevant because then the vertical limits need to be respected.

- In case of State / FAB / ANSP requirement that a given flow of traffic should be between FL(A) and FL(B) on a given ATS route segment then the FPL originator should file the lower ATS route and possibly have an adapted RFL.

In such case two options are possible:

  - Option 1: Publish a RAD on the upper route, forbidding it and add a PTR on the lower Route Portion - Id Relevant to keep them between FL(A) and FL(B) on this portion. (Correct Route and adapted RFL will be required); or
  - Option 2: Create a PTR on the lower Route Portion - Point List (No RFL and filing on the upper will be allowed).

Create a PTR on the upper Route Portion Point List only if there is no lower route available. But in this case ensure that flying DCT underneath the route is allowed;

- When forcing flights to stay below certain Sector A (Green volume) (FL100 - FL200) traffic based on the 3D derived from the RFL has to be selected. As Reference Location an extended band consisting of same Sector A (FLR - UNL), and as Forbidden Flow Routing Sector A (FL205 - CEL) will be used.

![Figure 25: Example of PTR avoiding Airspace Volume](image)

- PTR profile (used to count traffic by ETFMS) follows the RFLs mentioned in the FPL Item 15 (Blue line). The PTRs are calculated before the FPLs are processed by the NMOC system. This means that PTRs can influence the complete process of a flight plan (e.g. all other Restrictions, counts etc.);
  - After processing the flight plan there is the IFPS/ETFMS profile (Red line).
  - It is important to know that creating PTRs looks at the RFLs and not at the calculated profile.
- Avoiding Airspace Volume, the profile has to be below the relevant Airspace Volume (Green line) for the Airport of Departure (ADEP) as shown on Figure 26.
- Considering Airspace Volume as Reference Location is not enough as the PTR profile is already above (Blue line) and the PTR will not capture any traffic.
- A good option is to take the entire Airspace Volume (Green + Pink volumes) (FLR - UNL). In this case, the traffic will be captured by the PTR and the IFPS / ETFMS profile will be affected (see red line).

![Figure 26: Example of PTR avoiding Airspace Volume](image.png)

g) PTR “extension”

- To avoid “yoyo” flight profiles, ETFMS may artificially extend the forbidden FLs of a PTR toward the ADEP or ADES. This happens when all the following conditions are met:
  - The ADEP or ADES is a positive Flow Condition of this PTR;
  - The FLs of the forbidden Flow Routing element(s) go up to UNL (no extension is done if for example FL660 is used);
  - The ADEP or ADES is less than 200 km away from the forbidden Flow Routing element(s).
- This “PTR extension” is shown on the vertical view by extending up to the ADEP or ADES the orange area representing the forbidden Flow Routing element(s).

Note: If PTRs are pushing flights (profiles) into the restrictions and FPL is rejected, AO should advise NMOC to tactically resolve it.

### 3.7 EU / EURO Restriction

#### 3.7.1 Purpose

(1) A temporary (duration of few hours, daily, weekly) or seasonal airspace related information and/or other information influencing the air navigation is considered either as “EU” or “EURO” restriction.
3.7.2 Creation

(1) EU / EURO restrictions are created in CACD by the NM Airspace Data Team based on proper request by relevant State / FAB / ANSP National Environment Coordinator (NEC).

(2) “EU” restrictions are created for:
   a) Major Military exercise/s;
   b) Special event/s;
   c) Industrial action/s;
   d) Contingency plans;
   e) Crisis management;
   f) Temporary RSA.

(3) And published via:
   a) AIP Supplement/s;
   b) Aeronautical Information Circular/s (AIC/s);
   c) NOTAM/s.

(4) “EURO” restrictions are created for Traffic Flow Restrictions published in AIP (ENR part).

(5) EU / EURO restrictions are marked as Forbidden (F), Mandatory (M) or Closed (C) and could also be considered as Active and non-Active, which are live updated, based on sources received by the States/ANSPs (NOTAM, AIP SUP, AUP/UUP etc.)

3.7.3 Publication

(1) EU / EURO restrictions as all other AURA restrictions / limitations are available via B2B in AIXM 5.1 format.

3.7.4 Usage

(1) EU / EURO restrictions are used to generate valid route/s.

(2) For flight plan processing purposes “EU” and “EURO” restrictions are technically qualified as “Hard Traffic Flow Restrictions”. Flight plan checking against “EU” and “EURO” restrictions is handled in the same way as against RAD restrictions. For EURO Restrictions the Textual Description must always refer to the AIP page where the information is published.

(3) Similarly to FUA restrictions (see Chapter 4), EU restrictions can have a dependent applicability based on an RSA allocation in an AUP / UUP, in which case they inherit its activation times and vertical limits.

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1 See paragraph 3.3.3.
### 3.8 Aerodrome Flight Rule Restriction

#### 3.8.1 Purpose

(1) The Aerodrome Flight Rule restriction defines under which specific flight rules arrivals to, or departures from, particular Aerodromes must be conducted.

(2) The Aerodrome Flight Rule restriction is used to forbid flights to be conducted in IFR to/from a specific Aerodrome and has no impact on ETFMS.

#### 3.8.2 Creation

(1) Aerodrome Flight Rule restrictions are created in CACD by the NM Airspace Data Team based on proper request by relevant State / FAB / ANSP National Environment Coordinator (NEC). States / FABs / ANSPs require that departing from and/or arriving at an aerodrome, which has no IFR equipment, must be done under VFR and that this information is present in the FPL Item 15.

#### 3.8.3 Publication

(1) The Aerodrome Flight Rule restrictions as all other AURA restrictions / limitations are available via B2B in AIXM 5.1 format.

#### 3.8.4 Usage

(1) The Aerodrome Flight Rule restriction has the below parameters defining its usage. Any textual description is optional for this restriction.

a) **Operational Goal**
   - “Aerodrome Flight Rule restriction on AAAA”, where AAAA is the relevant Aerodrome’s ICAO location Indicator.

b) **Flow Routeing**
   - No Flow Routeing Element.

c) **Flow Conditions**
   - It is a fixed set of conditions;
   - The concerned Aerodrome serves as departing and/or arriving Flow condition, and Reference Location.

(2) IFPS invalidates a FPL if it does not reflect the correct flight rules on the last segment before the aerodrome of destination or first segment after the aerodrome of departure. FPLs that have IFR indicated for the last segment to, and/or the first segment from the restricted Aerodrome will be invalidated by IFPS and an error message is generated.

(3) IFPS invalidates those FPL’s that are non-compliant on the first/last segment according to the rules laid down in ICAO Doc 4444 PANS-AIM and Doc 7030/EUR.

- If in Item 8a “I” is inserted the entire flight will be operated under the IFR;
- If in Item 8a “V” is inserted the entire flight will be operated under the VFR;
- If in Item 8a “Y” is inserted the flight initially will be operated under the IFR and changes to VFR at a point inserted in Item 15;
- If in Item 8a “Z” is inserted the flight initially will be operated under the VFR and changes to IFR at a point inserted in Item 15.
3.9 Flight Property Restriction on Terminal Procedures

3.9.1 Purpose

(1) The Flight Property Restriction on Terminal Procedures defines when the use of terminal procedures is often restricted to given flight property conditions such as aircraft type/classification (e.g. “propellers only” or “jet only”), type of flight (e.g. military), aircraft equipment (e.g. ILS).

(2) The Flight Property Restriction on Terminal Procedures allows IFPS and the ETFMS profiler to select more accurately the most suitable Terminal Procedure for a flight and invalidate those FPLs containing a wrong Terminal Procedure.

3.9.2 Creation

(1) Flight Property Restrictions on Terminal Procedures are created in CACD by the NM Airspace Data Team based on proper request by relevant State / FAB / ANSP National Environment Coordinator (NEC).

(2) The Flight Property Restriction on Terminal Procedures is not a stand-alone Restriction but rather additional information belonging to the relevant Terminal Procedure. When such a Restriction is created, the affected Terminal Procedures automatically indicate that this is the case.

3.9.3 Publication

(1) The Flight Property Restrictions on Terminal Procedures as all other AURA restrictions / limitations are available via B2B in AIXM 5.1 format.

3.9.4 Usage

(1) The Flight Property Restriction on Terminal Procedures has the below parameters defining its usage.

a) Operational Goal
   • “Aircraft type/classification Restriction on SID/STAR for AAAA”, where AAAA is the relevant Aerodrome’s ICAO location Indicator.

b) Textual Description
   • It is optional and should include a clear reference to the source of the data, such as an AIP page.

c) Flow Routing
   • It can be forbidden or mandatory;
   • Only the Terminal Procedure(s) for which the Aircraft type / Classification condition applies may serve as Flow Routing Element.

d) Flow Conditions - Reference Location
   • The concerned Aerodrome serves as Reference Location;
   • It is combined with a Flight Property Condition through the operand ‘AND/AND NOT’.
e) **Flow Conditions - Flight Property Conditions**

- It is composed of Flight type, Aircraft Classification/Type, Aircraft equipment;
- Flight Type Condition element is normally not used for this type of Restriction.

(2) When selecting a suitable Terminal Procedure to be inserted in a FPL, or when validating a FPL containing a Terminal Procedure, IFPS verifies if it is allowed for the aircraft type found in FPL Item 9:

- If it is allowed then possibly use the Terminal Procedure if it complies with the other criteria of selection;
- If it is not allowed then skip this Terminal Procedure for selection, or invalidate the FPL if it was already mentioned;
- Produce an error message stating SID (or STAR) is not valid.

### 3.10 No Planning Zone/s (NPZ)

#### 3.10.1 Purpose

(1) When and where required to prevent inappropriate flight trajectory airspace crossings or to properly manage ATC operationally sensitive areas inside or across relevant FRA area/s establishment of No Planning Zone/s (NPZ) might be considered in accordance with provisions in ERNIP Part 1, 6.9.1.

(1)(2) Within the airspace volume representing such zone the planning of flight trajectory is either not permitted or allowed under certain specified conditions. In order to assist the airspace users in the presentation of the intended flight operation, the flight planning limitation/s shall be defined in the Route Availability Document (RAD).

(3) Airspace users can avoid such zone by flight planning via appropriate significant points around it or in accordance with allowed conditions.

#### 3.10.2 Creation

(1) No Planning Zone (NPZ) is airspace of defined dimensions within which the planning of flight trajectory is either not permitted or allowed under certain specified conditions.

(2) Within the Free Route Airspace, NPZs will be implemented, if necessary, to enhance traffic organisation at flight planning level. NPZ contains all the characteristics of a RSA when defined in NM systems and managed via AUP/UUP. They are to be classified as AMA or NAM according to the flexibility offered. Being defined exclusively for the management of FPLs, the relevant FMPs will be responsible to coordinate with AMCs for their notification via AUP/UUP.

(3) NPZ are published in the AIP "ENR 2.2 Other regulated airspace". They are created in the NM system on the request of the AMC/FMP and are designated as AMA/NAM.

(4) The FMP shall pass the request for an FUA restriction to relevant State / FAB / ANSP National RAD Coordinator (NRC) for publication in the RAD Appendix 7.

(5) In case of NPZ, located across two or more adjacent FIR/UIR boundaries, the identification should start with letters "EC".
For uniqueness of identification, NM should do a centralised management of NPZ identification in Europe. Despite the limit of 1000 cross-border NPZs in Europe, it is believed that the amount cannot be reached but in case of reaching it, additional 9th character can be considered for use in identifier, where required.

3.10.3 Publication

(1) The associated FUA restriction for a NPZ is published in RAD Appendix 7.
(2) FUA restrictions as all other RAD restrictions are published as xls file via NOP RAD Portal, RAD Home in accordance of ERNIP Part 1, Chapter 8 provisions. The xls file of Appendix 7 is the only official containing the correct information to be used in flight planning.
(3) The associated FUA restriction to a NPZ is also defined and published via the EAUP / EUUP.

3.10.4 Usage

(1) NPZ are used by IFPS to validate/invalidate Flight Plans and by the Path Finder to generate valid routes. A basic FUA restriction will invalidate FPLs that have a profile calculated to be inside the airspace volume of the concerned area when it is activated in an AUP / UUP.

3.10.5 Identification of No Planning Zone (NPZ)

(1) Each NPZ should be identified based on the following rules:
(2) Identification: LENPZ1 or EFNPZ999 or ECNPZ123 (examples)

Rules:
- Up to 8 (eight) characters composed by:
  - 2 (two) letter(s): nationality letters for location indicator in accordance with ICAO Doc 7910, if zone is located entirely in one State, or
  - 2 (two) letter(s): letters “EC”, if zone is located across two or more State borders, followed by
  - 3 (three) letters: abbreviation “NPZ”, followed by
  - 1 (one) - 3 (three) digits: a number(s) digit(s) from 1 to 999; leading “0” or “00” should not be used.
- No type of sign, special character or space to separate the elements comprising the identification.

(3) Name (if applicable): LENPZ1 SUKOM or EFNPZ999 MIC or ECNPZ123 MIC (examples)

Rules:
- Identification and Name should be separated by only one “space”;
- Normally the name might be the name-code (3 or 5 letters) of the relevant significant point around which the zone is located or the closest one but any free name is also allowed;
- To support flight planning, the significant point as the name may be the significant point that should be used to avoid the area;
- Name composition is free and it is not part of the 8 characters rule applied for the identifier;
- Only upper cases should be used.
4 Airspace Management

4.1 Purpose

(1) The purpose of this Chapter is to describe the ASM entities expression and processing by NM systems.

(2) It supplements the ERNIP Part 3 Airspace Management Guidelines - The ASM Handbook and it focuses on those elements relevant for flight planning processes.

(3) In specific:

- FUA Concept
- Airspace structures
  - ATS Routes
    - Permanent
    - Conditional
  - Areas
    - NAM
    - AMA
- Airspace data management
- FUA/EU Restriction
- FBZ
- FUA process
  - AUP/UUP
- Notification Process
  - EAUP/EUUP
  - ASM Booklet
- Contingency Procedures

4.2 FUA Concept

(1) The basis for the FUA concept is that airspace should no longer be designated as either military or civil airspace but should be considered as one continuum and used flexibly on a day-to-day basis. Consequently, any necessary airspace segregation should be of a temporary nature.

(2) Effective application of the FUA concept requires the establishment of a national High-Level Airspace Policy Body (HLAPB) in each of the ECAC States. This body is tasked with the continuous reassessment of national airspace, the progressive establishment of new flexible airspace structures and the introduction of procedures for the allocation of these airspace structures on a day by day basis. The States are required to establish adequate real time civil/military coordination facilities and procedures so as to fully exploit the FUA concept. The practical application of the FUA concept relies on National or sub-regional Airspace Management Cells (AMCs) for the daily allocation and promulgation of flexible airspace structures and on the Centralised Airspace Data Function (CADF) within the Network Manager (NM). NM is in charge for the dissemination of the daily availability/unavailability of ATS routes and daily allocation of areas, including associated information (e.g. restrictions,
mandatory intermediate points, etc.), particularly relevant in the Free Route Airspace. ATC Units, civil and military are responsible for the tactical management, including activation/de-activation, tactical re-routings and shortcuts through areas.

4.3 Airspace Structures

(1) In relation to FPL processes, the basic airspace structures managed through the FUA process are ATS route and areas. In addition, the process implies the management of specific entities such as FBZ, treated as areas, and FUA/EU restrictions. They are described in specific chapters.

(2) For the publication of the upper and lower limits of ATS routes and military exercise and training areas and air defence identification zones (ADIZ) in their AIPs States should apply the criteria described in ERNIP Part 3 paragraph 6.1.3.2. In specific for the areas, FLs should be used for the description of vertical limits above the Transition Altitude; the identified FLs should consider the local QNH variations historically registered.

(3) The publication of areas’ activation time, the system used and means of activation announcements and whether AMC Manageable or not should be provided according to the guidelines described in ERNIP Part 1, paragraphs 7.2.8.

(4) The publication of availability time for ATS routes in the national AIPs should apply the criteria described in ERNIP Part 3 paragraph 6.1.4.3. The aim is to provide clear and unambiguous information of the ATS route classification (e.g. when permanent ATS, type of CDR, etc.)

4.3.2 ATS Routes

(1) Under ICAO provisions, an ATS route is a specified route designated for the routing of GAT and for the provision of air traffic services.

(2) A Permanent ATS Route is therefore a permanently designated route, which is not subject to daily management at ASM Level 2 by AMCs. Nevertheless, a Permanent ATS Route can be temporary closed, but only under specific conditions specified at ASM Level 1 and published by AIS publication (e.g. NOTAM), e.g. for large scale military exercises. Its closure should be also notified via EAUP/EUUP.

4.3.2.1 Conditional Routes

(1) A Conditional Route (CDR) is an ATS route or a portion thereof, which can be planned and/or used under certain specified conditions only. CDRs permit the definition of more direct and alternative routes by complementing and linking to the existing ATS route network.

(2) CDRs can be established at ASM Level 1:

- through areas of potential temporary reservations (e.g. TRA or TSA), with opening/closure conditions resulting from associated military activities; and/or
- to address specific ATC conditions (e.g. traffic restrictions or ATC sectorisation compatibility) with opening/closure conditions resulting from purely civil needs.
(3) The properties of CDRs, including their categories, alignment and route designator, are published in State AIPs.

(4) CDRs are divided into different categories according to their estimated availability and flight planning possibilities. A CDR can be established at ASM Level 1 in one or more of the three following categories:

a) **CATEGORY ONE (CDR1) - Permanently Plannable CDR**

   - CDRs1 are available for flight planning during times published in the relevant State AIP.
   - When a CDR is expected to be available for most of the time, it should be declared as permanently plannable for stated time periods and published as a CDR1 in AIPs. CDRs1 can either be established on an H24 basis or for fixed time periods or at fixed FL bands.
   - The unavailability of a CDR1 (or any portion thereof) for flight plan purpose, has to be published via AUP/UUP and promulgated via EAUP/EUUP. It remains a State responsibility to decide whether an AIS notification (e.g. NOTAM) is required as additional publication. In case an additional AIS notification is published, States are responsible for ensuring consistency between relevant publications (e.g. NOTAM and AUP/UUP information). Any unavailability of a CDR1 not affecting flight planning can be treated tactically when appropriate. Even in case of notified unavailability of CDR1 for flight planning tactical utilisation may be granted, based on defined tactical coordination procedures between responsible ATS and/or controlling military units whenever applicable.

**Notification**

CDRs1 are plannable as permanent ATS routes during the times published in AIPs. In the event of a short notice unavailability of a CDR1, aircraft will be tactically handled by ATC. Aircraft operators should consider the implications of such a possible re-routing and/or use of the alternate ATS routes published for each CDR 1 in the “Remarks” column of the AIP. Any CDR1 unavailability for flight planning is published in the AUP/UUP and notified to the operators by EAUP/EUUP, via NOP portal and eAMI for those using B2B service. In such case, any flight plan which uses the CDR1 portion during the affected period is to be cancelled or changed in accordance with the procedures laid down in the IFPS User’s Manual (rejection or FLOS messages are generated by IFPS to advise airspace users about the incorrectness of the routing described in the FPL). It remains a State responsibility to decide whether an AIS notification (e.g. NOTAM) is required in addition. In this case, State is responsible to ensure consistent information. The most appropriate UUP should be used to publish the cancellation of the any CDR1 unavailability from list “BRAVO”. If any NOTAM has been published, it is a State responsibility to issue a new NOTAM to align the information with the UUP. Any additional closure of CDR1, after the AUP publication, is notified via UUP (inclusion in List BRAVO of UUP), respecting the lead-time of Three (3) hours before its validity.
b) CATEGORY TWO (CDR2) - Non-Permanently Plannable CDR

- CDRs2 may be available for flight planning. Flights may only be planned on a CDR2 in accordance with conditions published daily in the EAUP/EUUP.
- CDRs2 form part of predefined routing scenarios depending on the allocation of associated AMC Manageable Areas or for addressing specific ATC conditions.
- CDRs2 availability can be requested to adjust traffic flow, when a capacity shortfall has been identified and after consideration of relevant ATC factors by the FMPs/ACCs concerned.
- CDR2 when not available according to EAUP/EUUP publication may also be managed tactically, whenever conditions allow short-notice usage, subject to preventive coordination between responsible ATS and/or controlling military units.

Notification

Flights on CDRs2 can only be planned when the CDRs are made available through AUP/UUP. In this respect, the UUP could also notify the closure of CDR2 declared available in AUP and/or previous UUPs. The CDR2 closure is notified by deleting the (available) CDR2 from the list “ALPHA” of previous AUP/UUP and notified to the AOs by EAUP/EUUP, via NOP portal and eAMI for those using B2B service.

Whenever an operator wishes to take advantage of particular available CDRs2 or is required by the ANM to use particular CDRs2, an individual flight plan should be submitted. It should contain in Item 15 the available CDRs2 to be followed.

The flight planning systems of aircraft operators or flight planning agencies should be able to process eAMI in AIXM format so as to automatically process the CDRs availability information (B2B service).

In addition, and in order to assist AOs in assessing the routing options, an “Aircraft Operator What-if Reroute” function (AOWIR) has been established by the NM. For more details see ERNIP Part 3 – ASM Handbook chapter 4.7.5 and NM IFPS User manual chapter 70.

In case of an ATFCM slot that prevents the CDR2 usage, the flight plan is to be changed to use an available ATS route. The revised FPL may result in a revised ATFCM slot.

c) CATEGORY THREE (CDR3) - Not Plannable CDR

- CDRs3 are not available for flight planning. Flights must not be planned on these routes but ATC units may issue tactical clearances on such route segments, when made available.
- CDRs3 are those CDRs that are expected to be available at short notice when the pre-notified activity in the associated AMC Manageable Areas has ceased, or for addressing specific ATC conditions.

After coordination with the ATS or controlling military unit(s) in charge of the associated AMC Manageable Area(s), the responsible controller may
offer an aircraft a short-notice routing through the area using a predefined CDR3. CDRs3 are published in AIPs as CDRs usable on ATC instructions only and are not subject to allocation the day before by AMCs.

**Notification**
CDRs3 are published in AIPs as CDRs that are usable on ATC instructions only. Therefore, flights cannot be planned in advance on CDRs3.

(5) As from June 2017, States agreed on the implementation of Single CDR Category (SCC) namely CDR1 only. A transition plan has been agreed to move to SCC environment by 2020.

(6) Whenever the Path Generator (see more details in chapter 6) provide new rerouting based on the CDRs availability, namely CDR1 and CDR 2, the information about the expiring validity of the proposed rerouting will take into consideration the CDRs time window availability.

(7) In case of cross-border CDRs, a Lead AMC should be identified, responsible for the publication of all segments across boundaries. These are classified in the CACD as “Related Routes”. The Lead AMC creates their national AUP/UUP for all the cross-border CDRs according to the agreement, including the appropriate route extension within neighbouring FIR/UIR(s). Therefore an AMC not designated as Lead AMC shall not include any information in its national AUP/UUP on a cross-border CDR for which a Lead AMC is defined.

(8) Being impossible to disable the allocation of the CDR segment within the NAS of the AMC not designated as Lead AMC, a warning message has been introduced to prevent double publication with potential inconsistencies. No matter which AMC starts the input (AUP/UUP) the other AMC will get a warning, who’s ever AUP is in higher status will trigger the warning for the other AMC AUP/UUP when they will promote or validate theirs. In case the warning is received by Lead AMC, Lead AMC should take initiative and coordinate with AMC who changed availability of related route.

(9) In CACD, in addition to the ATS routes crossing the RSA, derived automatically by NM system (e.g. CIAM), there are 3 possibilities for the CDR Info. This data is provided by the lead AMC, normally through the National Environment Coordinator (NEC).

(10) The purpose of this data is to fine-tune the proposals of CDR expansion made by CIAM when the concerned RSA is allocated or expanded.

**Offload CDRs**
Offload CDRs are CDR2 segments (Route, From PT, To PT, Lower FL, Upper FL) that CIAM will propose to open in the AUP/UUP when the RSA is allocated or expanded.

**Nearby CDRs**
- CDR1 or ATS route segments (Route, From PT, To PT, Lower FL, Upper FL) that CIAM will propose to close in the AUP/UUP when the RSA is allocated, in the same way as it proposes to close the crossing segments;
- Generally route segments preceding or following a crossing segment that it would not make sense to leave open when the crossing segment is closed, or route segments very close to the RSA but not
effectively crossing it (in particular due to the fact that CIAM only considers the ATS route centreline, as if the ATS route was 0 NM wide...).

**Excluded CDRs**

Excluded CDRs are:

- CDR2, CDR1 or ATS route segments (Route, From PT, To PT) physically crossing the RSA but that CIAM will consider as not crossing the RSA. As a consequence, CIAM will not propose to close these CDRs in the AUP/UUP when the RSA is allocated or expanded;
- Generally ATS route segments crossing the RSA but managed tactically by the AMC, and which do not require a closure by NOTAM.

Note that Excluded CDRs do not include a FL band, which means that the full vertical limits of the route overlapping with the concerned RSA are concerned.

An Excluded CDR can still be entered in the 'Manual CDRs’ tab of the AUP/UUP if required.

### 4.3.3 Areas (RSA)

1. In CACD Restricted Airspace (RSAs) are divided into two system types: Elementary RSA (ERSA) and Composed RSAs (CRSA).

2. Both ERSA and CRSAs are further divided into 8 RSA types, which correspond to the classification of these Airspaces according to the official State AIP publications:
   - Danger Area (D);
   - Restricted Area (R);
   - Prohibited Area (P);
   - Temporary Reserved Area (TRA);
   - Temporary Segregated Area (TSA);
   - Reduced Coordination Airspace (RCA);
   - Military Reserved Area (MRA);
   - Military Training Area (MTA);
   - Cross Border Area (CBA).

3. Specific constraints for Composed RSAs (CRSAs):
   - A Composed RSA (CRSA) must have the same RSA Type as one of its composing Elementary RSA (ERSA);
   - A composed RSA of RSA type CBA must have the following principles as an Identifier in order to ensure harmonised identification of CBA’s across Europe
     i) A group of two letters (EU); followed by
     ii) C" (EAD DHO-5, rule 6 for CBA); followed by
     iii) A group of up to 6 characters (preferably digits) unduplicated within ECAC.

In order to ensure the uniqueness of the designator, a centralised management of CBA identification in Europe has been agreed, with tasking ASMSG and its Secretariat to manage the process in close coordination with EAD.
Over the high seas, the harmonised CBA identification is not applicable. When D areas are established by different States on both sides of the FIR/UIR boundary and may be used jointly in accordance with bilateral agreements, their identification shall respect the provisions of ICAO Annex 11 section 2.3.12, and of the ASM Handbook 6.1.5.2 when applicable.

Request for new CBA must be send to the NM AD Supervisor, ASMSG secretariat.

(4) Specific constraints for composed RSA of RSA type TRA/TSA

- A composed RSA of RSA type TRA/TSA must have the following principles as an Identifier in order to ensure harmonised identification

  i) Up to 9 (nine) characters composed of:
  ii) 2 (two): nationality letters for location indicator;
  iii) 3 (three): letters TSA or TRA, only for the existing ones; or
  \[ 2 \text{ (two): letters “TS” or “TR” for TSA/TRA; or} \]
  iv) 1 (one) - 3 (three) for TSA/TRA: up to three characters with the last as a number; no leading “0” or “00” shall be used; or
  \[ 1 \text{ (one) - 4 (four) for TS/TR: up to four characters, with last as a number; no leading “0” or “00” shall be used; or} \]
  \[ 1 \text{ (one) - 5 (five) for T: up to five characters, with last as a number; no leading “0” or “00” shall be used;} \]
  v) 1 (one): letter indicating area sub-part/s; the letter “Z” shall not be used.
  vi) No type of sign or space to separate the elements comprising the identification.

  Note 1: Nationality letters are those contained in Location Indicators (ICAO Doc 7910).
  Note 2: In case of NO sub-part is expected, up to four characters can be used for TSA/TRA, up to five characters can be used for TS/TR and up to six characters can be used for T.

(5) The figures below indicate the different possibilities for TSA/TRA identification with area sub parts:

<p>| | | | | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
</tr>
</tbody>
</table>

National letters for location indicator  
letters TSA/TRA for TSA/TRA  
up to three characters, with last as number; no leading “0” shall be used  
letter indicating area sub-part/s;

Table 58: TSA/TRA identification with letters “TSA/TRA”
National letters for location indicator

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td>L</td>
<td>S</td>
<td>T</td>
<td>S/R</td>
<td>A → Z</td>
<td>1 - 9</td>
<td>A → Z</td>
<td>0 - 9</td>
<td>A → Z</td>
<td>0 - 9</td>
</tr>
</tbody>
</table>

letters TS/TR for TSA/TRA up to four characters, with last as number; no leading "0" shall be used letter indicating area sub-part/s;

Table 59: TSA/TRA identification with letters "TS/TR"

National letters for location indicator

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td>L</td>
<td>S</td>
<td>T</td>
<td></td>
<td>A → Z</td>
<td>1 - 9</td>
<td>A → Z</td>
<td>0 - 9</td>
<td>A → Z</td>
<td>0 - 9</td>
</tr>
</tbody>
</table>

letters T for TSA/TRA up to five characters, with last as number; no leading "0" shall be used letter indicating area sub-part/s;

Table 60: TSA/TRA identification with letter "T"

4.3.3.1 AUP Categories for RSA in CACD

(1) For all the areas inserted in the CACD, there are 4 possible values of Airspace Use Plan (AUP) category, which are derived from the FUA parameters:

- **AMA (AMC manageable):** areas which can be allocated in a flexible way after due coordination/negotiation between military and civilian users and owned by one and only one AMC.
- **NAM (Non-AMC manageable):** areas, which can be allocated by the military airspace users without prior coordination/negotiation with the civilian users/AMC and owned by one and only one AMC.
- **RCA (Reduced Coordination Airspace):** airspaces in which civil air traffic control can allow flights to deviate from the published route structure (using a DCT) with limited or no prior coordination and owned by one and only one AMC.
- **Blank:** airspaces for which a standard coordination agreement exists and which are never mentioned in the AUP. These airspaces shall be displayable in the CACD, but shall not be considered for AUP processing. The first two categories are those managed via AUP/UUP end notified via EAUP/EUUP.
### Table 61: Comparison between AMA and NAM in terms of management in NM System

<table>
<thead>
<tr>
<th>Action</th>
<th>AMA</th>
<th>NAM</th>
<th>NAM activated by NOTAM</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Area activation</td>
<td>AMC</td>
<td>by default</td>
<td>CADF Staff to insert availability time (on request from the AMC)</td>
</tr>
<tr>
<td>2. Area de-activation</td>
<td>AMC</td>
<td>CADF Staff to insert availability time as &quot;empty&quot; (on request from the AMC)</td>
<td>CADF Staff to insert availability time as &quot;empty&quot; (on request from the AMC)</td>
</tr>
<tr>
<td>3. FUA restriction from ON to OFF</td>
<td>AMC</td>
<td>AMC</td>
<td>AMC (once the area is active, see point 1.)</td>
</tr>
<tr>
<td>4. Reduce availability time</td>
<td>AMC</td>
<td>AMC</td>
<td>AMC (once the area is active, see point 1.)</td>
</tr>
<tr>
<td>5. Extend availability time</td>
<td>CADF Staff (on request from the AMC)</td>
<td>CADF Staff (on request from the AMC)</td>
<td>CADF Staff (on request from the AMC)</td>
</tr>
<tr>
<td>6. Reduce vertical limits</td>
<td>AMC</td>
<td>AMC</td>
<td>AMC (once the area is active, see point 1.)</td>
</tr>
<tr>
<td>7. Extend vertical limits</td>
<td>AD SPVR (AIRAC cycle)</td>
<td>AD SPVR (AIRAC cycle)</td>
<td>AD SPVR (AIRAC cycle)</td>
</tr>
<tr>
<td>8. Reduce horizontal limits</td>
<td>AD SPVR (AIRAC cycle)</td>
<td>AD SPVR (AIRAC cycle)</td>
<td>AD SPVR (AIRAC cycle)</td>
</tr>
<tr>
<td>9. Extend horizontal limits</td>
<td>AD SPVR (AIRAC cycle)</td>
<td>AD SPVR (AIRAC cycle)</td>
<td>AD SPVR (AIRAC cycle)</td>
</tr>
</tbody>
</table>

Note: NOTAM publication and coordination via e-mail (ref nbr NOTAM) required with CADF position before updates will be done in CACD concerning NAM areas, see item 1 / 2 / 4 / 5 and 6 of table above.

Note: Publication in AIP to be updated and e-mail (using data-submission for for ASM related data) to request modification in CACD.

#### 4.3.3.2 RSA Data Management

(1) Manageable or Restricted Areas represent a part of the airspace where General Air Traffic (GAT) can be restricted. In practice, it corresponds in most cases with airspace where military operations may take place.

(2) CACD data only includes Restricted Areas (RSAs) after coordination with request from the concerned AMC through the National Environment Coordinator (NEC).

(3) The coordination with the NEC depends on the internal agreement inside ANSP/STATE concerning the request of implementing RSAs in CACD. This coordination is needed to decide precisely which of the Restricted Areas published in AIPs are required in CACD, and to define CIAM-specific parameters for which the values are not published.

(4) For operational reasons, it could be possible to have in CACD RSAs data, namely vertical limits and time availability, different from those published in national AIS publications (e.g. AIP). This variation shall be officially requested by States concerned using the appropriate Template. This deviation is occasionally asked by States to facilitate the management of frequent temporary extension of vertical limits and time availability of related RSAs. According to the NM system
business rules, AMCs are not allowed to allocate directly via AUP/UUP RSAs with different temporary limits without the modification (manually) of these limits in CACD by NM ENV AD SVR. The procedures in place are complex and cumbersome due to the manual intervention required, with potential risks of mistakes. The adopted solution to have different limits by default aims to facilitate the coordination process between national AMCs and NM staff in case of frequent temporary modification of specific RSAs. It is important to highlight that these temporary extensions shall be supported by national AIS publications (NOTAMs). The NMOC staff is not performing the regular monitor of these AIS publications; therefore, States remain full responsible to ensure the proper required publication.

(5) It should also be noted that once Restricted Airspaces (RSAs) are defined in CACD database, an AUP is required daily for the concerned AMC.

4.3.3.3 RSA Allocation via AUP/UUP

(1) The RSA Activation includes a FL band (Lower/Upper FL), a start date and time, and the end date and time.

(2) RSA allocations from Released AUPs/UUPs are automatically propagated to the corresponding RSA Activation tables.

(3) It should be noted that RSAs with AUP category NAM (Non-AMC Manageable = Level 1 only) are generally not allocated explicitly in the AUP/UUP. In this case, the RSA is considered as implicitly allocated during its period of availability; in other words the RSA availability is the default allocation for a NAM. For example, EGD026 is an RSA of type NAM (ASM Level 1 only) with an availability defined as H24 (as published in the State AIP or coordinated with the responsible AMC). It is normally not allocated in the AUP/UUP by the British AMC because it is not managed by them. However, implicitly this RSA appears in the each EAUP/EUUP as NAM, allocated from 06:00 to 06:00, according to the RSA Availability data.

(4) States in coordination with NM can identify those Non AMC manageable areas (P, D and R) they prefer to be regularly published via AUPs/UUPs. These areas should be published in the AUP/UUP list “DELTA”, with or without modifications compared with AIP publication. NM Systems retrieves automatically NAM information without modifications for the EAUP/EUUP publication.

(5) Remark 1. However, it should be noted that RSA activation alone in AUP/UUP does not ensure cross check and invalidation of the FPLs of the flights crossing the area volume of airspace when area is planned to be activated.

(6) Using CIAM CDR expansion function or a local ASM tool, AMC can identify and publish in AUP/UUP list of associated CDRs and define scenarios of their availability/unavailability in case the RSA is activated. Such scenarios should be defined well in advance, coordinated and pre-validated with CADF NMD.

(7) Remark 2. However, it should be noted that only those FPLs that consist of unavailable CDRs (or portion of) in Item 15 will be rejected or invalidated. The FPLs that do not consist of the unavailable CDRs (e.g. filing DCT trough active TSA/TRA) will not be captured by either two processes described above. For DCT described in RAD Appendix 4 this is valid as well, unless a dependent applicability with the RSA is pre-defined. In this case, the FPL filing the DCT will be rejected or invalidated. Even if the RSA will be partially allocated (level band), all the FLs of the DCT described in RAD Appendix 4 will be affected.
In order to ensure that the volume of the airspace of such TSA/TRA made active in AUP/UUP is effectively sterilised, AMC should coordinate with NMD CADF the implementation of required restrictions.

As a result, the FPL crossing the volume of the airspace of an active area will be rejected or invalidated in accordance with FPL reprocessing process. More details about IFPS FPL validation process are provided in chapter 5.

There is a possibility to identify scenario for such area activations. By default, if no scenarios identified for the area, the relevant volume of the airspace will be fully sterilised.

In areas where coordination procedures (including civil/military coordination procedures) and airspace crossing conditions permit, the airspace users are allowed to flight plan routeings through airspace reservations; therefore, no restrictions or ATS routes closure will be used.

Even if allowed to file the FPL through the RSAs, in some cases, tactical re-routeing could be provided if RSA is not available for crossing at that moment. The expected maximum additional length of a tactical re-routeing shall be promulgated through State AIS publications. In other cases, when such airspace is not available for crossing, alternative rerouting, including 5LNC (e.g. FRA environment) will be defined to facilitate flight planning clear of the airspace reservation and ensure required separation from the activity. The promulgation of these 5LNCs shall be ensured through State AIS Publication. If these points are to be used only for avoidance of airspace reservations, specific conditions for the use of these points for flight planning shall be published. An overall standardisation of the separation from airspace reservations will be required, in the longer term, especially for cross-border operations. Publication of activation time of airspace reservations should be considered.

Note: The possibility of using geographical coordinates should be considered.

4.4 FUA/EU Restrictions

4.4.1 Purpose

FUA restrictions define the unavailability of airspace for flight planning, depending on the allocation of the respective airspace for military purposes.

For ad hoc areas implemented for a temporary period (e.g. large scale exercises or special events), planned to be processed via AUP/UUP, an EU Restriction could be defined in the CACD system, if required. It will be managed as a FUA restriction.

4.4.2 Creation

FUA restrictions are used for RSAs published in the AIP (i.e. AMA and NAM) and are only created by the CADF / AD Team on request of an AMC.

The AMC shall pass the request for an FUA restriction to relevant State / FAB / ANSP National RAD Coordinator (NRC) for publication in the RAD Appendix 7.

FUA restrictions are typically forbidden and the Forbidden Flow Routing is the same RSA used to define the Dependant applicability and used as Reference location. Military traffic is typically excluded, and Routes or DCTs across the RSA can also be excluded if required.
4.4.3 Publication

(1) FUA restrictions are published as RAD Appendix 7.

(2) FUA restrictions as all other RAD restrictions are published as xls file via NOP RAD Portal, RAD Home in accordance of ERNIP Part 1, Chapter 8 provisions. The xls file of Appendix 7 is the only official containing the correct information to be used in flight planning.

(3) RAD “Annex for Special Event/s” contains restrictions of temporary nature. For the establishment of temporary areas (e.g. military exercise/activity) for which a temporary restrictions are required, those shall be published in “Annex for Special Event/s” dedicated to the specific event. In these cases, the Annex can be published/updated up to D-2 before the event/s. “Last minute” changes will be managed through the “Increment File”. This process will be mandatory as from 1 January 2021.

(4) FUA restrictions as all other AURA restrictions / limitations are also available via B2B in AIXM 5.1 format. Due to NMOC system capabilities to incorporate the structure of the RAD not all data in Appendix 7 xls file might be available via B2B.

(5) Information related to EU/FUA Restrictions established for temporary areas is published by AIP Supplement, AIC, or NOTAM and Annex for Special Events on the RAD homepage. EU Restrictions are not published in the RAD document but are available via the NOP Portal on the RAD Team webpage under “EU/EURO Restrictions” as an .xls file. This information is published every Tuesday and Friday. The same information is also available via B2B.

(6) In case of urgent required FUA restrictions (Safety issue), an AMC can ask CADF to create an EU restriction, which will remain in CADF for 3 AIRAC’s (End date of requested EU restriction will be implemented). This will give the AMC the time to coordinate, if the request is a permanent FUA restriction, with the RAD coordinator for publication in the RAD document.

(7) The airspace allocation and associated FUA/EU restriction are also defined and published via the EAUP / EUUP.

4.4.4 Usage

(1) FUA/EU restrictions as all other RAD restrictions are used by IFPS to validate/invalidate Flight Plans and by the Path Finder to generate valid routes. A basic FUA restriction will invalidate FPLs that have a profile calculated to be inside the airspace volume of the concerned area when it is activated in an AUP / UUP.

4.4.5 Specificities in Restriction Types

(1) An FUA restriction must have:

- A Reference location (an RSA or FBZ);
- Dependent applicability based on RSA or FBZ activation;
- A FUA Restriction ID starting with an RSA or FBZ ID and ending with the character ‘R’ (then S, T, U, V, W, X, Y. if there are multiple FUA Restrictions it should be followed by A.B.C..). (These letters won’t be published in RAD document Appendix 7). There is a limit of 10 characters in total.

Note: In case of more than 8 FUA restrictions per RSA, the NM RAD team in coordination with the relevant NRC’s and/or other NMOC Teams is
authorised to use other letters starting with Q on reserved order (Q, P, M, N, etc...., but NO Q and I).

(2) The Restriction identifier uses the format "EU" + free text (maximum 7 characters) + 1 alphabetic character (e.g. "R"). However, it is recommended that the name of the temporary exercise or special event for which the EU Restriction has been requested be used as a reference (e.g. for the exercise TIGER MEET, the EU Restriction would be called EUTIGER1A).

(3) It is also possible to use additional conditions in an FUA restriction in order to obtain a more specific invalidation of FPLs according to pre-defined scenarios.

Example of basic FUA Restriction:
- EHR8R
- EHR8S

When more than one FUA restriction used for same RSA (different scenarios), the last letter used based on the following rules:
- R - describes the most restrictive limitation/s in RSA availability;
- S - describes the less restrictive limitation/s different from those under letter "R";
- T, U, V, W, X, Y - same descending logic as for letter “S”.

Example of a complex FUA restriction (one scenario):
- EBTRANASA
- EBTRANASB

For this example, impossible to define the requested scenario with one FUA restriction (to complex). Two FUA restrictions created. The S stands for one scenario, the A and B indicates that we have a complex scenario. Always both FUA restrictions applied in AUP/UUP. Only EBTRANAS published in the RAD Appendix 7.

(4) Due to their complexity of some FUA restrictions, for the implementation into the technical systems, a complex restriction requires the breakdown into basic restrictions utilising sub-codes for their identification. The RAD Appendix 7 describes the complete FUA restriction using a single code.

(5) In the NM systems (e.g. CACD) a complex FUA restriction is inserted as a list of sub-codes of the basic restrictions which together defines the complex restriction. These sub-codes will contain the FUA restriction code (e.g. EBTRA01S) followed by a letter starting from A (e.g. EBTRA01SA, EBTRA01SB, etc.). In these cases, the IDs of the areas/FBZs should be adapted to respect the maximum length of 10 characters including the letters for the associated restrictions.

(6) The main code and the related sub-codes shall be activated simultaneously by AMC and will be notified in EAUP/EUUP on the NOP Portal and via B2B (subject to technical change).

(7) IFPS validates the FPLs against all sub-restrictions. The rejection/suspension messages of FPLs infringing one or more sub-restrictions will report the related sub-code(s).
As a special case of dependent applicability, the restricted object of a FUA restriction is the airspace volume which is at the same time the object for which determines the dependent applicability. These Traffic Flow Restrictions have a dependent applicability using an RSA activation, with Time and Vertical Limits calculated automatically (derived) by the system from the RSA activation.

In the dependent applicability of the FUA restriction, the 'FUA Default Active' parameter (Yes/No) determines whether the FUA restriction is active by default when creating an AUP / UUP. If required, the resulting activation or non-activation of the FUA restriction in an AUP / UUP can be changed there by selecting or deselecting the corresponding checkbox.

4.4.6 Implementation of FUA / EU Restrictions in CACD and usage in CIAM

RSA: FUA RS tab

In Figure 27 below, a FUA Restriction has been created for the RSA LFTPERCBRC, but not set as 'Default Active' in the CACD, meaning that they will not be shown in CIAM as 'Activated'.

In the 'RSA Allocation' pane, the 'FUA / EU RS' column displays the following information:

- Blank: No FUA Restrictions associated with this RSA are active;
- Vink sign: All FUA Restrictions associated with this RSA are active;
- Shaded square sign: Some, but not all, FUA Restrictions associated with this RSA are active.

The activation of the FUA restrictions (as defined in the CACD) can still be overruled in CIAM or any other ASM tool by the AMC, and each restriction (even those not activated) must be confirmed by the AMC.

FUA restrictions are also validated in CIAM, and warnings will appear if overlaps exist in 3D airspace volume or allocation time periods. This validation covers single AUP/UUPs and also cross-checks between multiple AUP/UUPs.
4.4.7 Multiple AS/RT for Restriction Dependent Applicability

(1) It is possible for a Restriction Dependent Applicability to reference more than 1 Restricted Airspace (TSA, TRA, CBA, D, R, P) or CDR.

(2) Addition of a composite dependent applicability table in Restrictions type H/S or PT.

4.4.7.1 How does it work?

- If FUA = ‘YES’, no change, there can be only one Airspace allowed, it shall be the reference location of the Restriction (as per today)

![Dependant Applicability](image)

Figure 28: Example of FUA restriction with dependent applicability

- If FUA = ‘NO’, there can be at least one airspace or at least one route

Note: in box Airspace, Airspace actually means “Airspace Activation”
In box Route Portion, Route Portion actually means “Route Portion Availability”
Figure 29: Example of FUA restriction with dependent applicability

- When operation is 'AND', it means “active together”, the dependent applicability corresponds to the intersection of the applicabilities derived for the combined element
- When operation is ‘OR’, the dependent applicability corresponds to the union of the applicabilities derived for the combined element
- When operation is 'NOT', it means “outside”, the dependent applicability corresponds to the inversion of the applicability derived for the combined element
4.4.7.2 Specific constraints

(1) Vertical Limits within the Restriction are calculated automatically (derived) by the NMOC system ONLY if the Reference Location is the same RSA as used to define the Dependent Applicability.

4.5 Flight Buffer Zone (FBZ)

4.5.1 Flight Planning Procedures around Active Reserved/Restricted Airspace

(1) The purpose of the following procedures is to enable a harmonised approach for IFR/GAT flight planning around reserved/restricted airspace. These procedures will establish a more transparent process for the Flight plan acceptance by IFPS, both in fixed route and free route environments.

(2) The FPL Buffer Zone (FBZ) is the associated airspace, which may be applied to a reserved/restricted area defining the lateral and vertical limits for the purpose of submitting a valid IFR FPL when such areas are active or planned to be active. Flight plans can be filed up to the boundary of the selected FBZ. The route described in Item 15, is to consider the nominal track between two points according to the great circle shortest route.

(3) For the submission of a valid flight plan (for an aircraft not engaged in an activity contained in the reserved/restricted airspace) the selected FBZ represent the totality of airspace to be avoided for flight planning purposes in accordance to the FUA/EU activated restriction.

(4) The State AIP, in addition to the publication of the reserved/restricted area, includes the associated “FBZ” when applicable. Multiple FBZs (e.g. different shape and/or location) can be published for the same restricted/reserved area.

(5) The activation of a selected FBZ is performed together with the associated restricted/reserved area. The time for the activation of the selected FBZ could differ from the activation time of the associated reserved/restricted area.
4.5.2 Publication

(1) An FBZ must always be published in the State AIP. The FBZ includes the volume of the owner’s RSA, and neither can be allocated at the same time or levels. The ID of the FBZ is the owner’s RSA ID + Z (end character).

Example:

**GEN 2.2 Abbreviations used in AIS publications**
*FBZ Flight Planning Buffer Zone*

**ENR 1.10 Flight planning**
This section should include a description of the concept of FBZ and the applicable rules for IFR flight planning such as the following examples:

- When applicable, for each reserved/restricted areas, an FBZ has been established for IFR flight planning purposes only. Flight plans can be filed up to the boundary of the FBZ when active;
- The route described in Item 15, shall consider the nominal track between two points according to the great circle shortest route;
- Reserved/restricted area and the selected FBZs are notified when active by... [insert appropriate promulgation means].

**ENR 5.1 Description of Prohibited, Restricted and Danger Areas**

<table>
<thead>
<tr>
<th>Identification, name and lateral limits</th>
<th>Upper Limits</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>AABBCC</td>
<td>FL205 GND</td>
<td>(e.g. time of activity)</td>
</tr>
<tr>
<td>AABBCCZ</td>
<td>FL215 GND</td>
<td></td>
</tr>
</tbody>
</table>

Figure 31: Example of FBZ publication

(2) ENR 5.1 and ENR 5.2 publication of FBZ with multiple vertical/lateral limits within the same airspace volume.

(3) In cases where the FBZ has different lateral limits (horizontal shape) depending on the vertical dimension, the following publication guidance applies:

- The definition of a FBZ with multiple vertical/lateral limits is published in the Remarks column, informing that the FBZ consists of separate areas and a listing of these parts. This publication is sufficiently describing the lateral limits of the total FBZ airspace volume. The upper and lower limits shall cover the total vertical limits of all involved parts. The identification of the FBZ is assigned in accordance with the general rules for a FBZ.
- Each separate part is published with their vertical/lateral limits.

---

The flights using the split altitude between different parts will be assigned to the upper part and processed by the NM systems accordingly.
• The FBZ consisting parts cannot be activated separately. The definition of the separate parts is only for the purpose of accurately describing the shape (horizontally and vertically) of the FBZ.

• The sum of the consisting parts covers the entire FBZ. The resulting FBZ is a contiguous airspace volume without any gaps.

<table>
<thead>
<tr>
<th>Identification, name and lateral limits</th>
<th>Upper Limits</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>AABBCC</td>
<td>FL205</td>
<td>(e.g. time of activity)</td>
</tr>
<tr>
<td></td>
<td>GND</td>
<td></td>
</tr>
<tr>
<td>AABBCCZ</td>
<td>FL215</td>
<td>AABBCCZ consists of:</td>
</tr>
<tr>
<td></td>
<td>GND</td>
<td>PART 1</td>
</tr>
<tr>
<td>PART 1</td>
<td>FL215</td>
<td>PART 2</td>
</tr>
<tr>
<td></td>
<td>GND</td>
<td></td>
</tr>
<tr>
<td>PART 2</td>
<td>FL215</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5000FT</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5000FT</td>
<td></td>
</tr>
</tbody>
</table>

Table 62: Example of FBZ with different lateral limits

(4) In case of CBA with defined FBZ, or when only the FBZ is crossing the national borders and/or the boundaries of an FIR, the publication requirements should be part of an Agreement between appropriate organisations in neighbouring States. It is recommended that, when only the FBZ is crossing national borders and/or the boundaries of an FIR, the State publishing the reserved/restricted area should be also responsible for the publication of the FBZ.

(5) As for the RSAs’ ones, the FBZ vertical limits should be published in accordance with ERNIP Part 1, Chapter 6, paragraph 6.4.4 - Publication of vertical limits. Both the reserved/restricted area and the associated FBZs will be uploaded in the CACD.

(6) The allocated reserved/restricted area, the selected FBZ(s) and the associated FUA/EU restrictions are notified to airspace users via EAUP/EUUP. The time and vertical dimensions of the selected FBZs could be different from those of the associated reserved/restricted area.

(7) AUP/UUP should be considered the primary means of notification of planned activation for reserved/restricted airspace. For non AMC manageable areas, States should consider their requirements for notification to airspace users also
via AIS publications (e.g. NOTAM). In all cases, when FBZ is applicable, both reserved/restricted airspace and the FBZ should be notified, with identification, coordinates and time period of activation.

(8) When utilising the AUP/UUP, the required activation of FBZ, as described in AIP, will be properly notified via CIAM/ASM tools. Airspace users will be notified subsequently via EAUP/EUUP.

(9) When ad-hoc areas are established and the application of the horizontal/vertical FBZ is required, adequate publication (e.g. NOTAM or AIP Supplement) should be provided. The inclusion of the FBZ within the limits of the defined ad-hoc areas may be considered in order to simplify the publication. In case of partial vertical activation (level bands) of the reserved/restricted areas, the vertical FBZ should be considered within the vertical limits of the level bands required. Whereas one or more FBZs with different dimensions compared to the area are required, adequate publication is expected (e.g. NOTAM or AIP supplement).

(10) In case of modular areas, the combination of modules allocated should be notified via AUP/UUP, including the activation of FBZs, if required. IFPS will validate the FPLs against each module, including the associated FBZ, in order to detect whether the trajectory is passing through one or more of the modules, including the associated FBZs. In case of the trajectory is passing through a module and the overlapping FBZ of the adjacent module, IFPS will consider the interaction with both of them.

### 4.5.3 FBZ Identification

(1) An RSA type TRA/TSA with FBZ(s) must have the following principles as an Identifier in order to ensure harmonised identification

i) Up to 9 (nine) characters composed of:

ii) 2 (two): nationality letters for location indicator or “EU” for new CBA;

iii) 3 (three): letters TSA or TRA or CBA, only for the existing ones; or

   • 2 (two): letters “TS” or “TR” for TSA/TRA;
   • 1 (one): letter “T” for new TSA/TRA

iv) 1 (one) - 2 (two) for TSA/TRA: up to two characters with the last as a number; no leading “0” shall be used; or

   • 1 (one) - 3 (three) for TS/TR: up to three characters, with last as a number; no leading “0” shall be used;
   • 1 (one) - 4 (four) for T: up to four characters, with last as a number; no leading “0” or “00” shall be used;

v) 1 (one): letter indicating area sub-part/s; the letter “Z” shall not be used;

vi) 1 (one): letter “Z” as last character - in case of FBZ associated to the TSA, TRA, CBA area.

vii) 1 (one): a number from 1 to 9 in case of more FBZs associated to one TSA, TRA, or CBA area.

viii) No type of sign, special character or space to separate the elements comprising the identification.
Note 1: In case of NO sub-part is expected, up to three characters can be used for TSA/TRA, up to four characters can be used for TS/TR and up to five characters can be used for T.

Note 2: In case of more FBZs defined for one TSA, TRA or CBA, the characters after TSA/TRA or TS/TR or T or C should be adapted accordingly.

Note 3: To avoid confusion, identification numbers shall not be reused for a period of at least one year after cancellation of the area to which they refer to.

(2) The figures below indicate the different possibilities for TSA/TRA identification with area sub parts:

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
</tr>
</thead>
</table>

National letters for location indicator: letters TSA/TRA for TSA/TRA

up to one number; no leading "0" shall be used

letter indicating area sub-part/s;

letter "Z" as last character - in case of FBZ associated to the TSA, TRA area

numerical character for more than one FBZs associated to the TRA/TSA

Table 63: FBZ identification for TSA/TRA with letters "TSA/TRA"

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td>L</td>
<td>S</td>
<td>T</td>
<td>S/R</td>
<td>A -&gt; Z</td>
<td>1 - 9</td>
<td>0 - 9</td>
<td>A -&gt; Y</td>
<td>Z</td>
<td>1 - 9</td>
</tr>
</tbody>
</table>

National letters for location indicator: letters TS/TR for TSA/TRA

up to two characters, with last as number; no leading "0" shall be used

letter indicating area sub-part/s;

letter "Z" as last character - in case of FBZ associated to the TSA, TRA area

numerical character for more than one FBZs associated to the TRA/TSA

Table 64: FBZ identification for TSA/TRA with letters "TS/TR"

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
</tr>
</thead>
</table>

National letters for location indicator: letter T for TSA/TRA

up to three characters, with last as number; no leading "0" shall be used

letter indicating area sub-part/s;

letter "Z" as last character - in case of FBZ associated to the TSA, TRA area

numerical character for more than one FBZs associated to the TRA/TSA

Table 65: FBZ identification for TSA/TRA with letter "T"
(3) There is an NM Systems limitation for all the area and FBZ IDs naming convention of a maximum 9 characters. Therefore, all the areas and their associated FBZ(s) shall not exceed the 9 characters limitation for their naming convention in the NM CACD database and, in the same time, following the rules described in the above paragraph. When the area/FBZ ID in the national AIP exceeds the 9 character limitation, there is the State responsibility to reduce the length of the area/FBZ ID down to 9 characters, according to the above rules, in order to be properly uploaded in the NM CACD database. Therefore, all the actors involved (ANSPs, FMPs, AMCs, AOs, CFSPs) have to acknowledge the discrepancy between the AIP publication and the NM airspace database in order to avoid any confusion.

(4) In order to ensure a harmonised approach, the following principles to reduce the area ID to 9 characters:
   - Keep the important information
   - Reduce “TSA/TRA” to “TR/TS” or “T” in order to free-up up to two characters
   - Cut from the area designator the last character given that no other area ID exists in the database

(5) Whenever a cutting rule is applied, its application should consider the need for the NM system to have always FBZs and FUA restrictions ID(s) matching the parent area ID. For example, to reduce the ID of the following EUTSA200AZRA (complex FUA restriction) in EUT200AZRA, according to the cutting rule, will require as well to adapt the ID of the parent TSA in EUT200A.

(6) If, for any reason, a State needs to implement additional FBZs for an area with an already existing FBZ, then the additional FBZ names IDs shall end with “Zn” (where “n” is a number from 1 to 9) leaving the current FBZ ending with the letter “Z” only. For example, the area LSTSA20 has the LSTSA20Z as its attached FBZ. If latter on, the State decides to add two new FBZs, their name ID will be LSTSA20Z1 and LSTSA20Z2. It should be noted that the 9 characters limitation still applies.

(7) Any FBZ, or FBZs, shall always match the area’s ID in order for the NM Systems and the airspace users to understand the link between the parent area and the FBZ(s). There is no FBZ defined without a parent area. The same logic applies to the FUA restriction name ID attached to an area or FBZ and published in the RAD Appendix 7. The link between the area, FBZ and FUA restriction is paramount for the NM systems flight planning process and for the airspace users.

**4.5.4 Flight Planning**

(1) In relation to the FPL processes, the following rules should be considered:
   - When applicable, for each reserved / restricted area, one or more FBZs have been established for flight planning purposes. Flight plans can be filed up to the boundary of the FBZ when active.

---

3 However, the exception to this rule is when the attached FUA restriction (either for an area or an FBZ) is "complex" and it needs to be split in multiple “simple” restrictions in order to be correctly processed by the NM systems and CFSPs. In this case, each simple restriction needs a two-characters instead of one digit (e.g. “SA”, “SB” etc. instead of “S”). Therefore, the area/FBZ ID shall not exceed 8 characters.
• The route described in Item 15, shall consider the nominal track between two points according to the great circle shortest route.
• Reserved/restricted airspace and the FBZ are notified when active by...
  [insert appropriate promulgation means].

(2) These limits are used to check FPL in a free route environment or DCT. For example, with an area activated from FL100 to FL230, all FPL crossing the area between FL100 and FL230 inclusive will be rejected.

(3) Different is the case when a route (CDR or ATS) crossing the area is used for FPL purposes. In this case, the above mentioned principles for the CDR publication are considered, “expanding” the area in order to match with the intermediate FLs. In general terms, the expansion is considered adding 5 or 10 (above FL410) at the upper limit and reducing 5 or 10 (above FL410) at the lower limit.

(4) Using the previous example, in case of activation of an area from FL100 to FL230, a CDR crossing an area will be available from 235 and above and 095 and below, therefore the first IFR FLs available will be FL240 and FL090. The intermediate FLs are relevant for the validation of climbing and descending flight profiles.

(5) In case of intermediate FLs used for the activation of the area (e.g. FL095 and FL235), the expansion is not required. If the allocation of the area is done via CIAM, it is possible to use the expansion function; in this case, the associated routes will be automatically processed according to the intermediate FLs. Acting directly on the opening or closure of CDRs, intermediate FLs should be used, otherwise the system detects an error and blocks the allocation process.

4.5.5 No Planning Zone/s (NPZ) - see Chapter 3
4.6 FUA Process

(1) The FUA process is described in detail in ERNIP Part 3 — ASM Handbook. Hereafter, complementary information is provided for those elements more relevant for airspace users.

4.6.1 Airspace Use Plan/Updated Airspace Use Plan

4.6.1.1 Airspace Use Plan (AUP)

(1) The "Airspace Use Plan" (AUP) is the official medium for the daily notification by an AMC of the national airspace allocation for a reference day. An AMC shall release only ONE AUP per day.

(2) Changes to the AUP published at D-1 could be effected by the AMC through an "Updated Airspace Use Plan" (UUP) [see ERNIP Part 3, Annex 6].

(3) As AUPs are not sent individually to AOs, the information provided by AMCs on the airspace structures use plans in the ECAC area shall be disseminated by the NM/CADF via the NOP portal and via eAMI messages, to operators for awareness as well as for flight planning purposes.

4.6.1.1.1 Description of the AUP

(1) The elements included in the AUP are described below:

- **Header**

<table>
<thead>
<tr>
<th>First Line</th>
<th>Identification of the Type of Message</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>[e.g. Airspace Use Plan or Draft AUP]</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Second Line</th>
<th>Identification of the Sending Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>[e.g. AMC: EDDAZAMC - GERMANY -]</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Third Line</th>
<th>Definition of the Validity Period of the Message</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>[e.g. 06/06/2008 06:00 - 07/06/2008 06:00]</td>
</tr>
</tbody>
</table>

The validity period shall cover the 24 hour time period between 0600 UTC the next day to 0600 UTC the day after.

This time period has to be considered for continuity purposes as a semi-open interval with the first limit included and the last one not.

<table>
<thead>
<tr>
<th>Fourth Line</th>
<th>Date and Time of Transmission of the AUP</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>[e.g. 05/06/2008 13:53]</td>
</tr>
</tbody>
</table>

In addition to the type of message defined in the first line, the AUP is identified by the day and time of its transmission.

**Table 66: AUP Header**
• **Lists ALPHA to FOXTROT**

For each allocated airspace structure listed in the AUP in the following sequence, the different columns will contain:

<table>
<thead>
<tr>
<th>Column</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ALPHA</strong></td>
<td>List of Available CDR2s;</td>
</tr>
<tr>
<td><strong>BRAVO</strong></td>
<td>List of Permanent ATS Routes and CDR1s temporary unavailable for flight planning;</td>
</tr>
<tr>
<td><strong>CHARLIE</strong></td>
<td>List of Active areas, <strong>including NPZ, defined in NM system as AMC Manageable Area (AMA)</strong>; List of active temporary AMC-manageable areas established via NOTAM/AIP Supplement/AIC, list of active FBZ areas linked to AMAs;</td>
</tr>
<tr>
<td><strong>DELTA</strong></td>
<td>List of areas, <strong>including NPZs, defined in NM system as Non AMC-manageable areas (NAM)</strong>; List of active temporary Non AMC Manageable areas established via NOTAM/AIP Supplement/AIC, list of active FBZ areas linked to NAMs;</td>
</tr>
<tr>
<td><strong>ECHO</strong></td>
<td>List of SIDs and STARs temporary unavailable for flight planning due to areas activations as appropriate;</td>
</tr>
<tr>
<td><strong>FOXTROT</strong></td>
<td>Additional Information</td>
</tr>
</tbody>
</table>

**First Column** **Number**
[e.g. 1]

Each airspace structure shall be listed with a sequence number and shall contain only one "Validity Period" and one "Flight Level Block" per number element. For each list ALPHA to ECHO, the sequence number shall start with [1] for the first item of the list in alphanumeric order. Upper and lower ATS routes having the same generic name shall be placed one above the other.

In order to meet requirements of various readers of the AUP, the different lists ALPHA to ECHO can be divided by FIR/UIR, but in keeping their unique sequence number of the alphanumeric order to allow their identification in the UUP in case of cancellation or reallocation.

**Second Column** **Designator**
[e.g. UR 80 PERDU TBO or LF-D 31 CAZAUX or UF REIMS]

Each airspace structure shall be identified as follows:

For Lists ALPHA and BRAVO, with the AIP ENR designator followed, if needed, by the name of the airspace or portion thereof concerned; With the ID of the temporary areas published by States via NOTAM/AIP Supplement/AIC. _Designator of any FBZ or NPZ._

For Lists CHARLIE and DELTA, with the AIP AD 2 airport designator + the designator used for SID/STAR.

For List ECHO, with the AIP AD 2 airport designator + the designator used for SID/STAR.

**Third Column** **Flight Level Block**
[e.g. F110 - F240 or F250 - UNL or GND or SFC - 900M AGL]

Each airspace structure shall be described vertically as follows:

For List ALPHA, with the upper and lower limits of the ATS route or portion thereof available inclusive of the IFR flight levels given;
For List BRAVO, with the upper and lower limits of the ATS route and CDR1 or portion thereof closed inclusive of the IFR flight levels given;

For Lists CHARLIE and DELTA, with the upper and lower limits of the affected airspace expressed either in flight levels, altitudes or heights inclusive of the figures given.

For list ECHO, due to the different levels used in the descriptions of SID/STAR, "Not Applicable (N/A)" should be used.

Note: due to the technology used by NM system, the EAUP published on the NOP portal will use intermediate FL.

<table>
<thead>
<tr>
<th>Fourth Column</th>
<th>Validity Period</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>[e.g. 12:05 - 06:00]</td>
</tr>
<tr>
<td></td>
<td>For each allocated airspace structure listed in ALPHA to ECHO, the &quot;Validity Period&quot; shall not exceed the 24 hours period of the AUP. The AUP shall repeat daily all data affecting more than one day. The &quot;Validity Period&quot; expressed with date/time groups indicating the start and the end of the period means variously:</td>
</tr>
<tr>
<td>For List ALPHA,</td>
<td>the &quot;Period of availability for flight planning&quot;;</td>
</tr>
<tr>
<td>For List BRAVO,</td>
<td>the &quot;Period of unavailability for flight planning&quot;;</td>
</tr>
<tr>
<td>For List CHARLIE,</td>
<td>the &quot;Period of Use&quot;;</td>
</tr>
<tr>
<td>For List DELTA,</td>
<td>the &quot;Period of Use&quot;;</td>
</tr>
<tr>
<td>For List ECHO</td>
<td>the &quot;Period of unavailability for flight planning&quot;.</td>
</tr>
<tr>
<td></td>
<td>This time period has to be considered for continuity purposes as a semi-open interval with the first limit included and the last one not. Date will be referred to the day only and time will be expressed in hours and minutes.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fifth Column</th>
<th>FUA/EU Restriction</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>This column will allow the AMC to indicate when an NM restriction is required according to the follow:</td>
</tr>
<tr>
<td>For List CHARLIE and DELTA,</td>
<td>FUA Restriction is required for a permanent area; EU restriction is required for a temporary area;</td>
</tr>
<tr>
<td></td>
<td>FUA/EU Restriction should be available in the CACD. Coordination with national responsible Authority is required for their definition.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sixth / Seventh Columns</th>
<th>Responsible Unit and/or Remarks Field</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>[e.g. For continuation see AUP Germany EDFF FIR or ETNT BOMBING 3/F4]</td>
</tr>
<tr>
<td>For each allocated airspace structure listed in ALPHA to ECHO, the &quot;Remarks Field&quot; may be used to input any specific comments.</td>
<td></td>
</tr>
<tr>
<td>For List ALPHA,</td>
<td>when continuation of the ATS route has been coordinated with (a) neighbouring State(s) in (an) adjacent FIR/UIR(s), [the following information shall be given &quot;For continuation see AUP + country name + FIR/UIR designator&quot;] or</td>
</tr>
</tbody>
</table>
the information on the consolidated CDR2 portion commonly accessible shall be given only once in the AUP of the designated Lead AMC;

For List BRAVO, when the ATS route closure information needs to be repeated in the EAUP for safety repetition, the word "NOTAM" shall be included without any reference;

For Lists CHARLIE and DELTA, the unit responsible may be indicated for the concerned airspace during the time specified by the Validity Period; then the remarks field may be divided into two parts separated by a tab to indicate additional information, such as FUA/EU restrictions ID codes, the type of activity and the number and type of aircraft concerned.

<table>
<thead>
<tr>
<th>Table 67: List ALPHA to FOXTROT</th>
</tr>
</thead>
<tbody>
<tr>
<td>• <strong>Additional Information</strong></td>
</tr>
<tr>
<td>Finally, any additional information may be added in plain language at the end of the message (LIST FOXTROT).</td>
</tr>
</tbody>
</table>

**4.6.1.2 Updated Airspace Use Plan (UUP)**

(1) After the AMC has completed the allocation process and published accordingly the, modifications to the airspace allocation might be necessary in order to take advantage of the cancellation of any previously reserved airspace structure or to provide information of new allocation of areas. Changes to the airspace allocation will be promulgated by the AMC through an "Updated Airspace Use Plan" (UUP).

(2) The CDRs new availability or closure described in UUPs, will be published via the EUUP on the NOP portal and the CACD database will be updated accordingly.

(3) UUPs shall consist of alterations to the current AUP. In particular, UUPs will contain details of:

- The cancellation of areas allocated in the current AUP;
- The cancellation/relaxation of FUA/EU restrictions;
- The new allocation of **RSAs**;
- The new/more constraining activation of FUA/EU restrictions;
- New CDRs 2 made available as a result of areas cancellation and/or FUA/AU restrictions;
- New CDRs unavailable due to new allocation of areas and/or new/more constraining activation of FUA/EU restrictions;
- Modifications made to CDRs already listed in the current AUP;
- Alterations to, or cancellations of, unavailable ATS routes or CDRs1, **RSAs** and FUA/EU restrictions listed in the current AUP.

**4.6.1.2.1 General case with additional route or airspace availability**

(1) Except for the UUPs mentioned in the next paragraph, the following restrictions apply to the content of an UUP:
a) **Allowed**

- Cancellation of RSA allocation;
- Reduction (in time and/or FL) of RSA allocation;
- Additional CDR2 availability;
- Extension (in time and/or FL) of CDR2 availability;
- Cancellation of CDR1/ATS route closures; in this case a NOTAM cancellation is required (only if the closure has been announced by NOTAM or other AIP SUP), and the route closure must be deleted from CACD;
- Reduction (in time and/or FL) of CDR1/ATS route closures; in this case a new NOTAM publication is required (only if the closure has been announced by NOTAM or other AIP SUP), and the route closure must be updated in CACD.

b) **Not Allowed**

- Additional RSA allocation;
- Extension (in time and/or FL) of RSA allocation;
- Cancellation of CDR2 availability published in previous AUP/UUP;
- Reduction (in time and/or FL) of CDR2 availability published in previous AUP/UUP;
- Additional CDR1/ATS route closures;
- Extension (in time and/or FL) of CDR1/ATS route closures;

There is one additional exception to the above limitations: in case the UUP concerns the correction of erroneous data published by mistake in the AUP, and this corrected data is available in due time for publication as part of one of the UUP06.

In such a case, the CADF may decide to publish an AIM to attract the attention of airspace users on the potential impact of the concerned UUP.

4.6.1.2.2 Specific UUPs with additional route or airspace closures

(1) After the AUP publication, additional CDR/ATS route closures and/or activations of RSAs (known as ‘procedure 3’) are allowed in the following UUPs, with a minimum of 3 hours lead time at D-1:

- UUP06/17 (winter) = UUP06/16 (summer)
- UUP06/18 (winter) = UUP06/17 (summer)
- UUP06/19 (winter) = UUP06/18 (summer)
- UUP06/20 (winter) = UUP06/19 (summer)

(2) On the Day of Operation (D), the need for additional airspace reservations and/or new/more constraining FUA/EU restrictions can be promulgated using the first convenient UUP from 07.00 UTC (06.00 UTC Summer) every 30 minutes up to 20.00 UTC (19.00 UTC Summer) at 08.00 UTC (07.00 UTC Summer) or at 12.00 UTC (11.00 UTC Summer). For the choice of the convenient UUP, it should be considered the required lead time of Three Hours (3H) before its validity. In case of the request does not respect the three hours (3H) lead time, NM should inform AMC that the reject the request to promulgate the draft UUP is rejected, unless specific contingency situation requires an exception (e.g. correction of previous erroneous publication).

(3) Consequently, the content of these UUPs with validity later than 3 hours after the planned publication time is not concerned by the restrictions listed in the
paragraph above. In other words, additional activations of RSAs or closures of CDRs/ATS routes can be part of these UUPs if they comply with the 3-hour lead time.

4.6.1.2.3 Preparation, Publication and Distribution of the UUP

1. The UUP shall be prepared by the AMC in the same common format as the AUP and distributed to the NM.

2. The UUPs information will be used by NM/CADF to produce eAMI messages as well as available on the NOP portal.

4.6.1.2.4 Description of the UUP

1. The UUP shall contain lists in the same sequence as for the AUP and for easy reference, the number element of each amended route/airspace in the UUP shall be the same number as the item in the corresponding AUP it is amending.

2. The elements included in the UUP are described below:
   - **Header**

<table>
<thead>
<tr>
<th>First Line</th>
<th>Identification of the Type of Message</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>[e.g. Updated Airspace Use Plan]</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Second Line</th>
<th>Identification of the Sending Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>[e.g. AMC: EDDAZAMC - GERMANY]</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Third Line</th>
<th>Definition of the Validity Period of the UUP</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>[e.g. 08/06/2008 12:00 - 09/06/2008 06:00]</td>
</tr>
</tbody>
</table>

   The validity period of an UUP shall not exceed the validity period of the AUP it is amending and shall end at the same time.

   As for the AUP, this validity period has to be considered for continuity purposes as a semi-open interval with the first limit included and the last one not.

<table>
<thead>
<tr>
<th>Fourth Line</th>
<th>Date and Time of Transmission of the UUP</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>[e.g. 08/06/2008 08:53]</td>
</tr>
</tbody>
</table>

   **Table 68: UUP Header**
In addition to the type of message defined in the first line, it is important to identify the day and time of transmission of the UUP to ensure that the one being used is the latest.

- Lists ALPHA to FOXTROT

The UUP shall contain lists in the same following sequence as for the AUP:

<table>
<thead>
<tr>
<th>Lists</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALPHA</td>
<td>Amended List of CDR2s Availability;</td>
</tr>
<tr>
<td>BRAVO</td>
<td>Amended List of Temporary Unavailable Permanent ATS routes and CDRTs;</td>
</tr>
<tr>
<td>CHARLIE</td>
<td>Amended List of Active TRAs/TSA and AMC-manageable R and D areas (AMA’s); Active temporary AMC-manageable areas established via NOTAM/AIP Supplement/AIC, Active FBZ areas linked to AMAs; <em>active NPZs classified as AMA</em></td>
</tr>
<tr>
<td>DELTA</td>
<td>Amended List of Active Non AMC-Manageable areas. (NAM’s); Active temporary Non AMC-manageable areas established via NOTAM/AIP Supplement/AIC, Active FBZ areas linked to NAMs; <em>active NPZs classified as NAM</em></td>
</tr>
<tr>
<td>ECHO</td>
<td>Amended List of Unavailable SIDs and STARs, as appropriate.</td>
</tr>
<tr>
<td>FOXTROT</td>
<td>Additional information.</td>
</tr>
</tbody>
</table>

Table 69: List ALPHA to FOXTROT

For each amended airspace structure listed in the UUP, the different columns will contain:

<table>
<thead>
<tr>
<th>First Column</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>[e.g. 3]</td>
<td></td>
</tr>
</tbody>
</table>

For ease of reference, the number element of each amended route/airspace in the UUP shall be the same number as the item in the corresponding AUP it is amending. For the new airspace structures made available, a sequence number following the last number element of the corresponding list in the AUP shall be used so as to avoid any confusion.

Where two or more airspace structures in the AUP are being replaced by one in the UUP, the second and following airspace structures must also appear in the UUP, but with only the word "deleted" in the Remarks field.

In order to meet requirements of various readers of the UUP, the different lists ALPHA to ECHO can be divided by FIR/UIR, but in keeping their unique sequence number of the alphanumeric order in the original AUP.

<table>
<thead>
<tr>
<th>Second Column</th>
<th>Designator</th>
</tr>
</thead>
<tbody>
<tr>
<td>[e.g. UR 80 PERDU TBO or LF-TSA 42 or UF REIMS]</td>
<td></td>
</tr>
</tbody>
</table>

Each amended airspace structure shall be identified as follows:

- For Lists ALPHA and BRAVO, the AIP ENR 3-2 route designator followed by the two ICAO identifiers of the first and last points of the portion of the ATS route concerned.
- For Lists CHARLIE and DELTA, with the AIP ENR 5 designator followed, if needed, by the name of the airspace or portion thereof concerned; With the ID of the temporary areas published by States via NOTAM/AIP Supplement/AIC; Designator of any FBZ or NPZ.
<table>
<thead>
<tr>
<th>Third Column</th>
<th>Flight Level Block</th>
</tr>
</thead>
<tbody>
<tr>
<td>[e.g. F110 - F240 or F250 - UNL or GND or SFC - 900M AGL]</td>
<td></td>
</tr>
<tr>
<td>Each amended airspace structure shall be described vertically as follows:</td>
<td></td>
</tr>
<tr>
<td>For List ALPHA,</td>
<td>with the upper and lower limits of the ATS route or portion thereof available inclusive of the IFR flight levels given;</td>
</tr>
<tr>
<td>For List BRAVO,</td>
<td>with the upper and lower limits of the ATS route or portion thereof closed inclusive of the IFR flight levels given;</td>
</tr>
<tr>
<td>For Lists CHARLIE and DELTA,</td>
<td>with the upper and lower limits of the affected airspace expressed either in flight levels, altitudes or heights;</td>
</tr>
<tr>
<td>For List ECHO,</td>
<td>Due to the different altitudes/FLs used in the descriptions of SID/STAR, &quot;Not Applicable (N/A)&quot; should be used.</td>
</tr>
</tbody>
</table>

*Note: Due to the technology used by NM system, the EAUP publish on the NOP portal will use intermediate FL.*

<table>
<thead>
<tr>
<th>Fourth Column</th>
<th>Validity Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>[e.g. 12:05 - 06:00]</td>
<td></td>
</tr>
<tr>
<td>For each amended airspace structure listed in ALPHA to ECHO, the &quot;Validity Period&quot; shall not exceed the validity period of the UUP. The &quot;Validity Period&quot; expressed with date/time groups indicating the start and the end of the period means variously:</td>
<td></td>
</tr>
<tr>
<td>For List ALPHA,</td>
<td>the &quot;Period of availability for flight planning&quot;;</td>
</tr>
<tr>
<td>For List BRAVO,</td>
<td>the &quot;Period of unavailability for flight planning&quot;;</td>
</tr>
<tr>
<td>For List CHARLIE,</td>
<td>the &quot;Period of Use&quot;;</td>
</tr>
<tr>
<td>For List DELTA,</td>
<td>the &quot;Period of Use&quot;;</td>
</tr>
<tr>
<td>For List ECHO,</td>
<td>the &quot;Period of unavailability for flight planning&quot;;</td>
</tr>
<tr>
<td>For List FOXTROT,</td>
<td>Additional Information.</td>
</tr>
</tbody>
</table>

This time period has to be considered for continuity purposes as a semi-opened interval with the first limit included and the last one not. Date will be referred to the day only and time will be expressed in hours and minutes.

<table>
<thead>
<tr>
<th>Fifth Column</th>
<th>FUA/EU Restriction</th>
</tr>
</thead>
<tbody>
<tr>
<td>This column will allow the AMC to indicate when an NM restriction is required according to the following:</td>
<td></td>
</tr>
<tr>
<td>For List CHARLIE and DELTA,</td>
<td>When a FUA Restriction is required for a permanent area; when a EU Restriction is required for a temporary area;</td>
</tr>
</tbody>
</table>

FUA/EU Restriction should be available in the CACD. Coordination with national responsible Authority is required for their definition.

<table>
<thead>
<tr>
<th>Sixth / Seventh Columns</th>
<th>Responsible Unit and/or Remarks Field</th>
</tr>
</thead>
<tbody>
<tr>
<td>[e.g. Deleted or ETNT    BOMBING 3 /F4]</td>
<td></td>
</tr>
</tbody>
</table>
For each amended airspace structure listed in ALPHA to ECHO, the Remarks field may be used to input any specific comments.

For Lists ALPHA and BRAVO, when continuation of the ATS route has been coordinated with (a) neighbouring State(s) in (an) adjacent FIR/UIR(s),

[the following information shall be given “For continuation see AUP + country name + FIR designator”] or

[the information on the consolidated CDR2 portion commonly accessible shall be given only once in the AUP of the designated Lead AMC];

For Lists CHARLIE and DELTA the unit responsible may be indicated for the concerned airspace during the time specified by the Validity Period; then the remarks field may be divided into two parts separated by a tab to indicate additional information, such as FUA/EU restrictions ID codes, the type of activity and the number and type of aircraft concerned.

Table 70: UUP Airspace Structure

- **Additional Information**
  Finally, any additional information may be added in plain language at the end of the message (List FOXTROT)

4.6.2 Preparation, Publication and Distribution of the AUP/UUP

1. The AUP shall be prepared by the AMC and distributed to the NM via CIAM or via authorised ASM tools using B2B service.

2. During the pre-AUP coordination procedure, draft AUPs will be used and identified as “Draft AUP”. Draft AUPs will be available to each AMC. At any time, there will be only ONE stored AUP per day and per AMC in “Airspace Use Plan” or “Draft” form identified in the first line of the header as “Draft AUP” or “Airspace Use Plan” respectively. The D-1 “Airspace Use Plan” content will be decided by the AMC itself at D-1 1400 UTC at the very latest or if none, automatically by the NM system, unless the AMC informed the NM of a late release of the AUP.

3. The NM collects and consolidates the D-1 AUP, publishes the EAUP on the NOP portal and produces eAMI messages for the B2B service.

4. Each AMC must produce a READY AUP for each day, even when no openings or closures have to be done. In the latter case, a NIL AUP shall be made. This implies that for an AMC not manned during weekend or bank holidays or longer holiday periods, the READY AUPs for those days shall be made at least on the last day before the AMC closes down its operations for the period.

5. The DRAFT AUPs available from D-6 to D-2 are published on the NOP Portal\(^4\). Due to the fact that they are not mandatory, no EAUP is expected.

---

\(^4\) Technical capability is not yet available.
4.6.2.2  **Timing**

(1)  Technically, CIAM allows the publication of a UUP for a validity starting at any time between 06:00 UTC and 06:00 UTC the next day. The ‘Next UUP time’ is set by CADF.

(2)  The UUPs shall be prepared by means of the CIAM software set up in NM terminals.

It is planned to have up to 31 UUPs (4 on D-1 + 27 on D) at fixed times as follows:
Table 71: Example of ATS / ASM / ATFM pre-tactical WINTER timetable

<table>
<thead>
<tr>
<th>AUP/UUP</th>
<th>Draft</th>
<th>Ready before</th>
<th>Released before</th>
<th>Valid from</th>
<th>Valid until</th>
</tr>
</thead>
<tbody>
<tr>
<td>AUP</td>
<td>Before D-1 13:00</td>
<td>D-1 15:00</td>
<td>D-1 16:00</td>
<td>D 06:00</td>
<td>D+1 06:00</td>
</tr>
<tr>
<td>UUP06/17</td>
<td>After D-1 16:00</td>
<td>D-1 16:50</td>
<td>D-1 17:00</td>
<td>D 06:00</td>
<td>D+1 06:00</td>
</tr>
<tr>
<td>UUP06/18</td>
<td>After D-1 17:00</td>
<td>D-1 17:50</td>
<td>D-1 18:00</td>
<td>D 06:00</td>
<td>D+1 06:00</td>
</tr>
<tr>
<td>UUP06/19</td>
<td>After D-1 18:00</td>
<td>D-1 18:50</td>
<td>D-1 19:00</td>
<td>D 06:00</td>
<td>D+1 06:00</td>
</tr>
<tr>
<td>UUP06/20</td>
<td>After D-1 19:00</td>
<td>D-1 19:50</td>
<td>D-1 20:00</td>
<td>D 06:00</td>
<td>D+1 06:00</td>
</tr>
<tr>
<td>UUP07</td>
<td>After D-1 20:00</td>
<td>D 06:50</td>
<td>D 07:00</td>
<td>D 07:00</td>
<td>D+1 06:00</td>
</tr>
<tr>
<td>UUP07:30</td>
<td>After D 07:00</td>
<td>D 07:20</td>
<td>D 07:30</td>
<td>D 07:30</td>
<td>D+1 06:00</td>
</tr>
<tr>
<td>UUP08</td>
<td>After D 07:30</td>
<td>D 07:50</td>
<td>D 08:00</td>
<td>D 08:00</td>
<td>D+1 06:00</td>
</tr>
<tr>
<td>UUP08:30</td>
<td>After D 08:00</td>
<td>D 08:20</td>
<td>D 08:30</td>
<td>D 08:30</td>
<td>D+1 06:00</td>
</tr>
<tr>
<td>UUPPh</td>
<td>After D hh -30'</td>
<td>D hh - 10'</td>
<td>D hh:00</td>
<td>D hh:00</td>
<td>D+1 06:00</td>
</tr>
<tr>
<td>UUPPh:30</td>
<td>After D hh</td>
<td>D hh + 20'</td>
<td>D hh:30</td>
<td>D hh:30</td>
<td>D+1 06:00</td>
</tr>
<tr>
<td>UUP20</td>
<td>After D 19:30</td>
<td>D 19:50</td>
<td>D 20:00</td>
<td>D 20:00</td>
<td>D+1 06:00</td>
</tr>
</tbody>
</table>

Table 72: Example of ATS / ASM / ATFM pre-tactical SUMMER timetable

<table>
<thead>
<tr>
<th>AUP/UUP</th>
<th>Draft</th>
<th>Ready before</th>
<th>Released before</th>
<th>Valid from</th>
<th>Valid until</th>
</tr>
</thead>
<tbody>
<tr>
<td>AUP</td>
<td>Before D-1 12:00</td>
<td>D-1 14:00</td>
<td>D-1 15:00</td>
<td>D 06:00</td>
<td>D+1 06:00</td>
</tr>
<tr>
<td>UUP06/16</td>
<td>After D-1 15:00</td>
<td>D-1 15:50</td>
<td>D-1 16:00</td>
<td>D 06:00</td>
<td>D+1 06:00</td>
</tr>
<tr>
<td>UUP06/17</td>
<td>After D-1 16:00</td>
<td>D-1 16:50</td>
<td>D-1 17:00</td>
<td>D 06:00</td>
<td>D+1 06:00</td>
</tr>
<tr>
<td>UUP06/18</td>
<td>After D-1 17:00</td>
<td>D-1 17:50</td>
<td>D-1 18:00</td>
<td>D 06:00</td>
<td>D+1 06:00</td>
</tr>
<tr>
<td>UUP06/19</td>
<td>After D-1 18:00</td>
<td>D-1 18:50</td>
<td>D-1 19:00</td>
<td>D 06:00</td>
<td>D+1 06:00</td>
</tr>
<tr>
<td>UUP06</td>
<td>After D-1 19:00</td>
<td>D 05:50</td>
<td>D 06:00</td>
<td>D 06:00</td>
<td>D+1 06:00</td>
</tr>
<tr>
<td>UUP06/30</td>
<td>After D 06:00</td>
<td>D 06:20</td>
<td>D 06:30</td>
<td>D 06:30</td>
<td>D+1 06:00</td>
</tr>
<tr>
<td>UUP07</td>
<td>After D 06:30</td>
<td>D 06:50</td>
<td>D 07:00</td>
<td>D 07:00</td>
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</tr>
<tr>
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<td>After D 07:00</td>
<td>D 07:20</td>
<td>D 07:30</td>
<td>D 07:30</td>
<td>D+1 06:00</td>
</tr>
<tr>
<td>UUPPh</td>
<td>After D hh -30'</td>
<td>D hh - 10'</td>
<td>D hh:00</td>
<td>D hh:00</td>
<td>D+1 06:00</td>
</tr>
<tr>
<td>UUPPh:30</td>
<td>After D hh</td>
<td>D hh + 20'</td>
<td>D hh:30</td>
<td>D hh:30</td>
<td>D+1 06:00</td>
</tr>
<tr>
<td>UUP19</td>
<td>After D 18:30</td>
<td>D 18:50</td>
<td>D 19:00</td>
<td>D 19:00</td>
<td>D+1 06:00</td>
</tr>
</tbody>
</table>

(3) After each publication of the EAUP or EUUP, the start time of the next UUP has to be set manually in CIAM by the CADF. It should be noted that this ‘next UUP’ target time applies simultaneously to all users.

(4) For this reason, an AMC shall only start the creation of a draft UUP for a given start time after the publication of the previous EUUP, if any. This is reflected in the second column of the above tables. Example: Draft UUP08 (valid from 08:00 UTC) shall not be created before 07:00 UTC, the publication time of the previous EUUP, if any.

(5) AMCs are only able to create a UUP that will be valid as from the ‘next UUP time’ set by the CADF. If the CADF has not set a ‘next UUP time’, the AMCs are not able to create any UUP and will get an error message.

(6) The CADF will not systematically set the ‘Next UUP time’ for all possible UUP times. Therefore when intending to create an UUP, an AMC should first check the next UUP time in CIAM. If no ‘next UUP time’ is set, the AMC should contact the CADF and ask them to set the next UUP time as required, according to the tables above.

(7) Coordination procedures must exist or be established between neighbouring AMCs (lead AMC concept, Cross Border Area concept).

(8) CIAM accepts consecutive UUPs with the same start time.
The draft AUP will also be used to support coordination with the NM as required.

Once the coordination between neighbouring AMCs as well as the NM is finalised, the AMC will promote the AUP before 15:00 UTC (14:00 UTC summer) from DRAFT to READY.

### 4.6.2.3 AUP/UUP warnings

The aim of these warnings is to ensure correct information is propagated for the final publication of EAUP/EUUP

#### a) No NOTAM closure

- There is no NOTAM closure corresponding to the AUP/UUP closure (Route ID: Route portion);
- This warning indicates that NO NOTAM closure was manually input in CACD. NOTAM could have been overlooked by CADF staff or no NOTAM was published. The CDR1/ATS route closure will be applied to the NM systems according to the AUP/UUP data;
- Actions:
  - CACD: No action;
  - AMC: Depending on internal ANSP/State agreement, NOTAM publication or no NOTAM publication, the AMC is to coordinate with responsible services for the publication of a NOTAM. The AMC is to decide the way of closing routes they prefer: NOTAM or AUP closures or combination of both.

#### b) AUP/UUP closure

- (Route ID: Route portion) is only partially covered by NOTAM closure(s);
- This warning indicates that a NOTAM was implemented by CADF staff, but the closing time via AUP/UUP of the mentioned route(s) in the NOTAM is longer then published on the NOTAM. The CDR1/ATS route closure will be applied to the NM systems according to the AUP/UUP data;
- Actions:
  - CACD: No action;
  - AMC: Depending on internal ANSP/State agreement, NOTAM update publication, the AMC is to coordinate with responsible services for the publication of a NOTAM or UUP to adapt according NOTAM publication.

<table>
<thead>
<tr>
<th>AUP/UUP</th>
<th>NOTAM</th>
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<tbody>
<tr>
<td>01:00</td>
<td>01:00</td>
</tr>
<tr>
<td>19:00</td>
<td>18:00</td>
</tr>
</tbody>
</table>

#### c) NOTAM closure

- (Route ID: Route portion)*is only partially covered by AUP/UUP closure(s);
- This warning indicates that a NOTAM was implemented by CADF staff, but the closing time via AUP/UUP of the mentioned routes in the NOTAM is shorter then published on the NOTAM. The CDR1/ATS route closure will be applied to the NM systems according to the AUP/UUP data;
• Actions:
  o CACD: No action;
  o AMC: Depending on internal ANSP/State agreement, NOTAM update publication, the AMC is to coordinate with responsible services for the publication of a NOTAM or UUP to adapt according NOTAM publication.

<table>
<thead>
<tr>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>AUP/UUP</td>
<td>NOTAM</td>
</tr>
<tr>
<td>01:00  17:00</td>
<td>01:00  18:00</td>
</tr>
</tbody>
</table>

d) **Warnings II and III**

• A combination of these warnings will indicate a warning as well;
• A NOTAM was implemented by CADF staff. The CDR1/ATS route closure will be applied to the NM systems according to the AUP/UUP data.
• Actions:
  o CACD: No action;
  o AMC: Depending on internal ANSP/State agreement, NOTAM update publication, the AMC is to coordinate with responsible services for the publication of a NOTAM or UUP to adapt according NOTAM publication.

<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>AUP/UUP</td>
<td>NOTAM</td>
</tr>
<tr>
<td>04:00  19:00</td>
<td>01:00  18:00</td>
</tr>
</tbody>
</table>

e) **CDR2 (Route ID)**

• Route portion open by AUP or a previous UUP is being re-closed for at least part of the FL range and applicability period;
• Actions:
  o CACD: No action;
  o AMC: Depending on internal ANSP/State agreement, NOTAM publication, the AMC is to coordinate with responsible services for the publication of a NOTAM.

f) **Other**

• RSA allocation (RSA ID) is less than 3 hours after planned UUP publication;
• CDR1/ATS route closure (Route ID: Route portion) is less than 3 hours after planned UUP publication;
• CDR2 re-closure (Route ID: Route portion) is less than 3 hours after planned UUP publication;
• Warning: the above 3 messages indicate that the agreed 3 hour lead time for the procedure 3 application is not respected in an UUP;
• Actions:
  o CACD: Report to Airspace Data Domain;
  o AMC: Report to CADF staff reason (typing error, safety issue, etc.).
Remark: CADF staff still monitors CDR1/ATS route closures and implement the route closures manually in the CACD, based on the published NOTAMs and before AUP/UUP validation in CIAM.

(2) The AUP/UUP procedure should be used for those areas classified as manageable; otherwise NOTAM publication should be followed. The publication of a NOTAM and usage of UUP is always required for the procedure 3 process.

4.6.3 Early Access to Weekend (EAWS)

(1) Each ECAC State wishing to participate in the international agreement set-up to facilitate the EAWS process across Europe notifies its decision to NM by a request at existing working arrangements in place.

(2) The decision may be supported by a written request and, if deemed necessary by the state, an appropriate AIS publication (e.g. AIP Supplement). This notification will clarify the selected Busy Friday during the summer season and CDRs, if not all, for which early access from 10:00 UTC is granted. The notification could also include additional busy days and related CDRs, if not all, for which early access from 10:00 UTC is granted.

(3) Consolidated information of Busy Fridays and selected CDRs, if not all, will be provided on the NOP Portal (Strategic web page) at least one AIRAC cycle before summer season. Daily Information on airspace and/or CDR status is notified via AUP/UUP, and it will cover the extended availability agreed within the frame of the EAWS arrangements.

(4) For FRA areas the FPL process will consider the ASM Manageable Areas (AMA) which are concerned by Early Access arrangements. For other AMA not covered by these arrangements the planned routes will take into account the avoidance procedures in place.

4.6.4 Extended and Public Holiday

(1) When military operations are foreseen to be significantly reduced e.g. during a long holiday period, States should publish relevant airspace and route availability information via AUP/UUP.

(2) In addition to that, or in case AUP/UUP is not used, states, at their discretion, may publish relevant information in their AIP or through appropriate AIS publications (e.g. NOTAM below). In case of NOTAM, a pre-notification period of 7 days is required.

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**Figure 34: Example of NOTAM**
4.7 Notification Process

(1) This chapter focuses on those elements of the FUA process aiming to disseminate airspace structures information to airspace users.

4.7.1 European AUP/European UUP

(1) The Network Manager collects the national AUP/UUPs and produces the European Airspace Use Plan (EAUP) and European Updated Airspace Use Plan (EUUP). The EAUP/EUUPs are the common harmonised format to share on network level the planned and consolidated information with regard to airspace allocation. The EAUP/EUUP are daily published on the NOP Portal and used via B2B service to provide information to Aircraft Operators (AOs) for flight planning purposes.

(2) The content of the EAUP/EUUP is divided in three tabs:

- ATS Route and CDT Type 1 Closure
- CDR Type 2 Availability
- RSA Allocation

![Figure 35: Example of EAUP](https://www.eurocontrol.int/PUBLIC/PORTAL/2017/05/06/21.5.0.4.23/ps努力-detacht/View-jsp/!portal_content.jsp)
(3) “ATS Route and CDR Type 1 Closure” tab contains the route ID and the closed segments for the respective ATS Route and CDR1 for a given flight level band and period. AOs would not be able to flight plan along those routes indicated in this tab.

(4) “CDR Type 2 Availability” tab contains the route ID and segment of the CDR2 made available for flight planning for a given flight level band and period.

(5) “RSA Allocation” tab contains the ID of the RSA that have been allocated for a given flight level band and period. There is a column “CAT” which indicates if the RSA is AMC Manageable (AMA) or Non-AMC Manageable (NAM). For those RSAs that have a FUA/EU/EURO restriction activated, those are also published in a dedicated column “FUA/EU RS”.

4.7.2 EAUP/EUUP Publication

(1) The CDRs unavailability and/or new/more constraining areas activations, FBZs and/or FUA/EU restrictions information relevant for flight planning should be disseminated by NM through:
   - the NOP portal; and
   - eAMI.

(2) Dissemination of information via eAMI should be done through the posting of CDR availability or airspace status and/or new/more constraining FBZs and/or FUA/EU restrictions updates onto FTP server in the same way as is being done by NM for e-RAD promulgation. Such a process would allow AO stakeholders using B2B service to upload the updates.

(3) The EAUPs/EUUPs update automatically the CACD database, therefore its information are used by IFPS for FPL validation purposes. AUPs/UUPs are not planned to replace, unless a State decision, AIS notifications (e.g. AIP supplements, NOTAMs) that remains a national responsibility according to ICAO provisions. Nevertheless, focusing on the FPL process, States should provide coherent information to the airspace users whenever both notification means are used. In this respect, airspace users should consider AUP/UUP information as the reference source for filing FPLs.

(4) EAUP/EUUP should be considered the main source, for FPL purposes, to notify airspace users about the status of airspace structures managed via AUP/UUP as described in ERNIP Part 3, Annex 5 and 6. The EAUPs/EUUPs update automatically the CACD database, therefore its information is used by IFPS for FPL validation purposes. EAUPs/EUUPs are not planned to replace, unless a State decision, AIS notifications (e.g. AIP supplements, NOTAMs) that remains a national responsibility. Nevertheless, focusing on the FPL process, States should provide coherent information to the airspace users whenever both notification means are used. In this respect, airspace users should consider EAUP/EUUP information as the reference source for filing FPLs. States should ensure that AIS notification constantly reflects the EAUP/EUUP information. In case of the information is published before via AIS notification, the most appropriate EAUP/EUUP should be used accordingly in order to ensure consistency in the NM CACD database for FPL purposes. With specific regards to the notification of reserved/restricted areas activation, EAUPs/EUUPs provide information on associated restrictions (FUA/EU restrictions) relevant for FPL purposes.
4.7.3 ASM Booklet – Conditional Routes (CDRs) Catalogue

(1) The ASM Booklet contains information on conditional routes as collected from national AIPs and it is updated every AIRAC cycle. The ASM Booklet is for information purposes only.

(2) This booklet provides some more information that cannot be displayed on the ERC/ERN charts such as time and level restrictions for Conditional Routes (CDRs). It also contains a list of national holidays relevant for the CDR classification per State.

(3) The ASM Booklet is published on the external EUROCONTROL website prior to each AIRAC cycle. Upon request the data contained in the ASM Booklet can be made available in .xls format.

4.8 Contingency

4.8.1 Contingency procedure

Note: For the complete CADF contingency procedure refer to the FUA AMC CADF Operations Manual.

B.1. Action by CADF

B.1.1 AMC OPS are out for less than one (1) day or Network Operations Systems out less than two (2) hours

When the unavailability of the CACD and CIAM or any ASM tool authorised to provide AUP via B2B does not impact the AIRAC CACD Database preparation (static data) but only the dynamic updates of CACD and EAUP preparation/distribution, the following contingency procedures will be applied (these procedures refer only to the publication of AUP at D-1 and no UUP Publication is expected during the application of contingency procedures):

a) CADF will send an AIM or inform stakeholders by any means of communication available to create awareness on the contingency situation.

b) If return to normal operations occurs before 1400 UTC (1300 UTC Summer) there will only be minor impact on EAUP publication. A small delay may be expected for EAUP publication. AMCs will prepare/validate AUP.

c) If return to normal operations occurs after 1400 UTC (1300 UTC Summer) and not later than 1900 UTC, there will only be minor impact on EAUP publication. A delay will be expected for EAUP publication. AMCs will prepare/validate AUP.

In cases where the AMC will not remain open between 1400 UTC and 1900 UTC, the AMC should provide a hardcopy (or file in ACA format) of AUP to CADF before closing, for CADF to be able to use that information in the case the systems return to normal. As soon as possible, CADF will implement either the received AUP, the AUP hardcopy (or file in ACA format), or the AMC-AUP contingency template if applicable. If none of those items is available, CADF will produce a NIL AUP.

If the “out of operations” situation still persists, CADF will send out an AIM to inform that the EAUP publication will be delayed.
d) If the “out of operations” situation still exists for CACD and CIAM after 1900 UTC, CADF will send an AIM and if necessary, inform stakeholders by any means of communication available to indicate that no EAUP will be published.

e) If only CIAM is unserviceable but CACD is available, then the information received (from hardcopy (or file in ACA format), NOTAM or AMC-AUP contingency template) on unavailable routes will be implemented manually in the CACD Database for IFPS validation purposes, and that will be indicated by AIM.

f) If, for any reason, there is a discrepancy (one or more routes) between the AUP and national AIS publication and no contact at all with the AMC (or the backup facility, or FMP) the following actions will be taken by CADF:

1) Involved CDR2 routes will be taken out of the AUP (and will remain as published in the AIP);

2) Routes unavailability will be implemented in accordance with national AIS publication.

B.1.2 Network Operations Systems out more than two (2) hours

a) Depending on the decision of Director NM, the NM Disaster Recovery Plan can be activated;

b) In case of no EAUP publication for at least two (2) days, AIMs will be sent out as soon as possible.

B.1.3 CACD is not updating IFPS with EAUP/EUUP information:

a) CADF will receive an alerting message from CSO about the failure of CACD to pass EAUP/EUUP information to IFPS for validation of FPL\(^5\);

b) CADF Supervisor will advise the Operations Manager (OM) providing hardcopy of the CDR1/ATS routes being not available and/or of the areas activated and subject to FUA/EU restrictions;

c) OM will instruct Flow Management Positions to introduce zero rate on the CDR1/ATS routes not available as well as on those areas subject to FUA/EU restrictions;

d) CADF will inform AMCs of the situation and actions executed. AMCs will inform local FMPs/Supervisors of the situation (risk of potential flights accepted on);

e) FMPs/Supervisors will evaluate the need to ask for regulations;

f) AIM will be sent out as soon as possible.

4.8.2 eAMI

(1) eAMI message is processed automatically to airspace users via B2B service. In case of interruption of the B2B service, the eAMI message in its format or other feasible format is normally made available for airspace users through other means of notification (e.g. NOP Portal or email).

\(^5\) Technical capability not yet available.
5 NMOC Flight Planning

5.1 Purpose

(1) The purpose of this Chapter is to describe the expression of the main rules and procedures in FPL processing by NM systems.

(2) It summarizes already known and explained NM features of the IFPS with the aim to present them to the Operational Stakeholders for proper understanding of the NM FPL processing.

(3) It also describes some of the IFPS capabilities with regard to the way of processing flight plans in FRA areas.

(4) More details on FPL processing by IFPS are also available in the IFPS User’s Manual.

5.2 Integrated Initial Flight Planning System (IFPS)

5.2.1 General Description

(1) The IFPS is designed to enable the reception, processing and delivery of IFR/GAT flight plan data in the IFPS Zone. The IFPS Zone is the area covered by the ATS facilities of the IFPS Contracting States. The IFPS provides two units (IFPUs) addresses throughout the IFPS Contracting States Zone for all IFR/GAT flight plan messages (FPL) concerning flights which are partly or completely within the IFPS Zone. (For complete list of counties see IFPS Users manual)

(2) The IFPS is a part of NM and consists of two IFPUs, which are functionally identical and interconnected by a wide area network (WAN) for data exchange. The IFPS is directly connected to the NM systems, ATC units and AOs.
(3) The IFPS checks the flight plans, which it receives and corrects them in accordance with the CACD. The correction of flight plans takes place automatically but may also require manual input. During the process of checking and correction, the IFPS extracts the data from the message, including the route description.

(4) After the completion of checking, correction and extraction process, the IFPS disseminates the accepted flight plans to the appropriate ATC units and the NM systems for the IFR/GAT parts of the flight. By using the calculated flight profile IFPS automatically determines the required addresses for the messages within the IFPS Zone.

(5) For flights which include a portion outside the IFPS Zone or which are not IFR/GAT, the IFPS does not perform the addressing or dissemination for that section. In this case, the message originator is required to use the IFPS re-addressing function which provides a mechanism to ensure consistency between the flight plan distribution inside the IFPS Zone and the FPL distributed outside the IFPS Zone. Alternatively, AOs can address the corresponding parts of the flight plan message directly to the ATC units involved.

5.2.2 IFPS processing features

(1) One of the aims of the IFPS is to reduce the number of sources of flight plan data within the IFPZ to a single point, thus maximizing the consistency of flight data available operationally. To achieve this, all flight plans and associated messages for IFR/GAT flights or parts thereof intending to operate within the IFPZ are submitted to the IFPS for processing. In addition, IFPS provides ATC units with flight plan data that can be automatically processed. In addition, IFPS feed the Enhanced Tactical Flow Management System with a copy of the flight plan data.

(2) IFPS calculates 4 dimensional (4D) flight profile based on the Estimated Off-Block Time (EOBT), aircraft type, filed route and requested level. This profile is used to generate the address list for distribution of the flight plan to ATC Units within the IFPZ/FPM distribution area. Any General Air Traffic / Instrument Flight Rules flight operating within the area where NMOC is responsible for FPM distribution needs to be filed to IFPS. If an Operational Air Traffic (OAT) portion is received as part of the FPL, IFPS does not calculate any addresses for that portion of the flight.

(3) Flight plans must be submitted to the IFPS for processing at least 3 (three) hours before the EOBT where possible to, if required, allow a timely CTOT distribution. The IFPS also accepts for processing those messages that are, for operational reasons, filed less than three hours before the EOBT of that flight. Flight plans may be submitted up to a maximum of 120 hours (5 days) in advance of the EOBT of that flight plan. The flight plans that are submitted more than 24 hours in advance of the flight must include the Date Of Flight (DOF). Any changes of more than 15 minutes to the EOBT of a filed flight plan must be submitted to the IFPS. If the modification relates to the introduction of the earlier EOBT of a flight, that flight must be cancelled and new FPL should be submitted.
When FPL is send to the NMOC, IFPS will perform following actions:

a) Checking, Correction and Extraction
   - Most flight plans are sent to the IFPS in ICAO format (but also by ADEXP, via XML B2B and FIXM).
   - In IFPS the FPLs are converted to an ADEXP format.
   - The IFPS checks the messages that it receives, and corrects them as far as possible within its knowledge of the ATS environment. Correction of messages is done automatically as far as possible, but may also require manual input in some cases. During the process of checking and correction, the IFPS extracts the data in the message, including the route description, and calculates 4D flight profile.
   - The IFPS checks that only one flight with the same Aircraft ID (ARCID) is operating at the time. It checks for duplicates and overlapping times for aircraft with the same ARCID. IFPS discards duplicate (exact character match) FPLs from the same originator (within a specific time parameter) with no further processing or outputs. Matching with other FPLs are dependent on ARCID, EOBT, airport of departure and airport of destination. Also, IFPS rejects a duplicate FPL from a different originator.
   - Once an FPL has been accepted for processing as a new FPL, IFPS carries out initial syntax and semantics validation checks. Possible errors may be automatically or manually corrected.
   - When IFPS has completed the syntax and semantic checks, it checks the route provided in the FPL. The checks it carries out are following:
     - that equipment corresponds to the airspace requirements;
     - that the 4D flight profile is possible (i.e. airways/level/speeds/directions are available);
     - that the Flight Profile is available (i.e. timings for positions correct).

b) Operational Replies to the Message Originator
   - The IFPS sends an Operational Reply Message (ORM) to the message originator after the completion of all checks, which indicates whether or not the message has been accepted. Messages sent to IFPS Operators (IFPO) for manual processing may be corrected with or without reference to the message originator in accordance with operational procedures.
   - If the FPL is correct, an Acknowledge (ACK) message is sent to AO. If the FPL is incorrect:
     - a Reject (REJ) message which includes errors (and in most cases a field POSRTE (Possible Route) which is an IFPS compliant route suggestion), or
     - a Manual (MAN) message is sent, which means that an IFPS Operator within the relevant IFPS Unit (IFPU) will be trying to correct it according to set procedures.
   - There are 4 different classes corresponding to the type of error found by the IFPS in a flight plan (FPL) or “Associated message”:
     - Syntax (SYN) - occurs when data does not adhere to the prescribed formats;
o Extended Flight Plan Message (EFPM) - occurs when data content is inconsistent with the CACD or FPL database;
o Route (ROUTE) - occurs when the data format and/or content is inconsistent with the databases (specifically within the routing);
o Profile (PROF) - occurs when data inconsistencies or violations are found during the calculation of the 4D flight profile.

c) Storage and reprocessing
   • The data from all messages which are accepted is stored in the IFPS Database set (IFPD).
   • Each FPL held in its valid flight plan database shall be re-processed against the CACD at certain time parameters. This process is intended to accommodate the on-line input of dynamic environment data such as RAD restrictions and updates, or, route closures and openings, etc.

d) Distribution
   • The IFPS distributes the accepted messages to the ATC Units and the NMOC for the IFR/GAT parts of the flight. It automatically determines the required addressing for the messages within the IFPS distribution area, by use of the calculated flight profile. For flights which include a section outside the IFPS Zone or a section which is not IFR/GAT, the IFPS does not automatically perform the addressing or distribution for that section.

e) Re-validation
   • The IFPS will re-validate flight plans that have already been accepted whenever a modification is made to the availability of an airspace/aerodrome or to an ATFCM restriction. If, following such a change to the airspace availability, a flight plan is no longer consistent the aircraft operator will be informed so that the necessary modification can be made.
   • Revalidation for each of the valid FPLs will occur automatically between EOBT-12 hours and EOBT. It will occur every 30 minutes starting at EOBT–X hours, (X is between 12 and 0, e.g. 12, 11.5, 11, 10.5, etc.).

(5) All flight plans and associated messages for IFR/GAT flights or parts thereof intending to operate within the IFPZ shall be submitted to the IFPS for processing. This shall include those flights where the flight rules are indicated as mixed IFR and VFR, shown as Y (IFR then VFR) or Z (VFR then IFR) in the Flight Rules of the flight plan and where all or part of the flight is operating within the IFPZ under IFR/GAT conditions.

(6) Any intended change of flight rules shall be associated with a significant point. The point at which the change of flight rules is intended to take place shall be a specified ICAO-named designator, a set of geographical co-ordinates, or a bearing and range from a named navigation beacon.

(7) The IFPS fully process only the IFR/GAT parts of the flight and distribute the message to those ATC Units handling the IFR/GAT part or parts of the flight.
(8) The IFPS undertakes only minimal processing of any VFR part of a flight. The IFPS does not distribute the message to those parts of the flight indicated as VFR unless the message originator makes use of the re-addressing function. It shall remain the responsibility of the message originator to ensure distribution of the message to all those addresses requiring the message for any VFR part(s) of the flight.

(9) It is a responsibility of the message originator to ensure that any VFR part of a flight is filed in accordance with any requirements outlined by the relevant State.

(10) It is not allowed to fly VFR above FL195. When a flight transitions from VFR to IFR and the RFL for the VFR portion is ‘VFR’ and the RFL for the IFR portion is above FL195, the IFPS calculates the flight to be at maximum FL195 at the transition point (depending on the distance from the ADEP and the transition point).

(11) The IFPS checks the route of a submitted flight plan for the indicators “IFR” and “VFR”.

(12) The IFPS confirms that the filed flight rules and any change of flight rules indicated in the route correspond. Where they do not, that message shall fail automatic processing and be passed for manual treatment by the IFPS staff.

(13) Any change of flight rules are processed automatically by the IFPS where these indicators are associated with a significant point.

5.3 Route and Profile Analysis process

(1) The full route extraction is only carried out for IFR/GAT flights or parts thereof intending to operate within the IFPZ. However, a profile calculation is carried out by the IFPS where data within the VFR portion of the route is syntactically correct. These data items are used in the calculation of the total estimated elapsed time and any speed/level changes at these data items shall also be taken into account.

(2) The IFPS calculates distribution of that flight plan and associated messages only for that part or parts of the flight operating under IFR/GAT conditions. Where any part of the flight operates under VFR conditions within the IFPZ, the addressing for that part of the flight plan and any associated messages is not undertaken by the IFPS. Any necessary addressing for those VFR parts of that flight shall be carried out by the message originator or the aircraft operator, and such addressing may be included in the re-addressing function.

(3) Where a flight intends to change to/from IFR/VFR control, this shall be indicated in the Flight Rules and in the route.

Note: Y in the Flight Rules indicates that the flight shall commence under IFR conditions and shall change to VFR. Z in the Flight Rules indicates that the flight shall commence under VFR conditions and shall change to IFR.

(4) The point at which the flight plans to change from VFR to IFR shall be followed by an oblique stroke or a space and the identification group “IFR”. The point may also have the speed and level indicators attached to it but separated by an oblique stroke.
Example
N0487VFR WELIN/N0487F330 IFR UN57 TNT UL28 RODOL...
The flight intends to change from VFR to IFR at the point. In this situation, the IFPS shall assume that the entire route prior to WELIN shall be under VFR flight rules and therefore shall only begin route extraction from WELIN onwards.

The point at which the flight plans to change from IFR to VFR may be followed by an oblique stroke or a space then the identification group ‘VFR’.

Examples
N0487F330 BUZAD T420 WELIN/N0430F190 N57 TNT/VFR ...
N0487F330 BUZAD T420 WELIN/N0430F190 N57 TNT VFR ...
The flight intends to change from IFR to VFR at the point TNT, so the IFPS shall stop route extraction from the point TNT onwards.

(5) Where required by the State, the message originator may include an indication of the speed and level of the flight at the point at which the change in flight rules takes place.

Examples
N0487F330 BUZAD T420 WELIN/N0430F190 N57 TNT/N0245A050VFR ....
N0487F330 BUZAD T420 WELIN/N0430F190 N57 TNT/N0245VFR VFR...
N0487F330 BUZAD T420 WELIN/N0430F190 N57 TNT/N0245VFR ...
(while not being ICAO compliant, this format is accepted by IFPS and the output will be as follows: ...UN57 TNT/N0245VFR VFR...The first VFR indicates the FL and the second VFR indicates the change of flight rules).

Example
N0330VFR DCT POL/N0330F230 IFR N601 GRICE P600 GLESK
IFPS shall calculate the profile to be at POL at maximum F195 and no error is raised. Whenever the RFL for a VFR portion is above F195, then the message shall fail automatic processing and shall be passed for manual processing by the IFPS staff.

Examples
Y flight: N0330F230 BCN N864 NITON P17 POL/N0310F175 VFR ...
Y flight: N0330F230 BCN N864 NITON P17 POL/N0310VFR ...
Y flight: N0330F230 BCN N864 NITON P17 POL VFR ...
Are not valid because the previous RFL before the VFR portion (upstream of POL) is higher than F195 (F230).
Solution: indicate a change of RFL below F195 at a point upstream of the point at which the transition to VFR is planned:
N0330F230 BCN N864 NITON P17 BARTN/N0330F190 P17 POL VFR ...

Z flight: N0330F225 BCN/N0330F240 IFR N864 NITON P17 POL GRICE P600 GLESK
Is not valid because the RFL for the VFR portion is higher than F195.
Solution: indicate an RFL at or below F195 for the VFR portion:
N0330F195 BCN/N0330F240 IFR N864 NITON P17 POL GRICE P600 GLESK

(6) The flight profile is a representation of the 4D path that a flight is expected to follow between departure and arrival aerodrome. The profile calculation is required to validate the route of that flight, to determine the address list for the distribution of messages and to facilitate air traffic forecasting.

(7) All flight plans and associated messages for IFR/GAT flights or parts thereof operating within the IFPZ shall be submitted to the IFPS for processing.

(8) The profile for any given flight must provide the means to determine the FLs and times at which it is expected to enter/overfly/exit any significant point that may be used as a potential parameter for validation, distribution and forecast.
The IFPS checks all those messages submitted for processing. As far as possible, those messages shall be processed automatically, but some messages may require manual treatment by the IFPS staff. During the process of checking against the CACD and any resulting necessary automatic correction, the IFPS extracts the data in each message, including the route description, and shall calculate a 4D profile for that flight based on that extracted information. 

Note: The profile calculation does not take into account weather data or individual flight characteristics such as load sheets for individual aircraft (except if specified in item 18 under RMK/), as it is the case with profiles calculated by aircraft operators.

For profile calculation and route analysis, the IFPS uses the following items/elements from the flight plan or associated message:

- Flight rules and flight type;
- Aircraft type and the corresponding performance data from the CACD;
- Aerodrome of departure and estimated off-block time;
- Initial speed and RFL;
- Route elements including change of speed/level;
- Aerodrome of destination, total estimated elapsed time;
- Item 18: PBN, EET, DOF, DLE, RMK.

In order to improve the IFPS profiles accuracy compared with the profiles as calculated by aircraft operators it is possible for message originators to include profile data in the sub-field RMK/ of the ICAO format message, or in specific ADEXP field in ADEXP message or via B2B.

The profile data that may be provided is:

- Taxi (taxi time): for IFPS profile calculation, a standard taxi time dependent on the aerodrome of departure is used. If the airline operator considers holding a more accurate taxi time, then it may be inserted.
- Take-off weight (TOW): for each aircraft type, the NM CACD has 3 performance tables: low, nominal and high. By default, the nominal data is used. The provision of the take-off weight may result in IFPS using another table when calculating a profile.
- Distance at location (DAL).
- Top of climb (TOC): position for every transition from a climb phase to a cruise phase.
- Top of descent (TOD): position for every transition from a cruise phase to a descent phase.
- Bottom of climb (BOC): position for every transition from a cruise phase to a climb phase.
- Bottom of descent (BOD): position for every transition from a descent phase to a cruise phase.

Normally profile data shall be automatically generated by the CFSPs used by the operator. Profile data should not be created manually except for TAXI and TOW.

Whenever present in a message, TAXI, DAL, TOW, TOC, TOD, BOC BOD shall be used by the IFPS for the profile calculation, providing that they do not contain errors in format or discrepancies in content. The IFPS does not raise any error for syntactically incorrect elements with the RMK/ sub-field or in the specific ADEXP fields. Such syntactically incorrect elements shall be ignored by the IFPS (only incorrect elements in RMK sub-field are ignored, while others are used by IFPS).
(15) For the profile data provided within the sub-field RMK/ of an ICAO format message the following format shall be used:

- **TAXI**: Estimated TAXI time at the aerodrome of departure. Format: TAXI: <hhmm>. Example: RMK/TAXI: 0012. Maximum value accepted is 1 hour and 30 minutes.
- **TOW**: Actual Take-Off Weight. Format: TOW:<weight> weight to be expressed in kilograms. Example: RMK/TOW:137500

*Note: DAL is only supported for the aerodrome of destination and when the route does not contain any OAT, VFR or STAY portions.*

(16) The 4D flight profile calculated by the IFPS for each IFR/GAT flight or part thereof within the IFPZ shall be based on the route and speed/level information where given in Item15: Route, on the aircraft performance, the Estimated Off-Blocks Time (EOBT) and the Estimated Off-Blocks Date (EOBD) of that flight and/or based on the airline operator profile data if provided in the message. If the profile data provided is found to be inconsistent when compared to the profile as calculated by the IFPS, then the data is disregarded.

(17) For those flights that are flying across two AIRAC (EOBDT in one AIRAC and landing in the following AIRAC), IFPS checks the profile against the constraints of both AIRAC. However the IFPS cross AIRAC check applies only to the flight plan initial validation and subsequent associated messages (DLA, CHG) and does not apply to IFPS revalidation.

(18) In addition, whenever present in a message, the estimated elapsed time(s) (EET) shall be used by the IFPS for profile calculation, together with the total elapsed time (Item 16B). Prior to using the EET information, the IFPS validates it against its own calculated EETs allowing for the provided EETs to be within a pre-defined window around the EETs as calculated by the IFPS. In the case the provided EET information is found to be outside this window, the message shall not be invalidated. In this case the IFPS shall retain its own calculated EETs.

(19) It should be noted that IFPS will use EET given at significant points (providing that those points are on the route) as well as EET given at FIR boundaries.

*Note: Whenever a flight plan route is modified, the message originator shall ensure that the estimated elapsed times (EET) are also modified in order to be consistent with the new route and also any profile data if provided in the original message.*

(20) Whenever present in messages submitted to the IFPS, TAXI, DAL, TOW, TOC, TOD, BOC and BOD elements shall be removed from messages transmitted to external addresses.

(21) The profile shall be a calculated point profile, where the level and time of that flight for each specific point along the route shall be calculated by the IFPS. The profile shall consist of a departure phase, an en-route phase and an arrival phase.

(22) Although it may not be required by State AIP publication, the message originator may indicate the full SID and STAR designators in the flight plan route submitted to IFPS. Whenever present, such designators shall be used by the IFPS for the profile calculation. The IFPS ensures that in messages distributed to ATC, the SID and STAR designators will not be present when they are not required.

(23) A taxi time shall be included in the profile calculation as and where that taxi time is held in the NM CACD.
The estimated elapsed time(s) (EET in Item 18) shall be used by the IFPS for profile calculation, together with the total elapsed time (Item 16b). IFPS compares the calculated total EET to the total EET indicated in the message. Prior to using the EET information, the IFPS shall validate it against its own calculated EETs allowing for the provided EETs to be within a pre-defined window around the EETs as calculated by the IFPS. In the case the provided EET information is found to be outside this window, the message shall not be invalidated. In this case the IFPS shall retain its own calculated EETs. It should be noted that IFPS will use EET given at significant points (providing that those points are on the route) as well as EET given at FIR boundaries.

The calculated point profile shall be the basis for further checking of the route and shall be used to determine the point of entry to or exit from the IFPZ where applicable.

The profile shall be used to check the flight path against the published requirements including, ATS Route, Terminal Procedure, DCT, FRA and Airspace requirements (these requirements are published in AIPs, RAD appendices, EAUP/EUUP and NOTAMs).

Where the IFPS calculates a flight to violate airway availability or RAD conditions, or where a flight is not compliant with 8.33 kHz or RVSM requirements, that message shall fail automatic processing and be passed for manual processing by the IFPS staff.

The IFPS identifies a list of those ATC addresses to which that message shall be sent, based on the calculated profile. The profile calculation shall produce a list containing all airspaces crossed by the flight path. It shall contain only those airspaces calculated to be entered by any part of an IFR/GAT flight within the IFPZ.

Note: The use of either IFPSTOP/IFPSTART or VFR/IFR and OAT/GAT has an influence on the profile calculation. IFPSTOP/IFPSTART is a manual processing function that results in many, but not all, errors being ignored by the IFPS. That part of a route within an OAT or VFR designation is considered only as text, except where a STAY designator is found after the first point of a VFR/OAT portion (in such a case, the STAY information is taken into account).

### 5.3.1 Route Analysis

(1) Route Analysis process is consisted of four sub-processes:

- Parsing of FPL Item 15, calculation and validation of Track 2D;
- 4D flight profile and curtain calculation;
- 4D flight profile validation (RAD, DCT, ...);
- Adapting 4D flight profile to that of the AO provided AO 4D (AO4D).

(2) Route Analysis is responsible for analysing the route description given in either:

- Item 15 from ICAO messages;
- The ROUTE field for ADEXP messages;
- FIXM.

(3) Route Analysis processes the route field provided in an EFPM (Extended Flight Plan Message) and outputs an EFPM, possibly with modified route information and an address list. Processing status is set to OK or FAIL.

(4) Any errors marked in the EFPM to be ignored are recorded and ignored at the appropriate places.
5.3.2 Route Extraction

(1) If Route Extraction successful further processing is performed:
   - Profile Generation takes place for the EFPM including its extracted route;
   - Message distribution is carried out to involved stakeholders.

(2) If Route Extraction is unsuccessful one or more errors are raised and added to
    the error list component of the EFPM.

(3) Route Extraction expands the route produced by Route Analysis so that all points
    along the route are derived. The extracted route will identify all points on the
    IFR/GAT part of the route in the IFP_DIST contained in the EFPM.

5.3.3 Route processing

(1) Route processing performs parsing, validation and processing of Item 15. The
    result of this process (when valid) is the curtain. It contains the 2D-track and time
    and level information for the complete flight. It also contains all geometric and
    volumetric information about airspace penetration.

(2) Route processing requires the following time related data:
   - ETOT (Estimated Take Off Time, or time at first point when no ADEP);
   - EET at oceanic boundary if present in the flight plan.

(3) The Taxi Time may come from one of three sources and should be selected in
    the following order of priority, depending on the availability of the information:
   - Taxi time is available from the Runway configuration table;
   - If supplied in the FPL or updated message, the FPL TAXI time;
   - The taxi time of the default runway at the aerodrome of departure.

(4) The IFPS does not cater for the processing of pure VFR flights. If a flight plan has
    the ‘VFR’ flag set from analysis of the flight rules field, then an error status is
    raised (because the flight plan is not of concern to the IFPS) and the message is
    automatically rejected, unless the message is a CHG/ICHG containing a change
    to pure VFR.

(5) Profile Generation calculates a 4D flight profile from an expanded route
    produced by the Route Extraction process. This consists of a list of points with
    estimated times and levels.

(6) The 4D flight profile is a list of all SPs presented in chronological order, starting
    with the ADEP or the first SP (when the departure is outside the IFPS Zone, or
    ZZZZ or AFIL), and terminating with the ADES (when it is inside the IFPS Zone
    and not ZZZZ) or the last SP. Each point has an associated level and time-over.

(7) Once the aircraft has taken off, there may be minor deviations in the flight path
    actually taken compared to the original plan, e.g. a different FL may be required
    because of local congestion. For this reason, the IFPS does not attempt to derive
    a precise profile such as that implemented for the NMOC ETFMS system. Instead,
    it determines a band around an estimated profile and ensures that all
    ATC Units intersected by the band are notified of the flight. This can result in a
    slight over-delivery of flight plans, but results in a safer ATC situation.
5.3.4 Aerodrome of departure

(1) The IFPS checks the departure aerodrome in all submitted messages. The system first checks to identify the ICAO aerodrome code, ZZZZ or AFIL; where such identification cannot be made, that message shall be passed for manual processing at both IFPS units. Those flight plans containing ZZZZ with no sub-field DEP information shall fail automatic processing and be passed for manual processing.

(2) When the sub-field DEP is a unique geographical coordinate, that information will be inserted at the beginning of the route field.

(3) In the event that flight plans containing ZZZZ and a known ICAO aerodrome designator in the sub-field DEP are submitted for processing, the IFPS automatically replaces the ZZZZ indicator with that known ICAO designator given in the sub-field DEP.

(4) When the departure aerodrome has been identified, the EOBT is checked against the current time in the IFPS and against any DOF given in that message.

(5) The IFPS accepts flight plans that do not contain a DOF. In such cases, the IFPS shall automatically assume that the flight is to take place in the 24 hour period starting 30 minutes in the past when compared to the current time, and shall add the appropriate DOF to that message.

(6) Where a DOF is included in the flight plan, the IFPS takes that information into account when processing the EOBT.

(7) For practical reasons it shall be possible for the IFPS to process those flight plans that contain an EOBT of more than 30 minutes in the past compared to the current IFPS system time. This is only possible where the EOBDT (i.e. the combination of the EOBT and DOF) is not more than 12 hours in the past when compared to the current IFPS system date/time. The flight plan fails automatic processing but may be manually forced through processing by the IFPS staff.

(8) It is not possible to alter the departure aerodrome by means of a message.

5.3.5 Aerodrome of destination

(1) The IFPS processes those IFR/GAT flight plans and associated messages or parts thereof intending to operate wholly or in part within the IFPZ.

(2) In order to help determine whether a flight operates wholly or in part within the IFPZ, the IFPS shall identify the geographical location of the destination aerodrome, where that aerodrome of destination is given as a known ICAO code.

(3) Where no ICAO designator exists for the aerodrome or point of destination, that aerodrome or point shall be given as ZZZZ with corresponding details, where known, in the sub-field DEST.

(4) The total Estimated Elapsed Time (EET) given is considered by the IFPS to be the total time calculated for that flight from departure to the point at which that flight lands at the aerodrome or point of destination.

(5) Where:

- An alternate destination aerodrome is given, that aerodrome shall be given as a known ICAO code, otherwise ZZZZ shall be used.
- ZZZZ is used; the corresponding details shall be given in the sub-field ALTN. It is possible to indicate more than one sub-field ALTN. The IFPS
checks Item 16 in all submitted messages. The system first checks to identify any known ICAO aerodrome codes or ZZZZ that shall be present; where such identification cannot be made, that message fails automatic processing and be passed for manual treatment by the IFPS staff.

- ZZZZ is found for the destination aerodrome, the IFPS checks for the sub-field DEST giving the name of the destination. Should no sub-field DEST information be given when ZZZZ is used for the destination aerodrome, the message fails automatic processing and is presented for manual treatment by the IFPS staff.

- ZZZZ is used for the destination aerodrome and a known aerodrome of destination is used in the sub-field DEST the IFPS replaces ZZZZ by the known DEST. Where the sub-field DEST is a unique geographical coordinate, that information will be inserted at the end of the route field.

- ZZZZ is found for the alternate aerodrome, the IFPS checks for the sub-field ALTN giving the name of the alternate destination aerodrome. Should no sub-field ALTN information be given when ZZZZ is used for the alternate aerodrome, the message fails automatic processing and is presented for manual treatment by the IFPS staff.

- ZZZZ is used for the alternate aerodrome and a known alternate aerodrome is used in the sub-field ALTN the IFPS shall replace ZZZZ by the known ALTN.

Note: The IFPS shall not distribute any flight plans or associated messages to the alternate or en-route alternate aerodromes given in the flight plan. It shall remain the responsibility of the message originator to ensure the distribution of the flight plan and all subsequent associated messages to the alternate or en-route alternate aerodromes.

(6) It is possible for the message originator to use the Re-addressing function to ensure message distribution to any alternate aerodromes.

(7) Following the destination and alternate aerodrome checks, the IFPS checks the time given for the total EET, against the profile calculation made by the IFPS. Should there be a discrepancy of more than 40%, 120% or 200% (depending on the length of that flight) between the given and calculated total EETs, that message fails automatic processing and is passed for manual treatment by the IFPS staff. This check is not performed for those flights with a flight type given as ‘X’.

Note: Where the Ignore function is used against a total EET error to manually force a message through processing, the total EET of that message calculated by the IFPS shall be used to calculate the flight profile.

5.3.6 Terminal Procedure (TP)

Aerodrome requires a TP to be included in the IFPS FPL distribution

(1) When a TP is specified in the filed route of a flight plan or associated message received, the IFPS checks the validity of that TP.

- Where the TP is valid, the IFPS shall accept and transmit that TP in the distributed message.

- Where the TP is not valid, the IFPS shall propose a valid TP where existing that shall be included in the distributed flight plan after validation by the IFPS staff.
Where no valid TP can be proposed, the message will be presented with the error message: 'TP not valid, DCT is assumed, other possibilities are NONE' to the IFPS staff for manual correction. Connecting points should be found, to allow valid TP to be included by the IFPS in the distributed messages.

(2) When a TP is not specified in the filed route of a flight plan or associated message received, the IFPS:

- Checks that the first/last point extracted from the filed route is a connecting point (CP) from a valid TP for that aerodrome and if so, insert in the distributed message a valid TP.
- Where the first/last point extracted from the filed route is not a CP from a valid TP for that aerodrome, raise a SID/STAR DCT limit for that aerodrome and present the message for manual correction in order for the IFPS staff to find a CP that connects the route to a valid TP.

Aerodrome does not require a TP to be included in the IFPS FPL distribution

(3) When a TP is specified in the filed route of a flight plan or associated message received, the IFPS checks the validity of the TP:

- Where the TP is valid, the IFPS shall use it for its internal profile, but shall not transmit it in the distributed message.
- Where the TP is not valid, the IFPS shall use a valid TP where existing for its internal profile but shall not transmit it in the distributed message.
- Where no valid TP can be used, the message shall be presented to the IFPS staff for manual correction, with the error message 'TP not valid, DCT is assumed, other possibilities are NONE'.
- Where a TP exists for that aerodrome, the route field should be corrected to connect that aerodrome with a CP of that valid TP.
- Where no TP exists, but CPs from a DCT route segment is defined for the aerodrome, one of those CPs should be inserted.
- Where no CPs are defined for that aerodrome, a point that is within the SID/STAR DCT limit should be inserted.

(4) When a TP is not specified in the filed route of a flight plan or associated message received, the IFPS accepts the flight plan where the first/last point extracted from the route field is within the maximum SID/STAR DCT limit for that aerodrome providing that it is compliant with the DCT cross-border restriction and:

- Where the first/last point of the route field exceeds the maximum SID/STAR DCT limit, check that the first/last point specified in the filed route is a CP from a valid TP. If so, the TP will be used in its internal profile but not transmitted in the distributed message.
- When the first/last point specified in the filed route is not a CP from a valid TP, raise a SID/STAR DCT limit for that aerodrome and present the message for manual correction by the IFPS staff.
- Where a CP exists for that aerodrome, it should be inserted.
- Where no CP exists for that aerodrome, a point that is within the SID/STAR DCT limit should be inserted.

(5) To be considered valid, a terminal procedure must:

- Not have any active TP restrictions (type of flight, aircraft type and equipment); and
- Be available in time and level (the minimum level on the first/last route segment is ≤ to the RFL); and
- Connect to the route; and
- Belong to the aerodrome.

5.3.7 Speed / Level

(1) The IFPS verifies that the speed and level in the route corresponds to the aircraft performance of the indicated aircraft type of the flight plan or associated message. Where the required format is not followed, or the indicator is beyond the performance of that aircraft type, or the RFL in a visible portion (GAT, IFR, IFPSTART) does not end with a zero, the message shall fail automatic processing and shall be passed for manual processing by the IFPS staff.

(2) The IFPS uses the indicated speed and level given in any flight plan or associated message submitted to the IFPS for processing to calculate the profile of that flight, and to verify the availability of the route as filed. An appropriate error shall be raised when any part or parts of that route are calculated as being not available for that flight. The profile shall be adapted with a performance factor, which expresses the difference between the requested speed and the optimal speed (taken from the performance table) at RFL. This factor is applied to the climb and descent speed.

(3) The IFPS takes the point at which a change in speed/level is indicated to be the point at which the change in speed and/or level is to commence, and the profile shall be calculated accordingly.

Note: It is recognised that a number of aircraft operator flight planning systems do not interpret speed level change information in accordance with the ICAO interpretation. This may give rise to flight plans being referred for manual processing by the IFPS staff where a flight plan indicates a change of level at a point from which a RAD level restriction or unavailable route applies. In order to ensure that the constraint is fully respected (and thus ensure automatic processing by IFPS) flight plan originators should submit flight plans that adhere to the ICAO interpretation of a speed and level change.

(4) Where a flight plan or associated message submitted to the IFPS for processing relates to a flight entering the OCA Oceanic Airspace, the IFPS shall check for the required speed and level conditions at that Oceanic entry point.

(5) Where for westbound traffic the speed at the Oceanic entry point is not given as a Mach number, the IFPS shall automatically convert any given value to a Mach number, and output such.

(6) Where for westbound traffic no speed and level indication at the Oceanic entry point is given, the IFPS shall automatically insert such, basing the values on the last given speed and level indications in the route field of that flight.

5.3.8 Point / Significant Point

(1) The IFPS requires that all flight plans or associated messages submitted to the IFPS for processing shall contain details of the route intended to be flown by that flight.

(2) Where a route is made up of more than a direct (DCT) route between the departure and destination aerodromes, that route shall give details of any relevant significant geographical points.
(3) Where a flight intends to fly on an airway, the route given in the flight plan shall indicate the point at which the flight intends to join that airway and the point at which the flight intends to leave that airway.

(4) Any flight intending to enter or leave the European RVSM airspace from or to non-RVSM airspace within the vertical limits of the RVSM airspace is required to indicate in the route of the flight plan or any associated messages the RVSM entry/exit point plus the planned speed and level at that point.

(5) Where a navigation aid name is given in the route of a message submitted to the IFPS for processing, the IFPS confirms that the name given is correct and unambiguous. In the event that the IFPS cannot clearly identify a navigation aid, that message fails automatic processing and is passed for manual treatment by the IFPS staff.

(6) Where a navigation aid is indicated as being a part of an airway or a terminal procedure in a message submitted to the IFPS for processing, the IFPS verifies that the navigation aid is a part of that airway or terminal procedure. Where a navigation aid inside the IFPZ cannot be identified by the IFPS, the IFPS fails the automatic processing of that message and passes it for manual treatment by the IFPS staff.

Note: Where geographical coordinates are given in a route, the IFPS checks those coordinates against the coordinates of the known navigation aids held in the NM CACD, and subsequently carry out the processing described above.

(7) When there are several same coded designators of navigation aids, the CACD creates homonyms in order that the IFPS is able to unambiguously identify those points when they are given in the routes of messages submitted to the IFPS for processing.

(8) Where a navigation aid is preceded or followed by another navigation aid without the indication of either DCT or an airway, the IFPS checks if an available airway exists between those two points. The IFPS uses an algorithm to determine if the airway shall be inserted automatically between those two points.

(9) Where the IFPS cannot determine an airway between two navigation aids, the message shall fail automatic processing and be passed for manual correction by the IFPS staff.

5.3.9 Airway / ATS route / Route

(1) The IFPS requires that all flight plans or associated messages submitted to the IFPS for processing shall contain details of the route intended to be flown by that flight. Where the IFPS cannot determine an airway between two navigation aids, the message fails automatic processing and is passed for manual correction by the IFPS staff.

(2) The minimum possible for the route is a direct (DCT) route between the departure and destination aerodromes; the availability of that direct route, and any other routes mentioned shall be verified by the IFPS. Where a flight intends to fly on a route, whether a named airway, or a direct routeing, the route given in the flight plan or any associated messages shall indicate the points at which the flight intends to join and leave that route.

Note: Where a flight intends to fly only on a DCT route between the departure and the destination aerodrome, the IFPS may accept this route as the only route entry.
The IFPS verifies the DCT against any cross border or maximum DCT limit requirements (both en-route and aerodrome). Additionally a State may declare specific DCT portions as forbidden or allowed, regardless of the DCT limit of the airspace. The allowed maximum DCT length may be defined per airspace slice and type of flight. The relevant State may declare the crossing of an international boundary on a DCT routeing to be forbidden or allowed.

The designator T for truncated route is not accepted by the IFPS.

A check is executed for the use of DCT between two points, therefore it is recommended to use DCT only where a connection to a point is not possible via an ATS route or a SID/STAR.

The route information is used in the profile calculation for that flight. The IFPS does not check the cruising levels against the FLOS defined for the flown segment except for the entry and exit requirements of the EUR RVSM airspace.

The IFPS checks the route details in any message submitted to the IFPS for processing, and where a route designator is found, the IFPS confirms that the given designator matches that one given in the CACD as being the correct route between the given points. Where no such match is found, the IFPS passes those messages for manual processing by the IFPS staff.

The IFPS uses an algorithm to determine which point to extract for the profile calculation and terminal procedure checking.

- If the route starts with a route rather than a point - the first point of the route;
- If the route ends with a route rather than a point - the last point of the route.

The IFPS verifies that the given point preceding the ATS route and the given point following the ATS route are part of that ATS route.

Where:

- An airway is preceded or followed by another airway without the indication of a point at the intersection of those airways, the IFPS checks if an available point exists between those two airways. The IFPS uses an algorithm to determine if the point shall be inserted automatically between those two airways.
- The IFPS cannot determine a unique intersection between two airways, the message fails automatic processing and is passed for manual correction by the IFPS staff.
- A DCT route is filed between two points, the IFPS confirms whether there is an available airway between those two points. Where such is found, the IFPS automatically replaces the DCT with the available airway.
- The airway between the two points is not available; the message fails automatic processing and is passed for manual correction by the IFPS staff.
- No unavailable route is found between those two points, the availability of the filed DCT is confirmed against the unavailable DCTs and the maximum allowed DCT length for that airspace. If the DCT fails either of these checks, the message fails automatic processing and is passed for manual correction by the IFPS staff.
- A DCT is filed across an international boundary; the IFPS confirms whether or not the relevant States / FABs / ANSPs permit the use of cross-border
DCT routes. If the DCT fails this check, the message fails automatic processing and is passed for manual correction by the IFPS staff.

(11) The IFPS calculates the profile of the flight and check the availability of the requested route in respect to time, level and any other restriction detailed in the RAD document.

(12) The IFPS drops any repetitive ATS routes and outputs the route in a simplified form.

Example
Submitted to the IFPS: LATEK UN871 OBUTO UN871 GONUP UN871 TOU UN871 GIPNO
Output by the IFPS: LATEK UN871 GIPNO

5.3.10 CDR Undefined (“undefined airspace”)

(1) In NM systems, if, in between two points, there is no route defined (as per National AIP) at a given level, then it is considered to be CDRU.

Example: between two points, a lower route is defined from FL055 (first available level is FL060) until FL195 (last available level is FL190), and there is no co-located upper route.

Then from FL000 until FL055 and from FL195, the “non-defined” route is considered to be CDRU.

![Figure 37: Example of CDRU](image)

(2) In order to ease flight planning, IFPS has a tolerance that allows some part of the trajectory to be in CDRU.

(3) Without this tolerance, numerous flight plans would fail IFPS checking and be passed for manual correction without any possibilities to re-route the flight in order to have an error free flight plan.

(4) This is an example that explains why that tolerance is needed:
According to ICAO and as per IFPS calculation, RFL of F190 indicated at C means that the flight reaches C at F280 and starts its descent to F190 from the point C.

Above L456, between C and D there is no upper route defined. Below UM123, between A and B and B and C there is no lower route defined. This is considered to be CDRU by IFPS.

Without that tolerance, the flight trajectory would have to transition from UM123 to L456 exactly at FL195 (at the corner of the two green blocks). To achieve this, the descent would need to be indicated at an upstream point from C. This is virtually impossible to have a point (in this example B) that would be at the exact distance from C and based on the aircraft performance, would guarantee the transition between the two routes, exactly at FL195.

IFPS parameters for the tolerance:

IFPS has two parameters to define the tolerance.

- Maximum length in climb or descent in CDRU portion*: 40 NM.
  
  *: portion means a section of a profile that uses a given route. It can be composed of one or more route segments.
• Maximum length of the cruise part of a segment* (percentage of the segment length): 40%.
  *: segment means a section of a profile made of two consecutive points.

![Flight segment of a route (two consecutive points) with a partial cruise]

1. Cruise length is less than 40% of the total distance of the segment: no error
2. Cruise length is more than 40% of the total distance of the segment: error

Figure 40: Example of maximum length of cruise of segment parameter

5.3.11 Aircraft model

(1) As unique resource of the aircraft performances, NMOC systems are utilising Aircraft Performance Model (APM) with corresponding database - the Aircraft performance data of BADA (Base of Aircraft Data).

(2) BADA is being maintained and developed by the EUROCONTROL.

5.3.12 Anticipated climb and descent

(1) When a climb/descent is planned to commence at certain point, the flight must already have achieved previous FL specified in the FPL. In some cases, NM system will try to achieve this requirement by using different climb/descent rate. If, even when using an aggressive climb/descent rate it is not possible for the profile to achieve previous FL by the point where new change would commence, NM system will start climb / descent earlier on the previous route segment (starting somewhere on the previous route segment).

Example:

....N0389F190 SAU G39 SECHE/N0444F360 UT122 NARAK/N0440F380.... To commence a climb at NARAK to FL380, the flight must already be at FL360 at that point. As this is not the case, climb to FL 360 starts before point SECHE.

5.3.13 PBN Specifications

(1) In respect to Performance-based Navigation (PBN), AOs are to indicate PBN (RNAV and/or RNP) capability in the flight plan only if the aircraft and flight crew are appropriately certified and operationally approved.

(2) In that case, AOs should file an “R” (PBN) together with the navigation sensor(s) in Item 10A (Equipment and Capabilities) and list the approved PBN capabilities under the PBN/ indicator in Item 18 (Remarks).
The following table includes the PBN descriptors, which the AOs should file in the flight plan for relevant PBN specification/s:

<table>
<thead>
<tr>
<th>NAV SPEC</th>
<th>Permitted Sensors</th>
<th>Item 10A</th>
<th>Item 18 PBN/</th>
</tr>
</thead>
<tbody>
<tr>
<td>RNP 4</td>
<td>GNSS</td>
<td>R, G</td>
<td>L1</td>
</tr>
<tr>
<td>RNP 1(2)</td>
<td>DME/DME/IRU</td>
<td>R, D, I</td>
<td>O4</td>
</tr>
<tr>
<td></td>
<td>GNSS</td>
<td>R, G</td>
<td>O2</td>
</tr>
<tr>
<td></td>
<td>All permitted sensors</td>
<td>R, D, I, G</td>
<td>O1(4)</td>
</tr>
<tr>
<td>RNP APCH</td>
<td>LNAV</td>
<td>R, G</td>
<td>S1(6)</td>
</tr>
<tr>
<td></td>
<td>LNAV/VNAV</td>
<td>R, G</td>
<td>S2</td>
</tr>
<tr>
<td></td>
<td>LPV</td>
<td>G, B(3)</td>
<td></td>
</tr>
<tr>
<td>RNP AR APCH</td>
<td>LNAV/VNAV with RF</td>
<td>R, G I(7)</td>
<td>T1(6)</td>
</tr>
<tr>
<td></td>
<td>LNAV/VNAV without RF</td>
<td>R, G I(7)</td>
<td>T2</td>
</tr>
</tbody>
</table>

Notes:
1. In Item 10A, the letter "O" does not need to be filed in if letter "S" for standard equipment is already used.
2. The RNP 1 specification is based on GNSS. Although some aircraft are capable of RNP 1 with DME/DME, the suitability of the DME infrastructure for RNP 1 applications needs to be carefully demonstrated before this is approved by a State and published in the AIP. The publication of DME/DME based RNP 1 applications is therefore expected to be very limited and AOs should be aware that filing other than O2 or O1 in Item 18 is unlikely to enable them access to RNP 1 routes/procedures.
3. Contrary to other PBN capabilities, the RNP APCH to LPV capability does not require the use of the letter "R" in Item 10 or the use of a PBN code Item 18. AOs should indicate LPV capability in Item 10A with letter B.
4. Where applicable, B1, C1, D1 or O1 should be used instead of listing each individual sensor code for that certified specification.

5. If C4, D4 or O4 are used, C3, D3 or O3 respectively should not be used in addition.

6. If either S2 or T1 is used, S1 or T2 respectively should not be used in addition.

7. If the procedure requires the carriage of an INS/IRS for extraction, then "I" should be filed in Item 10A.

(4) The AOs should indicate all applicable PBN specifications following the PBN/ indicator in Item 18. The PBN/ indicator can contain up to a maximum of 8 entries (PBN descriptors), i.e. a total of not more than 16 characters. The most relevant descriptors for the intended flight should be put as a priority under the PBN/ indicator in Item 18. Other codes can be filed under the NAV/ indicator in Item 18 (together with Z in item 10a).

(5) Operators of State aircraft not approved for RNAV 5 or RNAV 1 operations shall not insert any of the “B” or “D” descriptors within the PBN/ indicator of Item 18 of the flight plan. Instead, the letter “Z” shall be inserted in Item 10a and NAV/RNAVX shall be inserted in Item 18 of the flight plan.

(6) Where a failure or degradation results in the aircraft being unable to meet the RNAV 5 functionality and accuracy requirements before departure, the operator of the aircraft shall not insert any of the “B” descriptors within the PBN/ indicator of Item 18 of the flight plan. Since such flights require special handling by ATC, the letter “Z” shall be inserted in Item 10a and Item 18 shall contain NAV/RNAVINOP.

5.4 Common Flight Planning Processing

5.4.1 IFPS Proximity Check to an AUA Border

(1) The IFPS check known as “flying along the border” is done to avoid flight planning on or adjacent to, an AUA border. This IFPS check is performed only when flying along lateral AUA borders and applies across the whole IFPZ. This IFPS check is also done in Free Route Airspace but is not a check limited to FRA.

(2) The IFPS detects and invalidates trajectories (filed as DCT) which are “aligned” with operational airspace borders. Operationally, these trajectories are not acceptable and force additional coordination between ATC Units.

(3) A trajectory (filed as DCT) shall be “aligned” with an AUA border if it is too close to the airspace border for a considerable distance where:

- “Too close” parameter is within 0.5NM from the AUA border; and
- “Considerable distance” parameter is 15NM or more.

FPL Invalidation

The IFPS error is raised when a trajectory between two points filed as DCT (A DCT B) is within 0.5NM of an AUA border for at least 15NM (see Figure 41). The error (PROF53) states that the DCT segment is not allowed due to “distance” exceeding along airspace border between AUA1 and AUA2.
FPL Validation
The IFPS error will not be raised whenever the:

- Trajectory between two points filed as DCT (A DCT B) is within 0.5NM of an AUA border for less than 15NM (see Figure 42 and Figure 43).
Figure 43: Example trajectory of DCT in close proximity to AUA border - no error

- **Two** AUAs belong to the same State / ANSP (same first two letters. Example: LFMM and LFBB);
- **Two** AUAs are of type **OCA** (Oceanic AUAs);
- **One** AUA is of type **OCA** (Oceanic AUA) and the **other** is of type **NON IFPZ** (non-IFPZ AUA).

(4) Currently IFPS is not checking any other filed DCTs that may be in close proximity to either AUA borders or elementary AUA sector borders or collapsed AUA sector borders.

### 5.4.2 IFPS ATS / DCT Segments Checking

#### 5.4.2.1 Details of the segment check

(1) This IFPS check is valid when the ATS route network remains available and when a relevant DCT is within the vertical limits of the co-located ATS route.

(2) IFPS compares each ATS route and relevant DCT filed in the flight plan and either:

- Replaces it by the Route Designator (RD) of an existing co-located ATS route segment; or
- Retains the DCT.

(3) If the relevant ATS route segment is closed, then the IFPS raises an error indicating the closure.

(4) If the relevant ATS route segment is restricted by a mandatory DCT RAD unit, then the IFPS raises RAD errors. For this reason, mandatory DCTs should not normally be implemented in the RAD on the same trajectory as an existing ATS route segment.

(5) All ATS routes are introduced in CACD as they are published in State AIPs. For NMOC system purposes only, each unidirectional ATS route segment, which states the opposite non-existing / non-available direction as the Route Designator, is defined as closed.
5.4.2.2 DCT replacement

(1) Any DCT filed in the flight plan is replaced by a Route Designator of the co-located ATS route only if both alignments have exactly the same description.

(2) As a DCT is a “Direct” between two FRA significant points the co-located ATS route shall also be defined by the same two FRA significant points.

(3) The DCT replacement by a Route Designator is done in between two consecutive FRA significant points only.

(4) The examples below (see Figure 44) show the DCT replacement cases.

Myyy - DCTs (4 points / 3 ATS route segments / 1 DCT)
ATS route Myyy is published as AAAAA - NN - PPPPP - TTTTT. The filed FRA DCTs are AAAAA - PPPPP and PPPPP - TTTTT. In this case the alignment of the ATS route and the second filed DCT are exactly the same as both contain only points PPPPP and TTTTT.

IFPS replaces the abbreviation DCT between points PPPPP and TTTTT with Route Designator - Myyy in the validated flight plan.

Lxxx - DCTs (3 points / 2 ATS route segments / 2 DCTs)
ATS route Lxxx is published as KKKKK - PPPPP - TTTTT where all points are aligned in a straight line. The filed FRA DCTs are KKKKK - PPPPP and PPPPP - TTTTT. In this case the alignment of the ATS route and both filed DCTs are exactly the same as both contain points KKKKK and PPPPP and TTTTT.

IFPS replaces the abbreviation DCT between first and last points KKKKK and TTTTT with Route Designator - Lxxx in the validated flight plan.

Figure 44: Example of FRA DCT replacement by co-located ATS route designator

5.4.2.3 DCT non-replacement

(1) Any DCT filed in the flight plan which is NOT replaced by a Route Designator of the co-located ATS route takes place when both alignments have a different description.

(2) As a DCT is a “Direct” between two FRA significant points the co-located ATS route shall not be defined only by these two FRA significant points. The ATS route shall contain one or more additional points in between.
The example below (see Figure 45) shows the DCT non-replacement case.

ATS route Lxxx is published as straight line KKKKK - PPPPP - TTTTT while the filed FRA DCT is also a straight line but KKKKK - TTTTT. In this case the alignment of ATS route and filed DCT are similar but not the same as ATS route contains point PPPPP.

IFPS is NOT replacing in the validated flight plan the abbreviation DCT between points KKKKK and TTTTT.

5.5 FRA Flight Planning

5.5.1 Section Specificity

This Section covers the FRA models in CACD and the corresponding flight planning possibilities in IFPS, procedures for checking flight plans horizontally and vertically crossing a FRA area, taking the FRA “balcony effect” into account.

In this Section the FRA significant point relevance as defined by ERNIP Part 1 is used only in supporting figures while in the text it is adapted to reflect the relevant NMOC system requirements. For example the “system FRA Entry point” coincides with “FRA Horizontal Entry point” for the purpose of “horizontal” FRA entry by crossing the FRA lateral limit or with either “FRA Intermediate point” or “FRA Departure Connecting point” for the purpose of “vertical” FRA entry by crossing the FRA area vertical limit, etc.

5.5.2 Definition of FRA area

In NMOC system the FRA area can be defined by the following operational airspaces which might or might not include cross-border airspace ATS delegations:

- ATC Unit Airspace (AUA) or ATC Unit Airspace Group (AUAG); or
- FRA Airspace.
An AUA is a volume built up of one or more Elementary Sectors. It is the type of airspace representing the complete airspace for which a particular ATC unit is responsible. An Elementary Sector is an Airspace Volume, built up from one or more Airblocks to which a vertical dimension is added by means of FLs. An AUAG is a volume built up of one or more AUAs or different AUAGs.

A FRA Airspace is a volume built up as a composition of one or more Airblocks, Elementary Sectors, AUAs or AUAGs. The composition allows inclusion of the complete airspace volumes or single vertical slices of these volumes. It is possible to define separate vertical limits for each constituent airspace in the FRA Airspace volume composition.

The NMOC system allows:
- the definition of FRA Airspace as Airspace:
  - that is independent on the constraints of the other Airspace classifications;
  - with volume that is independent on AUA or FIR volumes;
- in the cross-border restrictions, the definition of borders between FRA Airspaces and AUAs or FIRs;
- in FRA Airspace time and vertical limits to be live updateable in the restriction;

The NMOC system validates for:
- no overlaps between FRA area definitions in 3D volume and time;
- no gaps in the FRA area border definition.

A FRA Airspace shall be used to define the FRA area when the FRA Concept implementation is based on ATC sectors belonging to an AUA and even on partial ATC sectors.

In short to medium term period the transition from AUA/AUAG to FRA Airspace based FRA area shall be performed by NM. The FRA area of any new FRA project will be defined as FRA Airspace while existing AUA/AUAG FRA Areas will be re-defined as FRA Airspace when change is planned in NMOC system by States / FABs / ANSPs. The final goal is for all FRA projects only FRA Airspace to be used in NMOC system as definition of FRA area.

5.5.3 FRA Models and corresponding flight planning possibilities

In CACD, two models of FRA can be implemented with the following common features:
- Flights can proceed from a FRA Entry point to a FRA Exit point;
- Flights can proceed via one or several FRA Intermediate points;
- FRA Intermediate points are optional in a flight plan;
- Flights can use either FRA or the ATS route network, if the ATS route network remains available.

"Full FRA" is a model where:
- As FRA Intermediate points can be used:
  - All published points;
  - These are all published points by States in AIPs and properly defined in CACD with their "Significant Point Type". It is not required to define in CACD relevant FRA significant points as Intermediate. IFPS allows in en-route part of the flight plan only those published points defined
in CACD as Significant Point Types “PWP” - Waypoint, “NVA” - Navigation Aid and "COR" - Coord Point. As there is no categorisation in CACD within the point description IFPS allows all these Significant Point Types, including defined FRA (E), FRA (X) and/or FRA (EX), without checking the real usage of the points and points used for terminal/aerodrome purposes to be used in “Full FRA” model.

*Important Note:* For further clarification and details see Chapter 2.

- Unpublished points, defined by geographical coordinates;
- DCT limit in the FRA area is set in CACD to N/A = Unlimited (UNL); meaning that outside the ATS route network the airspace can be crossed on a DCT via whatever FRA Intermediate point.

(3) “FRA with Intermediate points (FRA - IP)” is a model where:

- As FRA Intermediate points can be used only published and properly defined in CACD FRA Intermediate points;
- As FRA Intermediate points cannot be used unpublished points, defined by geographical coordinates;
- DCT limit in the FRA area is set in CACD to 0NM; meaning that outside the ATS route network the airspace can be crossed on a DCT only from FRA Entry point to a FRA Exit point or via the specifically allowed FRA Intermediate points.

(4) In both models:

- Flight Plan Procedures are applied and segments between FRA Entry, FRA Intermediate and FRA Exit points are to be indicated by DCT in ITEM 15: Route of the flight plan in accordance with ICAO Doc 4444.  
- It is possible to make some FRA Intermediate points mandatory, for example flights entering via A and exiting via B shall proceed via C. This shall be done via RAD restrictions.

5.5.4 FRA Vertical Connectivity

5.5.4.1 Definition

(1) The term “vertical connectivity” defined by IFPS shall be understood in the following manner:

- Expresses how to enter or exit FRA area by crossing the FRA area vertical limit;
- Refers to departing and arriving traffic;
- Refers to traffic changing cruising level, only if the change triggers an entry or an exit of the FRA area;
- Does not refer to cruising traffic that remains within the FRA area vertical limits.

(2) The “vertical connectivity” process in IFPS is related to the two following cases:

- FRA co-exists with ATS route network;
- FRA without the ATS route network.

In all cases within the AUA below the FRA area the ATS route network exists and ways of processing are based on DCT limits allowed within that AUA.
5.5.4.2 FRA area with ATS route network

5.5.4.2.1 Departing traffic

(1) For departing traffic there are two possible ways to “vertically” enter the FRA area, by using:
- ATS route network; or
- Relevant SID.

(2) When the ATS route network is used to enter the FRA area there is no requirement to use a FRA Entry point. In the example below (see Figure 46) B is a FRA Intermediate point and C is a FRA Exit point. FPL filing tip: The ATS route network is used to the first valid FRA Intermediate point at which the level is higher than the minimum level of the FRA area.

![Figure 46: Example trajectory of departing traffic in FRA area with ATS route network entering via airway](image)

(3) As SID is part of the ATS route network, it can be used to enter the FRA area. The possibility to enter is dependent on the minimum level of the FRA area as well as the maximum level of the SID. In the example below (see Figure 47) these levels overlap allowing airspace connectivity, A is a FRA Departure Connecting point and B is a FRA Exit point.
5.5.4.2.2 Arriving traffic

(1) For arriving traffic there are two possible ways to “vertically” exit the FRA area, by using:
   - ATS route network; or
   - Relevant STAR.

(2) When the ATS route network is used to exit the FRA area there is no requirement to use a FRA Exit point. In the example below (see Figure 48) A is a FRA Entry point and B is a FRA Intermediate point. **FPL filing tip:** The ATS route network is used until a valid FRA Intermediate point at which the level is still higher than the minimum level of the FRA area.

**Figure 47: Example trajectory of departing traffic in FRA area with ATS route network entering via SID**

**Figure 48: Example trajectory of arriving traffic in FRA with ATS route network exiting via airway**
(3) As STAR can be used to exit the FRA area. The possibility to exit is dependent on the minimum level of the FRA area as well as the maximum level of the STAR. In the example below (see Figure 49) these levels are overlapped allowing airspace connectivity, A is a FRA Entry point and B is a FRA Arrival Connecting point.

![Figure 49: Example trajectory of arriving traffic in FRA with ATS route network existing via STAR](image)

### 5.5.4.2.3 Overflying traffic (see Figure 50)

(1) For overflying traffic the same principles apply for leaving or joining the FRA following a change of the Requested FL (RFL). The term Requested FL is used for IFPS and RAD purposes and refers to the actual requested cruising level as specified in the ICAO FPL Item 15: Route.

![Figure 50: Example trajectory of overflying traffic in FRA area with ATS route network](image)
5.5.4.3 FRA area without ATS route network

(1) The entry to, or exit from, any FRA area depends on the length of “Direct” flight planning option allowed by the States / FABs / ANSPs. This section fully covers the flight plan processing when the FRA area DCT limit is UNL (“Full FRA” model). Provisions for FRA Vertical Connectivity when the FRA area DCT limit is 0NM (“FRA with Intermediate points” model) are also presented in this Chapter.

(2) In Full FRA, there are two possible ways of processing based on DCT limits allowed within the AUA below the FRA area:

- xxxNM; or
- 0NM.

The DCT limit of xxxNM is usually related to the size of the AUA.

5.5.4.3.1 Full FRA: DCT limit xxxNM below the FRA area

a) Departing or Climbing traffic (see Figure 51)

When the AUA DCT limit below the FRA area is for example 300NM, option B DCT C is accepted by IFPS despite the fact that the level at the first point of the DCT (B) is below the FRA minimum level. Point B is inside an AUA where the DCT limit is 300NM and as long as B DCT C is <300NM, it is accepted by IFPS. This means that B DCT C could enter the FRA area from below, if the allowed AUA DCT limit permits. If the FRA area has an entry “from below” restriction then point B needs to be defined as FRA Entry point in relevant FRA DCT restriction.

The option to enter the FRA area via a SID is also available when the FRA minimum level and SID maximum level overlap, allowing airspace connectivity. If there is no level overlapping, the ATS route network is used to enter the FRA area.

Figure 51: Example trajectory of departing and overflying traffic in FRA area without ATS route network with AUA DCT xxxNM
b) **Arriving or Descending traffic**

When the AUA DCT limit below the FRA area is for example 300NM, option C DCT B is accepted by IFPS despite the fact that the level at the last point of the DCT (B) is below the FRA minimum level. Point B is inside an AUA where the DCT limit is 300NM and as long as C DCT B is <300NM, it is accepted by IFPS. This means that C DCT B could leave the FRA area from above, if the allowed AUA DCT limit permits. If the FRA area has an entry “from above” restriction then point B needs to be defined as FRA Exit point in relevant FRA DCT restriction.

The option to exit the FRA area via a STAR is also available when the FRA minimum level and STAR maximum level overlap allowing airspace connectivity. If there is no level overlapping the ATS route network is used to exit the FRA area.

![Figure 52: Example trajectory of arriving and overflying traffic in FRA area without ATS route network with AUA DCT xxxNM](image)

5.5.4.3.2 Full FRA and FRA - IP: DCT limits 0NM below the FRA area

(1) For flight planning purposes, some FRA significant points can be defined as “vertical” Exit or Entry points out of the AUA to facilitate the vertical connectivity. This can be done by “vertically” expanding the lower vertical limit of required points.

a) **Departing or Climbing traffic (see Figure 53)**

The first point of the DCT going to FRA area shall be a FRA Intermediate point as published in State AIP but defined in CACD by relevant FRA DCT restriction as “system FRA Entry point” and shall pass through level band FLxxx - FLyyy. Option A DCT B or A DCT C is accepted by IFPS despite the fact that the level at A is below the FRA minimum level. It overrides the AUA DCT limit below FLyyy which is 0NM.
b) *Arriving or Descending traffic* (see Figure 54)

The last point of the DCT coming from FRA area shall be a FRA Intermediate point as published in State AIP but defined in CACD by relevant FRA DCT restriction as “system FRA Exit point” and shall pass through level band FLxxx - FLyyy. Option B DCT A or C DCT A is accepted by IFPS despite the fact that the level at A is below the FRA minimum level. It overrides the AUA DCT limit below FLyyy which is 0NM.

Whenever a FRA Intermediate point (“system FRA Entry or Exit or Entry / Exit point”) is used to enter or exit the FRA outside the level band FLxxx - FLyyy, IFPS reports two errors, for example:

- ROUTE165: stating that the DCT is too long for relevant AUA. This is the normal AUA DCT checking with DCT limit 0NM below FLxxx;
- ROUTE29: stating that it is forbidden to cross the border between relevant AUA. IFPS gives an indication that the point is not an “all allowed” FRA Entry or Exit at the calculated level, which means the point is allowed a “some levels”.

(2) IFPS Distance checking in FRA: distance FRA Entry or Exit point to FRA area border

5.5.4.4 Details of the distance check

(1) There is a maximum allowed distance that an aircraft can fly between a FRA Entry / Exit point and a border of an FRA area. This maximum allowed distance is different for every FRA Entry / Exit point and associated FRA area border and is independent from flight plan trajectories. It is calculated by solely taking the location of the FRA area Entry / Exit point and the location and shape of the AUA into consideration.

![Diagram](image)

**Figure 55**: Example of how the maximum allowed distance is calculated.

(2) If the difference between MIN and MAX is higher than 50NM, then the allowed distance to fly between FRA significant point and FRA area border will be:

\[(\text{MIN} + 50) \times 2 + 5\] NM

(3) If the difference between MIN and MAX is lower than 50NM, then the allowed distance to fly between FRA significant point and FRA area border will be:

\[(\text{MAX} \times 2 + 5)\] NM

(4) The MIN and MAX are the smallest distances between FRA significant point and FRA area border in all directions for a given level.

(5) Graphical explanation is given in Figure 56 below.
5.5.4.5 Reason for the distance check

(1) This is to ensure that flight enters and/or exits FRA area on a trajectory that States / FABs / ANSPs expect (see Figure 57).

5.5.4.6 FRA area border shape and consequences on the check

5.5.4.6.1 FRA area vertical border - straight “wall”

(1) In the case of an FRA area having a straight vertical border (wall) the minimum distance between a FRA Entry / Exit point and the border is constant at all levels.
The difference between MIN and MAX is Zero. The maximum allowed distance to fly between FRA point and FRA area border is:

\[(\text{MAX} \times 2) + 5 \text{ NM}\]

**Vertical View (from the top)**

In the example below (see Figure 59) the flight is going eastbound via point A which is the FRA Entry point for FRA area (2) but outside of it. Segment A DCT B is accepted by IFPS as measured distance to the FRA area border is within the maximum allowed limit. Segment A DCT C is not accepted by IFPS as measured distance to the FRA area border is above the maximum allowed limit.

**Figure 59: Example of calculations for correct and incorrect trajectory of entering traffic in FRA area**

5.5.4.6.2 **AUA FRA area vertical border - not straight “wall”**

(1) The “balcony effect” is triggered by the same check and is linked to delegated airspace.
What is the maximum of the shortest distance from the FRA Entry / Exit point to the AUA FRA area border taken over all levels where a shortest distance exists (i.e. over all levels where the FRA airspace exists)? In the example below (see Figure 60) where the AUA FRA area passes the vertical of the FRA Entry / Exit, the shortest distance is 0NM. In the FLs where there is a delegated airspace from AUA2 (above FL285) the shortest distance is 110NM. The difference between MIN and MAX is larger than 50NM, then the formula that is applied is:

\[(\text{MIN} + 50\text{NM}) \times 2 + 5\text{NM} = 105\text{NM}\]

**Horizontal View (view from the side)**

The distance not to exceed, whilst flying between the FRA Entry / Exit point and the AUA FRA area vertical border (wall), is 105NM. Any crossing of the vertical border (wall) of the AUA FRA area beyond the 105NM will trigger an error in IFPS as the FRA Entry / Exit point is not validated as a valid FRA Entry / Exit point (see Figure 61).

**Figure 60: Example of FRA “balcony effect” in AUA FRA area with delegated airspace**

**Figure 61: Example of calculations of FRA “balcony effect” in AUA FRA areas with delegated airspace**
(4) The check applies only for the crossing of the AUA FRA area vertical border (wall). Any trajectory crossing the AUA FRA area horizontal border (floor) is not subject to this check. This is presented in the example below (see Figure 62).

Figure 62: Example of calculations of FRA “balcony effect” in AUA FRA areas with delegated airspace

5.5.4.6.3 IFPS errors and Procedure

(1) IFPS will raise an error whenever the distance between the FRA (EX) point and the FRA area border is greater than the limit, IFPS will:

- Not validate the FRA (EX) point despite the point being used in its correct role;
- Look for a valid point:
  - For entry: previous point “en-route”;
  - For exit: next point “en-route”.

The examples below represent this.

(2) The flight plan route is A DCT B DCT C via FRA Intermediate point followed by a FRA Entry / Exit point followed by a FRA Intermediate point. Because of the check IFPS does not validate B as an allowed FRA exit and entry point. IFPS will invalidate the flight plan and report 2 errors (on the previous point “en-route”):

- ROUTE29 stating that point A is not an allowed entry point;
- ROUTE29 stating that point A is not an allowed exit point.
(3) The flight plan route is A DCT B DCT C via FRA Intermediate point followed by a FRA Entry / Exit point followed by a FRA Intermediate point. Because of the check IFPS does not validate B as an allowed FRA exit and entry point. IFPS will invalidate the flight plan and report 2 errors (on the next point “en-route”):

- ROUTE29 stating that point C is not an allowed entry point;
- ROUTE29 stating that point C is not an allowed exit point.

(4) If requested by States / FABs / ANSPs, when an error is raised, pertaining to a vertical error (“balcony” effect), it may be manually ignored by IFPS staff and the flight plan will be accepted.
5.5.4.7 Solution / Recommendation

(1) A significant point can be published as FRA Entry or FRA Exit point far from the FRA area border. Also, the FRA area vertical borders (wall) can be not straight. But it shall be considered that the “farther” FRA Entry or FRA Exit point and FRA area border are and the more irregular the vertical borders (wall) of the FRA area are, the more chances to have flights entering FRA area through unexpected points.

(2) If the delegation “sticks out” by more than 105NM, then the “wall” that doesn’t stick out will become unreachable from the FRA Entry point at this level, even when the flight takes the shortest route to the FRA area boundary. Such problems can be avoided by delegating this airspace at all levels, even if there is not a significant amount of traffic to be delegated at these levels. The simplicity of the airspace geometry will simplify flight planning.

(3) In order to avoid the undesired rejection of flight plans States / FABs / ANSPs may consider the following:
   - For point A - this point should be published as a FRA Entry / Exit point below FL285;
   - For point B - this point should be published as a FRA Entry / Exit point above FL285.

(4) Flights crossing the horizontal border (floor) can use either point.

Figure 65: Example of FRA “balcony effect” in AUA FRA areas with delegated airspace and FRA points positions
6 Path Generator

(1) Path generator is a group of functions that create 4D flight profile alternatives that comply with a set of pre-defined constraints.

(2) Path generator requirements can be logically partitioned into the following steps:
   - Reference profile creation: Takes into account pre-defined constraints and constructs the reference flight profile for which the 4D alternatives will be created;
   - Graph creation: Uses as input the reference profile and a set of parameters and produces as output the set of all possible paths with their associated costs;
   - 4D flight profile construction: Computes the indicators (RFL, requested speed, visibility, stay, EET, ATC reports) of each generated path using as input the reference profile associated indicators. Consequently, a 4D flight profile calculation is invoked for each one of the generated paths.

(3) The path generator functions are invoked within the context of ETACT (reported point lateral deviation processing), Map, Simulation and Experiment services (flight list display tools, re-route editor - GRRT) and Propose Routes or the Pathfinder.

(4) Prior to the graph creation, the system assembles and computes flight data that are used as a guiding template in the graph creation for the selected flight. The result of this computation is referred to as the reference profile.

(5) The reference profile consists of the following elements:
   - Flight profile: Point profile for which the alternative paths will be generated with the associated indicators. These indicators are RFLs (RFL), requested speeds (RSP), visibility indicators (VIS), stay indicators (STAY), estimates (EET) and ATC reports (RPT);
• Frozen Portions: These are route portions of the flight profile that are always present in the generated 4D flight profile and for which there is no graph generated.

6.1 Graph creation

(1) Graph creation consists of creating sequences of connecting segments between the bounds of the non-frozen portion of the reference profile.

(2) Graph creation is implemented using Dijkstra's single source shortest path algorithm. The graph consists of a set of paths connecting the bounds of the non-frozen portion of the reference profile.

(3) Graph creation starting points on the reference profile are referred as graph bounds. A path consists of a sequence of segments. Each segment is assigned a cost than can be controlled with parameters. The cost of a path is the sum of all constituent segments cost. Each path of the graph connects with the lowest cost each constituent segment with the graph bounds. For each segment in the graph, there is only one path that connects this segment with the graph bounds. Due to the parameterised segment cost, a lowest cost path is not necessarily the shortest path.

(4) During graph creation, the system creates a new branch of the graph from every segment located in the non-frozen portion of the reference profile that has passed pre-defined checks. Each new branch expands over the existing route segment network as defined in the system’s CACD. Graph expansions are done independently from each “side” (first side is associated with ADEP, last side is associated with ADES) of the reference profile and hence the graph consists of two independent expanded networks of segments.

(5) Each segment that is included in a path acts as a “source” segment, the segment’s end point being the starting point of the following “candidate” segments to be visited and checked whether they can also be part of this path. Following terminology is used in the graph creation requirements:

• Candidate segment: The segment that is currently visited in the graph creation;
• Source segment: A segment previously visited in the graph creation, the end point of which (in the direction of the graph expansion), is the starting point of the candidate segment;
• Expansion location: The source segment’s end point (in the direction of the graph expansion).

(6) A candidate segment is included in a path, if this segment passes a set of pre-defined segments checks. If there is already another path created that connects this segment with the same graph bound and if this path has a lower cost than the path currently examined in the graph creation, then the currently examined path is eliminated from the graph creation and vice-versa.

(7) The system considers avoid airspace constraints specified by the user during graph creation. A segment that intersects the ground projection of an airspace that must be avoided, does not qualify as a candidate segment in the graph expansion.

(8) The system stops the expansion of a path whenever the maximum expansion cost has been reached or when there is no candidate route segment left to expand to.
(9) The system reduces the number of candidate segments to be visited by performing a 'worst case' cost calculation. For each source segment, the system calculates the cost for the other "side" graph to expand to this segment via a straight line. If the cost of the path where the source segment belongs added to the lowest cost for the other graph exceeds the maximum expansion cost, the system stops the expansion from this source segment. This also provides with a more elliptical shaped graph pattern, instead of a graph pattern that expands to any direction.

(10) Depending on the context from where the path generator is invoked, the system can provide two options for choosing an alternative (lowest cost) path from the graph, namely Lowest_Cost_First or Shortest_Distance_First.

(11) Segments from the reference profile that are frozen shall cost zero, so that the accumulated cost at each frozen location (where expansion of the route network starts) is also zero for both locations. This is required because the maximum expansion cost has also been calculated using a zero cost for all frozen segments.

(12) For all other segments, the system calculates the cost as shown in the following equation:

\[ \text{Segment Cost} = \text{Segment Length Cost} + \text{Level Deviation Cost} \]

(13) Each segment cost component is calculated as follows:

- **Segment Length Cost**: A cost calculated from the Segment Length, being converted to a distance (Distnc function) in kilometers, and multiplied by a factor depending on the kind of segment:

\[ \text{Segment Length Cost} = \text{Distnc} (\text{Segment Length}) \]

- **Level Deviation Cost**: A cost for a possible level deviation is calculated as shown in the following equation:

\[ \text{Level Deviation Cost} = \text{Distnc} (\text{Length In Not Available Bands}) \times \text{Level_Off_Cost_Factor} @ \]

(14) The system delimits the graph creation with the use of a maximum expansion cost. Whenever the cost of a path exceeds a maximum expansion cost, graph expansion is stopped along this path (but can continue along other paths).

(15) If not preferred SID or STAR is present then only ATS terminal procedures that connect to active runway configurations shall be used in the expansion (if no active runway configuration exists then the CACD default configuration shall be used).

(16) A candidate segment must pass the pre-defined checks described in the following sections:

- **Segment angle check**: The angle formed between the bearings of the candidate segment and the source segment must not exceed a maximum allowable value (different value for TMA and En_Route).
- **Route sequence check**: The source and candidate segments must follow a specific sequence, depending on whether they are departure procedure, arrival procedure segments or air route segments.
- **Profile constraint check**: The system will check the candidate segment against all VIA and AVOID point profile constraints that are defined.
• RSA avoidance - The system shall avoid generating paths that go through Restricted Areas (RSA) that are active during the flying period. Like for AVOID airspace constraints it shall compare the FL range of the RSA with the FL_Band of the candidate segment and it shall compare the occupancy period of the candidate segment with the activation period of the RSA and shall stop the expansion of this segment when a level or time overlap has been found. The occupancy period of the candidate segment is the time interval between the interpolated ETOs on either side of the segment.

• CDR availability check - The availability of the candidate segments is checked against the consolidated availability of all RouteSegments with the same definition. Hence, consolidated segment availability has no Air Route associated with it. Exceptions are TP segments since they do not share a common segment.

• Restriction check - The system checks segments against AC (SID/STAR) restrictions and verifies if the aircraft type used, is allowed to fly the associated TP. If this is not the case, all segments of the associated TP are no longer considered as candidate segments. RAD or PTRs are not checked during graph creation. The system checks the DCT limit restrictions of candidate segments originating from the Reference Profile and if these are violated the system will not consider these candidate segments.

(17) Selection of Nearest Segments involves defining a path that connects the graph bounds of the reference profile with the required. This path consists of parts from the generated paths that include the required location or connect to this location via DCT. Following the selection of Nearest Segment(s), the system constructs a 2D track, using the lowest cost paths from the selected Nearest Segment(s) to each reference flight profile graph bound.

(18) The 4D flight profile construction involves first computing the new positions of the reference flight profile indicators on the 2D track of each generated path. Then a profile recalulation is invoked with the 2D track of each generated path and the associated indicator positions. Following the profile recalulation, the system invokes restriction checking for the generated 4D flight profile. If the restriction checks fail, the generated 4D flight profile is not considered as 4D flight profile alternative. Reference profile creation, graph creation and 4D flight profile construction result in a set of alternative 4D flight profiles. The system then selects from these alternative 4D flight profiles the ones that are sufficiently “different” so that the diversity in airspace penetration is not located only within a specific area around the paths, but is spread over the complete path length.
7 B2B

7.1 General Issues

(1) NM Operational Stakeholders not only need to exchange network operations information via applications but also need computer-to-computer interfaces. This interoperability with NM Operational Stakeholders is vital in order to ensure fast and efficient data sharing across the "ATM value chain" and more dynamic operations.

(2) The NM B2B Web Services give to eligible Operational Stakeholders a set of programming interfaces enabling the development of applications using web services for establishing direct interfaces with the NMOC systems and data.

(3) For interoperability reasons, NM B2B Web Services is based on open web services technologies that do not require the installation of proprietary software on the user’s side and follows the architecture standards recommended by the SWIM concept.

(4) The NM B2B Web Services is provided in two "flavours": SOAP web services and non-SOAP web services. The payload is always XML. The data exchanged follows standard data models, when available. This is the case for airspace data, where the model (and format) used is AIXM 5.1. All services make use of HTTPS. Access to NM B2B Web Services requires strong authentication with digital certificates (PKI).

(5) Users who wish to subscribe to NM B2B Web Services must be aware that they will have to develop their own applications before being able to benefit from NM B2B Web Services.

7.2 NM B2B Web Services grouping

(1) The available NM B2B Web Services have been grouped into various operational domains:

  a) Flight Services
     * FPL Preparation (Flight Plan Preparation):
       o It includes the generation of available routes and FPL Validation.
       o It provides the web services necessary for the preparation of a flight plan, before filing it to the NMOC.
     * FPL Management:
       o It provides multiple functions to support initial FPL Filing, FPL Updates, Cancellations and associated operations.
     * Flight Data Retrieval:
       o It provides web services to query and retrieve information on flight plans and flights.
     * Departure Planning Information (DPI):
       o It provides web services for CDM Airports and Advanced Tower systems to send DPI messages to NMOC.
     * Arrival Planning Information (API):
       o It provides services for the submission of target times (and other arrival information) in support of the arrival management processes.
     * Flight Update information:
o It provides services allowing the submission of airborne flight information to NM (e.g., First System Activation message type).

b) **Airspace Services**

- **Airspace availability**
  - It provides access to:
    - e-AMI (electronic Airspace Management Information); for access to the consolidated European AUP/UUP (Airspace Use Plan/Updated Use Plan) using the Aeronautical Information Exchange Model, AIXM 5.1 with the ADR extension.
    - FUA Service; for the creation and update of AUP/UUP, using AIXM 5.1, with the ADR extension.

- **Airspace Structure**
  - It provides access to the most up-to-date and consistent view of NM operational airspace data using AIXM 5.1 with ADR extension.
  - It consists of web services giving access to static and dynamic airspace data:
    - AIP sourced data (Points, Routes, Aerodromes and Airspaces) including changes resulting from NOTAM implementation and AUP/UUP implementation;
    - ATFCM related airspace data; i.e. primarily RAD and profile tuning restrictions, but also including other NM Restriction data.

c) **Flow Services**

- **Regulation List:**
  - It provides access to all regulation information used in the NM flow management systems.

- **ATFCM situation request:**
  - It provides information on the Network Situation (traffic, delays, delay causes and regulations) at a given point in time.

- **Traffic Counts Retrieval:**
  - It provides web services to query and retrieve Traffic Counts by Aerodrome, Aircraft Operator, Airspace, etc.

- **ATFCM Tactical Update:**
  - It provides services to manage ATFCM daily plan elements such as, Capacity Plan, Occupancy Traffic Monitoring Values (OTMV) Plan, Runway Configuration Plan, Sector Configuration Plan, Traffic Volume Activation Plan.

- **Regulation Proposal Management:**
  - It provides services to submit, update and revoke a regulation proposal, both for normal regulations and cherry-pick regulations.

- **Scenario Management:**
  - It provides services to access ATFCM scenarios.

- **Simulations:**
  - It provides access to simulation capabilities allowing to perform network impact assessment of ATFCM measures.
d) General information services
   - AIM (ATFM Information Messages):
     o For access to the general Network Operations information as published in the AIMs.
   - NM B2B Info:
     o For access to B2B documents, WSDL, XSC, Release Notes, examples.

e) Publish/Subscribe services
A NMOC Operational Validation Guidelines

A.1 Purpose and Objective

(2) The purpose of this Annex is to outline the necessary steps required by States / FABs / ANSPs in order to ensure the required level of compatibility with the NMOC systems with the envisaged airspace organization and flight planning procedures in the scope of FRA.

(3) The objective of a NMOC operational validation is to allow States / FABs / ANSPs to validate the impact of FRA on all NMOC systems on-site. The special exercises performed give mutual benefit for States / FABs / ANSPs who are able to actually assess the impact of their changes through the NMOC systems as well as for NMOC Airspace Data Section for which such reinforced co-operation leads to improvement in data quality. These exercises also give the opportunity to identify at Network level any side effects on the adjacent States / FABs / ANSPs.

(4) The request for NMOC operational validation and any subsequent data required shall be provided by States / FABs / ANSPs to the NMOC AIRAC Support and the NMOC AD Supervisor in accordance with the time period established by ERNIP Part 1. The relevant form for request of NMOC operational validation is given in section 5.4.

(5) The final Report from the NMOC operational validation shall be provided by NM not later than 1 (one) month after the validation.

A.2 General Requirements for FRA Data Provision and Verification

A.2.1 FRA Characteristic

(1) It shall be either in form of Concept of Operations document or a Draft AIP Publication and shall include as a minimum:

a) Lateral Limits;

b) Vertical Limits;

c) Applicable time;

d) Flight planning aspects - flight procedures for overflights, arrivals, departures, access to TMAs / CTRs, close proximity airports;

e) Status of ATS route network - available or withdraw during FRA.

A.2.2 Airspace Data

(1) It shall be either in form of Draft AIP Publication or separate .xls tables and shall include as a minimum:

a) FRA significant points definitions - 5LNCs or 3LNC NAVAIDs - clear indication of their purpose as: (E) - Entry, (X) - eXit, (I) - Intermediate, (A) - Arrival, (D) - Departure; reference to any airport procedures shall also be provided;
b) FRA significant points restrictions - 5LNCs or 3LNC NAVADs - restriction, normally as FL constraint;

c) Airspace Reservations - Special Areas if not published in CACD - clear indication of name-code, lateral limits in degree, minutes and seconds and vertical limits in VFR FLs or intermediate layer;

d) List of External Airports close to the FRA area;

e) List of Local (internal) Airports inside FRA area.

A.2.3 RAD Data

(1) It shall be in form of RAD Draft files and shall include as a minimum:

a) DCTs: Y - “Available” or N - “Not available”;

b) DCT Limits;

c) Required restrictions - new or/and withdrawn.

(2) The relevant RAD template format/s shall be used.

A.2.4 Flight Plan Data

(1) Flight plans shall be in ICAO format.

(2) The following requirements shall be considered:

- ITEM 15: Route - the ATS route designators inside the validated FRA area shall be replaced by abbreviation “DCT”. Outside this area the correctness of ATS routes or FRA DCTs is not mandatory;
- ITEM 18: Other information DOF/ - the date of flight departure (DOF) shall be removed from the text of each flight plan; REG/ - registration markings of the aircraft;
- ITEM 10: Equipment and Capabilities / ITEM 18: Other information PBN/ - the provided information shall be compatible to each other to avoid inconsistent data;
- In the case of NMOC operational validation of Night time FRA in ITEM 13 the time of departure (estimated off-block time (EOBT)) and in ITEM 18 estimated elapsed time (EET) from take-off to relevant FIR boundary representing the entry into the validated FRA area shall be coherent with defined FRA applicability period.

(3) Flight plans shall be presented in form of “.txt” format, unless otherwise agreed with the NMOC Validation Team, with files containing a maximum of 20 flight plans. For easy recognition the name of these files shall follow the procedure to be validated, for example “Test Group 1 - FIR Boundaries Compliance” or “Procedure F1”.

A.2.5 “Full FRA” model: FRA Significant Points data verification

(1) In case of FRA implementation based on “Full FRA” model the verification of the correct definition in CACD of Significant Point Types (PWP, NVA, COR, TER, etc.) shall be performed by States / ANSPs / FABs. This is important for proper “Full FRA” flight plan processing as not only en-route significant points can be used as FRA Intermediate points.
(2) Significant Point Type “PWP” includes all published 5LNCs including those used only for terminal/aerodrome purposes. Additionally these “terminal” 5LNCs cannot be defined as Significant Point Type “TER” - Terminal in CACD due to current system limitations where “TER” are only five-alpha numeric points. Verification requires correct definition of all PWP points that shall be used in “Full FRA” model.

(3) Significant Point Type “NVA” is divided in 14 sub-types including ILS/DME, LOC, MKR, etc. navigation aids not used for en-route purposes. Verification requires correct definition of all NVA points that shall be used in “Full FRA” model.

(4) All inconsistencies spotted by States / ANSPs / FABs shall be resolved by imposing a relevant EURO restriction. For example in order to allow proper “Full FRA” processing for each airport using PWP’s (5LNCs) as terminal points EURO restriction shall be created to allow these points only for arrival / departure to / from these airports.

A.3 General Requirements for Flight Plan Test Procedures

Important Notes:
1. The flight plan test procedures and the structure of the flight plans in this section were developed for the first time by BULATSA and were used for NMOC operational validation of Bulgarian Night FRA project in 2013.
2. Since then and with BULATSA approval they are used by the NM for NMOC operational validation for all other FRA projects following internal adaptations reflected in this Document.

A.3.1 Procedures for Coding

(1) This section contains test procedures which are logically organized into test groups. Each procedure consists of one or more flight plans which shall be “loaded” into NMOC systems in order to observe compliance or deviation with intended system behaviour.

(2) For the NMOC system the test procedures have the following attributes:

- Procedure Identifier - sequential letter and number assigned to procedures for the purpose of easy identification and reference;
- Procedure Purpose - definition of the goal to be accomplished by the procedure;
- Success criteria - criteria under which the test procedure fails or passes;
- Flight Plan Reference - contains numbers of flight plans relevant to the procedure. Each flight plan is identified by an artificial call-sign. Call-signs are presented as codes containing success criteria and procedure test group. The reference coding is comprised of the following symbols:
<table>
<thead>
<tr>
<th>Symbol</th>
<th>Possible Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Success criteria (one letter)</td>
<td>A - Flight plan has to be <strong>Accepted</strong> by the system</td>
</tr>
<tr>
<td></td>
<td>R - Flight plan has to be <strong>Rejected</strong> by the system</td>
</tr>
<tr>
<td>Test Group (one letter)</td>
<td>F - FRA area boundary compliance</td>
</tr>
<tr>
<td></td>
<td>S - Special areas avoidance</td>
</tr>
<tr>
<td></td>
<td>E - Transition To/From <strong>External</strong> Airports</td>
</tr>
<tr>
<td></td>
<td>L - Transition To/From <strong>Local</strong> Airports</td>
</tr>
<tr>
<td></td>
<td>C - Transition Due Change of <strong>Cruising Level</strong></td>
</tr>
<tr>
<td></td>
<td>P - FRA relevant <strong>Points</strong> Restriction</td>
</tr>
<tr>
<td></td>
<td>R - <strong>RAD</strong> Restrictions</td>
</tr>
<tr>
<td></td>
<td>N - FRA <strong>Normal</strong> Operations</td>
</tr>
<tr>
<td></td>
<td>T - Time Limits Compliance (for none H24 FRA only)</td>
</tr>
<tr>
<td>Procedure Number (one digit)</td>
<td>Procedure sequence</td>
</tr>
<tr>
<td>Flight Plan Number (two digits)</td>
<td>Sequential number identifying the flight plans from the procedure</td>
</tr>
</tbody>
</table>

For example test flight plan call-sign **AS101** means:

A - The flight plan is supposed to be accepted by the system

S - The test flight plan pertains to the “Special Area” test group

1 - The flight plan pertains to procedure number one from the test group

01 - This is the first flight plan from the procedure

### A.3.2 Test Procedure Groups and Flight Plan Examples

**Important Notes:**

1. The reference in flight plan examples below is a fictitious Night FRA area (FL245 - FL660) where relevant test group entities are underlined.

2. All flight plan examples are randomly chosen representing the minimum possible number but for NMOC operational validation preparation there is no limit in flight plans in each group to be prepared and validated.
### A.3.2.1 Test Group 1 - FRA area Boundaries Compliance

<table>
<thead>
<tr>
<th>Procedure Identifier:</th>
<th>F1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Procedure Purpose:</td>
<td>To test NMOC system ability to <strong>reject</strong> flight plans that are not compatible with FRA borders (crossing the FRA lateral limits).</td>
</tr>
<tr>
<td>Success Criteria:</td>
<td>All flight plans from this procedure are rejected by NMOC system.</td>
</tr>
<tr>
<td>Number of FPLs</td>
<td>2</td>
</tr>
<tr>
<td>FPL Reference:</td>
<td>RF101 - DCT from entry to exit</td>
</tr>
</tbody>
</table>

(FPL-RF101-IS  
-B744/H-  
-SDE2E3FGHIJ3J4J5M1RWXYZ/LB1D1  
-OMDB2130  
-... N0484F360 ... LLL DCT KKKKK  
-... EDDF0610 EDFH  
-PBN/A1B1C1D1L1O1S1S2  
-NAV/RNVD1E2A1 DAT/SVM REG/DABTF EET/... SEL/BFKQ  
-RVR/200 IFP/MODESASP OPR/DLH ORGN/EDDFDLHI RMK/TCAS ADSB |

(FPL-RF102-IN  
-B738/M-SDFGHILORVWXYZ/LB1  
-HEMA0035  
-... N0448F370 ... LLL DCT GGGG DCT XXXXX DCT QQQQ DCT CCCCC  
-... EPKT0426 EPWA EPKK  
-PBN/A1B2B3B4B5D1S2 COM/TCAS DOF/130512 REG/OKTVD EET/... SEL/LPJS  
-RVR/200 ORGN/LKPRTVSX RMK/...)
Procedure Identifier: F2

Procedure Purpose: To test NMOC system ability to accept flight plans that are not compatible with FRA borders (crossing the FRA lateral limits), but are defined as exceptions.

Success Criteria: All flight plans from this procedure are accepted by NMOC system.

Number of FPLs: 1

FPL Reference: AF201

(FPL-AF201-IS
-B738/M-SADE2E3FGHIJ1RWXYZ/LB1
-EDDN0020
-... N0444F380 ... TTTTT DCT
ZZZZZ DCT TTT, ...
-LTAI0255 LTBS
-PBN/A1B1C1D1L1O1S2T1
NAV/RNVD1E2A1 COM/CPDLC
DAT/V REG/DABMJ EET/...
SEL/ARHQ RVR/075 OPR/BER
ORGN/EDDTBERX RMK/TCAS)
### A.3.2.2 Test Group 2 - Special Areas Avoidance

<table>
<thead>
<tr>
<th>Procedure Identifier:</th>
<th>S1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Procedure Purpose:</td>
<td>To test NMOC system ability to reject flight plans that contain segments crossing special area airspace.</td>
</tr>
<tr>
<td>Success Criteria:</td>
<td>All flight plans from this procedure are rejected by NMOC system.</td>
</tr>
<tr>
<td>Number of FPLs 1</td>
<td></td>
</tr>
<tr>
<td>FPL Reference:</td>
<td>RS101 - entry-exit segment crossing special area</td>
</tr>
</tbody>
</table>

(FPL-RS101-IS
-A321/M-SDFGHIRWYZ/LB1
-LTBA0230
... N0450F340 ... TTTTT DCT DDDDD DCT ZZZZZ DCT JJJJJ DCT KKKK ...
-EDDT0238 EDDB
-PBN/B1D1S1S2 NAV/RNP APCH S1 S2 REG/TCJRG SEL/ERHM CODE/4BAA47 RVR/75 OPR/THY ORGN/LTBAHYW TALT/LTFJ RMK/TCAS)
Procedure Identifier: S2

Procedure Purpose: To test NMOC system ability to reject flight plans for flights changing cruising level from below FRA lower limit to above FRA lower limit but entering special area (from below / above).

Success Criteria: All flight plans from this procedure are rejected by NMOC system.

Number of FPLs: 1

FPL Reference: RS201 - changing cruising level over ...

(FPL-RS201-IS
-A321/M-SDFGHIRWXYZ/LB1
-LTBA0230
- ... N0450F220 TTTTT DCT ZZZZZ/N0420F260 DCT KKKKK ...
-EDDT0238 EDBB
-PBN/B1D1S1S2 NAV/RNP APCH S1 S2 REG/TCJRG SEL/ERHM CODE/4BA4A7 RVR/75 OPR/THY ORGN/LTBATHYW TALT/LTFJ RMK/TCAS

Procedure Identifier: S3

Procedure Purpose: To test NMOC system ability to reject flight plans for descending out of FRA area inbounds an external airport and entering a special area below FRA lower limit.

Success Criteria: All flight plans from this procedure are rejected by NMOC system.

Number of FPLs: 1

FPL Reference: RS301 - traffic descending ARR ....

(FPL-RS301-IS
-B738/M-SDE2FGHIM3RWXYZ/L
-OKBK2255
- ... N0453F370 ... KKKKK DCT JJJJJ DCT ZZZZZ DCT TTTTT ...
-LROP0345 LRCK
A.3.2.3 Test Group 3 - Traffic To/From External airports

<table>
<thead>
<tr>
<th>Procedure Identifier:</th>
<th>E1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Procedure Purpose:</td>
<td>To test NMOC system ability to accept flight plans for flights descending out of FRA inbound airports located close, but outside FRA borders.</td>
</tr>
<tr>
<td>Success Criteria:</td>
<td>All flight plans from this procedure are accepted by NMOC system.</td>
</tr>
<tr>
<td>Number of FPLs</td>
<td>1</td>
</tr>
<tr>
<td>FPL Reference:</td>
<td>AE101 - traffic ARR ... via ...</td>
</tr>
</tbody>
</table>

(FPL-AE101-IS
-B733/M-SDFGHIRWY/H
-HECA0025
-... N0460F370 ... KKKKK DCT JJJJJ DCT ZZZZZ/N0465F270 DCT TTTTT ...
-LROP0245
-PBN/A1B3C3D3L103S1T1 RVR/200 OPR/ROT ORGN)
**Procedure Identifier:** E2

**Procedure Purpose:** To test NMOC system ability to accept flight plans for flights climbing into FRA outbound airports located close, but outside FRA borders.

**Success Criteria:** All flight plans from this procedure are accepted by NMOC system.

**Number of FPLs:** 1

**FPL Reference:** AE201 - traffic DEP ... via ...

(FPL-AE201-IS
- B738/M-SDE2E3FGHIRWYZ/LB1
- LTBA0115
- N0440F340 TTTTT DCT ZZZZZ DCT KKKK ...
- ESSA0255 ENGM
- PBN/B1D1S1S2 NAV/RNP APCH S1 S2 REG/TCJHE EET/... SEL/ERDF CODE/4BA905 RVR/200 OPR/THY ORGN/LTBATHYW TALT/LTFJ RMK/TCAS)

A.3.2.4 Test Group 4 - Traffic To/From Local airports

**Procedure Identifier:** L1

**Procedure Purpose:** To test NMOC system ability to accept flight plans for flights climbing into FRA outbound local airports.

**Success Criteria:** All flight plans from this procedure are accepted by NMOC system.

**Number of FPLs:** 1

**FPL Reference:** AL101 - traffic DEP ... via ...

(FPL-AL101-IS
- A320/M-SDE1E2E3FGIRWXY/LB1
- LBWN2210
- N0450F370 MMMMM DCT PPPPP DCT TTTTT ...
- EGGW0315 EGSS
- PBN/B1D101S2 REG/HALWG EET/... RVR/75 OPR/WZZ ORGN/VIEFZXH)
Procurement Identifier: L2

Procedure Purpose: To test NMOC system ability to reject flight plans for flights descending out of FRA inbound local airports and outside of ATS route network (related to FRA where the use of ATS route network is mandatory for arrivals).

Success Criteria: All flight plans from this procedure are rejected by NMOC system.

Number of FPLs: 1

FPL Reference: RL201 - traffic ARR ... via ...

(FPL-RL201-IN
-C56X/M-SDE2FGRWX/H
-EDTY2230
- ... N0418F400 ... NNNN_DCT
-FFFE
-LBWN0210 LBBG
-PBN/A1B2B3B4C2D2 REG/DCBBB EET/... RVR/300 OPR/DC AVIATION ORGN/EDDSDCSC RMK/CALL SIGN TWINSTAR TCAS EQUIPPED ID DCS847 RTE DCA SEQ10005)
A.3.2.5 Test Group 5 - Traffic Transiting To/From FRA due change of cruising level

<table>
<thead>
<tr>
<th>Procedure Identifier:</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Procedure Purpose:</td>
<td>To test NMOC system ability to reject flight plans for flights with a cruising level below FRA lower limit (depends on AUA DCT limit below FRA).</td>
</tr>
<tr>
<td>Success Criteria:</td>
<td>All flight plans from this procedure are rejected by NMOC system.</td>
</tr>
<tr>
<td>Number of FPLs:</td>
<td>1</td>
</tr>
<tr>
<td>FPL Reference:</td>
<td>RC101</td>
</tr>
</tbody>
</table>

(FPL-RC101-IS
-A321/M-SDFGHIRWYZ/LB1
-LTBA0230
-N0450F220 KKKKK DCT PPPPP DCT TTTTT ...
-EDDT0238 EDDB
-PBN/B1D1S1S2 NAV/RNP APCH S1 S2 REG/TCJRG SEL/ERHM CODE/4BAA47 RVR/75 OPR/THY ORGN/LTBATHYW TALT/LTFJ RMK/TCAS)
Procedure Identifier: C2

Procedure Purpose: To test NMOC system ability to reject flight plans for flights descending out of FRA and continuing on a cruising level below FRA lower limit.

Success Criteria: All flight plans from this procedure are rejected by NMOC system.

Number of FPLs: 1

FPL Reference: RC201

(FPL-RC201-IN
-A321/M-DE1E2E3FGHIORVWXYZ/H
-ESSA2200
-N0412F250 ... KKKK DCT DDDDD/N0406F230 DCT TTTTT ... 
-LTAl0400LTBS
-PBN/A1B1C1D1L101 NAV/RNVD1E2A1 RNP4 REG/OYVKC SEL/EMRS RVR/75 OPR/VKG ORGN/EKCHVKG0 PER/C TALT/ESSA RMK/PLAN 3410)

Procedure Identifier: C3

Procedure Purpose: To test NMOC system ability to reject flight plans for flights climbing into FRA and containing DCT below FRA lower limit.

Success Criteria: All flight plans from this procedure are rejected by NMOC system.

Number of FPLs: 1

FPL Reference: RC301

(FPL-RC301-IS
-A321/M-SDE1E2E3FGHIJ1RWXYZ/LB1G1
-EGLL2255
-N0440F230 ... KKKK DCT PPPPP DCT DDDDD/N425F270 DCT TTTTT ... 
-LTBA0324LTBJ
-PBN/B1D1S1S2 NAV/RNP APCH S1 S2 REG/TCJRT EET/... SEL/KSCD CODE/4BAAS4 RVR/75 OPR/THY ORGN/LTBATHYW TALT/EGKK RMK/TCAS)
Procedure Identifier: C4

Procedure Purpose: To test NMOC system ability to accept flight plans for flights climbing into FRA and containing DCT above FRA lower limit.

Success Criteria: All flight plans from this procedure are accepted by NMOC system.

Number of FPLs: 1

FPL Reference: AC401

(FPL-AC401-IS
- B77W/H-SDE1E2E3FGHIJ3J5J6M1M2RWXY/LB1D1
- LIMC2255
- N0479E230 ... KKKKK L1 DDDDD/N0478E340 DCT TTTTT ... 
- WSSS1145 WSAP
- PBN/A1B1C1D1L1O1S2 REG/9VSWG EET/... SEL/DSCL OPR/SIA ORGN/WSSSSIAX RMK/ACASII EQUIPPED)
A.3.2.6 Test Group 6 - FRA points restrictions

**Procedure Identifier:** P1 and P2 - RESERVED FOR FUTURE USE

**Procedure Identifier:** P3

**Procedure Purpose:** To test NMOC system ability to reject flight plans for flights that have filed via a FRA Intermediate point defined by geographical coordinates or by bearing and distance.

**Success Criteria:** All flight plans from this procedure are rejected by NMOC system.

**Number of FPLs:** 1

**FPL Reference:** RP301 - intermediate point defined by geographical coordinates

(FPL-RP301-IS
-B763/H-SDE3FHIRWXYS
-EGLL2135
-N0460F370 ... AAAAA DCT 4241N02319E DCT TTTTT ...
-LCLK0412 LCPH
-PBN/A1B3B4B5D3D4 SUR/TCAS REG/GBNWB EET/... SEL/HPBD CODE/40041C RVR/075 OPR/BAW ORGN/EGLLBAWH RMK/LAHSO NOT AUTHORISED)
Procedure Identifier: P4

Procedure Purpose: To test NMOC system ability to reject flight plans that contain a FRA Entry or a FRA Exit point as a FRA Intermediate point.

Success Criteria: All flight plans from this procedure are rejected by NMOC system.

Number of FPLs 1

FPL Reference: RP401 - Entry / Exit point used as intermediate

(FPL-RP401-IS
-A320/M-SDE1FGHIJ1RWY/S
-OTBD2230
- ... N0442F370 ... AAAAA DCT
SSSSS DCT EEEEE ...
-EDDT0556 EDDB
-PBN/A1B1D1L1S1 REG/A7AHB
EET/... SEL/AJBS OPR/QTR
ORGN/OTBDZTZX RMK/TCAS)
## A.3.2.7 Test Group 7 - RAD Restrictions

<table>
<thead>
<tr>
<th>Procedure Identifier:</th>
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<tbody>
<tr>
<td>Procedure Purpose:</td>
<td>To test NMOC system ability to reject flight plans for flights that have filed a FRA cross-border DCT.</td>
</tr>
<tr>
<td>Success Criteria:</td>
<td>All flight plans from this procedure are rejected by NMOC system.</td>
</tr>
<tr>
<td>Number of FPLs:</td>
<td>1</td>
</tr>
<tr>
<td>FPL Reference:</td>
<td>RR101</td>
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</tbody>
</table>

(FPL-RR101-IN
-A320/M-SDFGIRWXY/LSB1
-LCLK2105
-N0450F370 ... AAAAA DCT RRRRR DCT UUUUU ...
-EPWA0320 EPKT
-PBN/A1B5C1D101S1 REG/SHPAC EET/... SEL/BKGR OPR/SMALL PLANET AIRLINES SPZOO ORGN/EKBICPUF RMK/OPS ..)

![Diagram showing cross-border DCT NOT allowed by RAD](Diagram)
<table>
<thead>
<tr>
<th>Procedure Identifier:</th>
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<tbody>
<tr>
<td>Procedure Purpose:</td>
<td>To test NMOC system ability to accept flight plans for flights that have filed a FRA cross-border DCT defined as an exception.</td>
</tr>
<tr>
<td>Success Criteria:</td>
<td>All flight plans from this procedure are accepted by NMOC system.</td>
</tr>
<tr>
<td>Number of FPLs</td>
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<tr>
<td>FPL Reference:</td>
<td>AR201</td>
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</table>

(FPL-AR201-IN
-A306/H-SDFHIRWY/L
-LTAI2200
-N0454F360 ... TTTT DCT QQQQ QQQQ DCT CCCCC ... 
-UKBB0210 UKCC
-PBN/A1B3B4B5D3D4O3O4 REG/TCOAH EET/... SEL/DRCE OPR/OHY ORGN/ISTOW8Q)
**Procedure Identifier:** R3  

**Procedure Purpose:** To test NMOC system ability to **reject** flight plans for flights that have filed in FRA via FRA Exit point not allowed for certain arrivals.  

**Success Criteria:** All flight plans from this procedure are rejected by NMOC system.  

**Number of FPLs** 1  

**FPL Reference:** RR301  

(FPL-RR301-IS  
- AT72/M-SDFGHRWY/S  
- LTBA2200  
- N0280F260 ... AAAA DCT RRRRR  
DCT XXXXX DCT TTTTTI ...  
- LYBE0153 LYPG LWSK  
- PBN/B2B3 REG/YU ALN  
EET/LBSR0031 LYBA0117 RVR/300  
ORGN/BEGNAJU

[Diagram showing flight paths and geographical locations, with note: TTTTT NOT allowed by RAD for ARR in FPL]
<table>
<thead>
<tr>
<th>Procedure Identifier:</th>
<th><strong>R4</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Procedure Purpose:</td>
<td>To test NMOC system ability to reject flight plans for flights that have filed in FRA via FRA Entry point not allowed for overflights.</td>
</tr>
<tr>
<td>Success Criteria:</td>
<td>All flight plans from this procedure are rejected by NMOC system</td>
</tr>
<tr>
<td>Number of FPLs:</td>
<td>1</td>
</tr>
<tr>
<td>FPL Reference:</td>
<td>RR401</td>
</tr>
</tbody>
</table>

(FPL-RR401-IS
-B738/M-SDFGHIL0RVWY/SB1
-LTAC2335
-N0441F370 ... AAAAA DCT RRRRR DCT XXXXX DCT TTTTT ...  
-EDDF0309 EDDK
-PBN/A1B1C1D1L1O1S2T2 REG/DASXD SEL/JQHM RVR/125 IFP/MODESASP OPR/SXD ORGN/EDDFSXSX RMK/TCAS)
**Procedure Identifier:** R5

**Procedure Purpose:** To test NMOC system ability to accept flight plans for flights that have filed in FRA via FRA Entry point allowed for certain departures.

**Success Criteria:** All flight plans from this procedure are accepted by NMOC system

**Number of FPLs:** 1

**FPL Reference:** AR501

(FPL-AR501-IS
-B738/M-SDE2E3FGHIRWYZ/LB1
-LTBA2200
-N0450F410 ... AAAAA DCT RRRRR DCT XXXXX DCT TTTTTI ...
-EDDL0303 EDDK
-PBN/B1D1S1S2 NAV/RNP APCH S1S2 REG/TCJGY EET/... SEL/ERCK CODE/4BA8F9 RVR/200 IFP/MODESASP OPR/THY ORGN/LTBATHYW TALT/LTFJ RMK/TCAS)
A.3.2.8  Test Group 8 - Normal FRA FPL Messages

<table>
<thead>
<tr>
<th>Procedure Identifier:</th>
<th>N1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Procedure Purpose:</td>
<td>To test NMOC system ability to accept flight plans that are acceptable for FRA operations in FRA area.</td>
</tr>
<tr>
<td>Success Criteria:</td>
<td>All flight plans from this procedure are accepted by NMOC system.</td>
</tr>
<tr>
<td>Number of FPLs:</td>
<td>1</td>
</tr>
<tr>
<td>FPL Reference:</td>
<td>AN101</td>
</tr>
</tbody>
</table>

(FPL-AN101-IS
-A321/M-SDFGHIRWYZ/LB1
-LTBA0230
-N0450F350 ... AAAAA DCTR RRRRR DCT EEEEE ...
-EDDT0238 EDDB
-PBN/B1D1S1S2 NAV/RNP APCH S1 S2 REG/TCJRG SEL/ERHM CODE/48AA47 RVR/75 OPR/THY ORGN/LTBATHYW TALT/LTFJ RMK/TCAS)
<table>
<thead>
<tr>
<th>Procedure Identifier:</th>
<th>N2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Procedure Purpose:</td>
<td>To test NMOC system ability to reject flight plans using ATS route network within FRA area when ATS route network is withdrawn.</td>
</tr>
<tr>
<td>Success Criteria:</td>
<td>All flight plans from this procedure are rejected by NMOC system.</td>
</tr>
<tr>
<td>Number of FPLs</td>
<td>1</td>
</tr>
<tr>
<td>FPL Reference:</td>
<td>RN201</td>
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</table>

(FPL-RN201-IS
-B738/M-SDFGHILORVWY/SB1
-LTAC2335
-N0447F380 ... TTTTT Lxxx PPPPP Lxxx BBBB ...  
-EDDF0307 EDDK
-PBN/A1B1C1D1L1O1S2T2 REG/DASXS EET/... SEL/JRFL RVR/125 IFP/MODESASP OPR/SXD ORGN/EDDFSXSX RMK/TCAS)

![Diagram of ATS routes withdrawn within FRA area]
<table>
<thead>
<tr>
<th>Procedure Identifier:</th>
<th>N3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Procedure Purpose:</td>
<td>To test NMOC system ability to accept flight plans using ATS route network within FRA area when ATS route network is available.</td>
</tr>
<tr>
<td>Success Criteria:</td>
<td>All flight plans from this procedure are accepted by NMOC system.</td>
</tr>
<tr>
<td>Number of FPLs</td>
<td>1</td>
</tr>
<tr>
<td>FPL Reference:</td>
<td>AN301</td>
</tr>
</tbody>
</table>

(FPL-AN301-IS
-B738/M-SDFGHILORVWY/SB1
-LTAC2335
-N0447F380 ... TTTTT Lxxx PPPPP DCT NN DCT BBBB ... 
-EDDF0307 EDKK
-PBN/A1B1C1D1L1O1S2T2 REG/DASXS EET/... SEL/JRFL RVR/125 IFP/MODESASP OPR/SXD ORGN/EDDFSXSE RMK/TCAS)
### A.3.2.9 Test group 9 - FRA Time Limits Compliance (only for none H24 FRA)

<table>
<thead>
<tr>
<th>Procedure Identifier:</th>
<th>T1</th>
</tr>
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<tbody>
<tr>
<td>Procedure Purpose:</td>
<td>To test NMOC system ability to reject flight plans for flights that arrive at the FRA Entry point before the beginning of FRA applicability period.</td>
</tr>
<tr>
<td>Success Criteria:</td>
<td>All flight plans from this procedure are rejected by NMOC system.</td>
</tr>
<tr>
<td>Number of FPLs</td>
<td>1</td>
</tr>
<tr>
<td>FPL Reference:</td>
<td>RT101</td>
</tr>
</tbody>
</table>

(FPL-RT101-IS
-A321/M-SDE2E3FGHIRWXY/S
-EGLL1830
-N0452F330 ... AAAAA DCT RRRRR DCT XXXXX DCT TTTTTI ... 
-LLBG0434 LCLK 
-PBN/A1B1D101S2 SUR/TCAS REG/GMEDG EET/...SEL/ESLP CODE/400965 RVR/075 OPR/BAW ORGN/EGLLBAWH RMK/LAHSO NOT AUTHORISED)
Procedure Identifier: T2

Procedure Purpose: To test NMOC system ability to reject flight plans for flights that arrive at the FRA Entry point after the end of FRA applicability period.

Success Criteria: All flight plans from this procedure are rejected by NMOC system.

Number of FPLs 1

FPL Reference: RT201

(FPL-RT201-IS
-A306/H-SDFGHIRWXY/L
-EDDK0220
- ...N0456F310 ... AAAAA DCT
RRRR R DCT XXXX DCT TTTTT...
-LTBA0242 LTBU LTBJ
-PBN/A1B1D1 REG/TCMNV EET/...
SEL/BGAJ ORGN/LTBMNBX
RMK/CALLSIGN BLACKSEA)
Procedure Identifier: T3

Procedure Purpose: To test NMOC system ability to reject flight plans for flights that arrive at the FRA Entry point before the end of FRA applicability period but exit after the end of FRA applicability period.

Success Criteria: All flight plans from this procedure are rejected by NMOC system.

Number of FPLs 1

FPL Reference: RT301
(FPL-RT301-IN
- B738/M-SDFGHILORVWY/SB1
- EDDK0150
- ... N0443F370 ... AAAAAA DCT RRRRR DCT XXXXX DCT TTTTTT ... 
- LTAI0312
- PBN/A1B1C1D1L1O1S2T1
REG/TCSNO EET/... SEL/FKMP
RVR/125 OPR/SXS
ORGN/EDDFSXSX RMK/TCAS)
**Procedure Identifier:** T4

**Procedure Purpose:** To test NMOC system ability to reject flight plans for flights that arrive at the FRA Entry point before the beginning of FRA applicability period but exit after the beginning of FRA applicability period.

**Success Criteria:** All flight plans from this procedure are rejected by NMOC system.

**Number of FPLs:** 1

**FPL Reference:** RT401

(FPL-RT401-IS
-B77W/H-SDE2E3FGHIJ3J6M1M2RWXY/LB1D1
-OMDB1805
- ... N0486F370 ... AAAA DCT RRRR DCT XXXX DCT TTTTT ...
-LFPG0636 LFPO
-PBN/A1B1C1D1S1 REG/FGZNC EET/... SEL/BMGS IFP/MODESASP OPR/AFR ORGN/OMDBZPX RMK/IRAN PERMIT YK 1F 287146 ALA)

**FRA fictitious example**
23:00 - 05:00 (22:00 - 04:00)
Entry 22:52 (21:52)
Exit 01:12 (00:12)
**Procedure Identifier:** T5  

**Procedure Purpose:** To test NMOC system ability to accept flight plans for flights that arrive at the FRA Entry point before the end of FRA applicability period and exit after the end of FRA applicability period but have filed a flight plan only up to the end of FRA applicability period and then continue via ATS route network.

**Success Criteria:** All flight plans from this procedure are accepted by NMOC system.

**Number of FPLs:** 1

**FPL Reference:** AT501

(FPL-AT501-IS  
- B744/H-SDE2E3FGHIM3RWXY/H  
- LIMC0210  
- ... N0484F350 ... AAAAA DCT RRRRRDCT XXXXX Nxxx TTTTTT ...  
- RKS1105 RKSS  
- PBN/A1B1C1D1S1S2 REG/HL7417  
EET/... SEL/DSCR CODE/71BC17  
OPR/AAR ORGN/RKSSAARO  
RALT/LOWW UAAA ZBAA RIF/DKO  
A596 KM ZBAA RMK/TCAS II  
EQUIPPED CARGO)
Procedure Identifier: T6

Procedure Purpose: To test NMOC system ability to accept flight plans for flights that arrive at the FRA Entry point before the beginning of FRA applicability period and exit after the beginning of FRA applicability period but have filed via ATS route network up the beginning of FRA applicability period and then using DCT.

Success Criteria: All flight plans from this procedure are accepted by NMOC system.

Number of FPLs 1

FPL Reference: AT601

(FPL-AT601-IS
-B744/H-SDE2E3FGHIM3RWXY/H
-LIMC2030
- ... N0484F360 ... TTTTT Nxxx XXXXX DCT RRRRR DCT NN DCT BBBBB ...
- RKS1105 RKSS
-PBN/A1B1C1D1S1S2 REG/HL7417 EET/... SEL/DSCR CODE/71BC17 OPR/AAR ORGN/RKSSAARO RALT/LOWW UAAA ZBAA RIF/DKO A596 KM ZBAA RMK/TCAS II EQUIPPED CARGO)
A.4 Request Form

(1) The request by relevant State / FAB / ANSP National Environment Coordinator (NEC) for NMOC operational validation shall be send to NMOC AIRAC Support and AD Supervisor in accordance with time period requirements established by the ERNIP.

REQUEST FOR NMOC OPERATIONAL VALIDATION

<table>
<thead>
<tr>
<th>Addressee(s)</th>
<th>EUROCONTROL - NMD</th>
</tr>
</thead>
<tbody>
<tr>
<td>To AIRAC Support</td>
<td><a href="mailto:nm.ad.airac@eurocontrol.int">nm.ad.airac@eurocontrol.int</a></td>
</tr>
<tr>
<td>Copy AD Supervisor</td>
<td><a href="mailto:nm.ad.spvr@eurocontrol.int">nm.ad.spvr@eurocontrol.int</a></td>
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</table>

NMOC OPERATIONAL VALIDATION

<table>
<thead>
<tr>
<th>Originator</th>
<th>NM AD CONTACT</th>
</tr>
</thead>
<tbody>
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Participants/Contact Person(s)

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Operational Implementation Date

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Deadline for Data delivery to AIRAC Support

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<th>Extra Tape / RAD+2 Tape</th>
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TYPE OF VALIDATION

| A | Only ENV / CHMI | Yes | No |
| A + IFPS profiles (+RAD) | Yes | No |
| A + B + ETFMS Profiles | Yes | No |

FPLs

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## Acronyms

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Table 74: Acronyms table