

CNS/ATM/IC/SG/1
Appendix 4A to the Report on Agenda Item 4

**DEVELOPMENT STATUS OF SARPS AND GUIDANCE MATERIAL
RELATED TO CNS/ATM SYSTEMS**

| MAIN FIELD | ELEMENTS | SARPs/PANS | | GUIDANCE MATERIAL | |
|-------------|--|-------------------------------------|--|-------------------------------------|---|
| | | TARGET COMPLETION DATE ¹ | STATUS | TARGET COMPLETION DATE ² | STATUS |
| A T M | Global air traffic management requirements | 2005 | Annexes 2 and 11 SARPs and PANS-ATM procedures under development. | | Operational concept of global ATM being defined as part of updated global plan. |
| | Interoperability and functional integration of flight operations, ATS, ATFM and tactical ASM | 2005 | Annexes 2 and 11 SARPs and PANS-ATM procedures under development. | | |
| | Required total system performance (RTSP) | 2005 | Draft policy statement under development. | | |
| | ATM requirements for communications, navigation and surveillance | 2002 | Annexes 2, 6 and 11 SARPs and PANS-ATM procedures under development. | | |
| A S M | Airspace infrastructure planning | | | Completed | <i>Manual on Airspace Planning Methodology for the Determination of Separation Minima (Doc 9689)</i> published. |

1) final action by the Air Navigation Commission

2) approval by the Secretary General

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|-------------|--------------------------------------|--|--|--|--|---|
| | | TARGET COMPLETION DATE ¹ | STATUS | TARGET COMPLETION DATE ² | STATUS | |
| | RNP and RNAV for en-route operations | Completed | Annex 11 SARPs and PANS-ATM procedures adopted by Council in 1998. | Completed | Update of the <i>Manual on Required Navigation Performance (RNP)</i> (Doc 9613) completed. Second edition published. | |
| A T M | A T S | Separation between aircraft | 2002 | PANS-ATM procedures approved by Council in 1998; further amendment to Annexes 2, 6, 11 and PANS-ATM under development. | 2001 | Amendment to <i>Air Traffic Services Planning Manual</i> (Doc 9426) to be developed. Amendment to the <i>Manual on Implementation of a 300 m (1 000 ft) Vertical Separation Minimum between FL 290 and FL 410</i> (Doc 9574) completed. Additional guidance is under development for the <i>Manual on APM</i> (Doc 9689). |
| | | ATS (uplink of MET data) | 2001 | Annex 3 SARPs and PANS-ATM procedures concerning D-ATIS and D-VOLMET being developed with the assistance of the METLINKSG. | | |
| | | ATS (uplink of SIGMET information in graphical format) | 2004 | Initial Annex 3 SARPs specifying the code to be used for graphical SIGMETs being developed with the assistance of the METLINKSG. | — | — |
| | | WAFS planning and implementation (final phase) | 2004 | Annex 3 SARPs for global WAFS SIGWX forecasts in binary format (BUFR code) for direct transmission to airline and ATM computers being developed with the assistance of WAFSSG. | | |

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| | | TARGET COMPLETION DATE ¹ | STATUS | TARGET COMPLETION DATE ² | STATUS |
| | ATS applications for air-ground data links | 2003 | Annex 11 SARPs and PANS-ATM procedures are being developed. | Completed | The <i>Manual of Air Traffic Services Data Link Applications</i> (Doc 9694) published and dispatched in second quarter 1999. Additional guidance is under development. |
| | Data interchange between automated ATS systems | 2002 | Annex 11 SARPs and PANS-ATM procedures under development. | | |
| | ILS/MLS/GNSS ³ operations | 2002 | PANS procedures under review. | | |
| | ATFM systems and procedures | 2005 | Annexes 2 and 11 SARPs and PANS-ATM procedures to be developed. | 2001 | ATFM part of the ATM operational concept under development. |
| CNS/ATM | Human Factors | 2001 | HF-related SARPs were developed and incorporated in Annexes 10 and 11. Further, HF-related requirements for inclusion in the PANS-OPS were developed during 2000, with an applicability date of 1 November 2001. | 2001 | A chapter on Human Factors issues was developed and included in the <i>Manual of Air Traffic Services Data Link Applications</i> (Doc 9694). A manual on Human Factors Guidelines for Air Traffic Management Systems (Doc 9758) was completed and published in 2000. |
| | Human Resource Planning and Training | | | 2001 | The human resource planning guidance material is under development. A potential approach and format for regional training planning was developed. |
| COM | VHF digital link (Modes 3 and 4) | Completed | Mode 4 validation commenced in 1997. Mode 3 validation started in 1998. Validation of material in manuals ongoing. | Ongoing | SARPs adopted in 2001. Manuals on VDL technical details and implementation aspects will be published in 2001. |

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| | | TARGET COMPLETION DATE ¹ | STATUS | TARGET COMPLETION DATE ² | STATUS |
| | AMS | Completed | Included in Amendment 75 to Annex 10. | Completed | Included in Amendment 75 to Annex 10. |
| | Next generation satellite system | Completed | SARPs development completed by AMCP/7 | Ongoing | Guidance material on specific systems to be developed as required. |
| NAV | RNP (en-route) | Completed | Adopted/approved by Council in 1994 (Annexes 2, 4, 6, 11, 15 and PANS-ATM). | Completed | Guidance material for RNP1 operations under development. |
| | | | | Completed | <i>The Manual on Airspace Planning Methodology for the Determination of Separation Minima</i> (Doc 9689) published in 1998. |
| | RNP (terminal area, approach, landing, departure) | Completed | Recommended by AWOP/16 and adopted by the Council in 1999. | Completed | Developed by AWOP, in parallel with SARPs. |
| | WGS-84 | Completed | Adopted by Council in 1994, 1995, 1997 and 1998. | Completed | <i>WGS-84 Manual</i> , (Doc 9674) and Amendment 1 issued. |
| | | | Annexes 4, 11, 14 (both volumes) and 15 updated, provisions applicable from 1 January 1998. | | Amendment 2 concerning taxiway and apron points has been written and submitted for translation and publication. ICAO WGS-84 website is under development. |
| | Aeronautical data bases | 2003 | SARPs for the standard conceptual information model required for the provision and exchange of electronic aeronautical data initiated at the AIS/MAP/98 Divisional Meeting, are being developed by the Secretariat with the assistance of ADMSG. | 2004 | To be developed by the Secretariat with the assistance of AISMAPSG and ADMSG. |

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4A-5

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|------------|--|-------------------------------------|---|-------------------------------------|--|
| | | TARGET COMPLETION DATE ¹ | STATUS | TARGET COMPLETION DATE ² | STATUS |
| | | 2001 | Initial SARPs for electronic aeronautical charts for cockpit display were included in Amendment 52 to Annex 4. | | |
| | | 2004 | SARPs for the electronic terrain data are under development in consultation with RTCA/EUROCAE. | | |
| NAV | GNSS performance criteria to support operational requirements | 2001 | Draft material was developed at the GNSSP/3 (12 to 23 April 1999). | 2001 | Developed by GNSSP in parallel with SARPs. |
| | SARPs for the use of existing satellite navigation systems with augmentation sub-systems | 2001 | First package of SARPs was recommended by GNSSP/3 and adopted by Council in March 2001 for applicability on 1 November 2001. | 2001 | Developed by GNSSP in parallel with SARPs. |
| | SARPs for the longer-term GNSS | 2004 | Guidance on the long-term GNSS was developed by GNSSP/3 and the work on SARPs for new elements of GNSS (GPS second civil frequency, Galileo, GLONASS-M) is under way. | 2004 | Developed by GNSSP in parallel with SARPs. |
| SUR | Surveillance system specifications for emerging surveillance systems and architectures | 2004 | Surveillance enhancements (ANC Task No. CNS-9601) being developed by SCRSP. | Ongoing | |
| | SSR procedures | Completed | Update of Annex 11 and PANS-ATM. | Completed | |

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| | | TARGET COMPLETION DATE ¹ | STATUS | TARGET COMPLETION DATE ² | STATUS |
| | ADS procedures | 2001 | Annex 11 SARPs and PANS-ATM procedures being developed by the OPLINKP and SASP. | Completed | <i>Manual of ATS Data Link Applications</i> (Doc 9694) published and dispatched in second quarter 1999. |
| | ADS-B and equivalent | On-going | Being developed by OPLINKP | Ongoing | Amendment to the <i>Manual of ATS Data Link Applications</i> (Doc 9694) to be developed. |
| | ADS: inclusion of turbulence reporting | 2001 | Annex 3 SARPs and PANS-ATM turbulence reporting procedures based on the eddy dissipation rate being developed with the assistance of METLINKSG. | | |

LEGEND

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|-------|--|------|------------------------------------|
| ATM | Air traffic management | COM | Communications |
| ADS | Automatic dependent surveillance | GNSS | Global navigation satellite system |
| ADS-B | ADS broadcast | NAV | Navigation |
| AIS | Aeronautical information services | RNAV | Area navigation |
| ASM | Airspace management | RNP | Required navigation performance |
| ATFM | Air traffic flow management | SSR | Secondary surveillance radar |
| ATN | Aeronautical telecommunication network | SUR | Surveillance |
| ATS | Air traffic services | WAFS | World area forecast system |
| CNS | Communications, navigation, and surveillance | WGS | World geodetic system |

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4A-1

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