

APPENDIX A

REGIONAL PLANNING AND IMPLEMENTATION ACTIVITIES RELATED TO AIR NAVIGATION SYSTEMS

1. Regional plans

Note.— The following paragraphs summarize the major planning activities which have been reported by recent meetings of the PIRGs.

AFI Planning and Implementation Regional Group

1.1 The fourteenth meeting of AFI Planning and Implementation Regional Group (APIRG/14), held in Yaoundé, Cameroon, in June 2003, focussed on the implementation of regional air navigation plans and associated ICAO provisions. The meeting identified the critical circuits and examined the use of public data networks (PDNs) or integrated services digital networks (ISDNs) for upgrading aeronautical fixed telecommunication network (AFTN) circuits. The meeting was informed that, to date, only South Africa (Johannesburg and Cape Town airports), and the Réunion Islands (St. Denis airport) had received specific indications by airlines wishing to operate the new larger aircraft (NLA), in particular the A380 due to enter commercial operation, in the first quarter of 2006. The meeting acknowledged the efforts recently undertaken by number of States in extending VHF coverage on various air traffic services (ATS) routes through the use of remote VHF stations. With reference to proposed implementation of reduced vertical separation minimum (RVSM) with a target date of January 2005, the meeting recognized the need to develop an implementation strategy, including a formal risk assessment, and to establish a safety management process in order to ensure that an acceptable level of safety can be achieved and maintained. It was agreed that SBAS operational system based on European Geostationary Navigation Overlay Service (EGNOS) should be implemented in the Africa-Indian Ocean (AFI) Region starting with the deployment of a preoperational system. Responding to the changing needs that called for a fresh approach in planning and implementation of air navigation systems, APIRG suggested a revision to its terms of reference.

ASIA/PAC Air Navigation Planning and Implementation Regional Group

1.2 The fourteenth meeting of ASIA/PAC Air Navigation Planning and Implementation Regional Group (APANPIRG/14), which took place in Bangkok, Thailand, in August 2003, focused on the development of the region's air navigation system infrastructure, and marked a major milestone by completing preparations for implementing RVSM in airspace over the Bay of Bengal and beyond, in conjunction with planned RVSM implementation in the Middle East Region effective 27 November 2003. The meeting adopted Mode S Extended Squitter as the data link for ADS-B for the near term applications and encouraged the States of Asia Pacific (ASIA/PAC) Region to implement ADS-B for ground-based surveillance with a target date of January 2006. It reviewed the draft regional procedures for identification, assessment, reporting and monitoring of the status of air navigation deficiencies as a supplement to the uniform methodology, which is expected to be finalized by early 2004 for its implementation by the States.

Recognizing the need for an airspace system performance monitoring structure for the ASIA/PAC Region, which would provide a framework for safety monitoring services for the implementation of reduced separation minima and CNS/ATM applications such as automatic dependent surveillance (ADS) and controller-pilot data link communications (CPDLC), the meeting established a Regional Airspace Safety Monitoring Advisory Group with immediate effect. Noting the success achieved at WRC 2003, the ongoing efforts to protect the aeronautical frequency spectrum were reviewed by the meeting and called on States to support ICAO's position through the participation in a number of regional forums. Other topics of discussion included increasing the efficiency of the regional planning process, meteorology applications and environmental issues with emphasis on the benefits made possible by implementing CNS/ATM systems. Responding to the changing needs that called for a fresh approach in planning and implementation of air navigation systems, APANPIRG suggested a revision to its terms of reference.

Caribbean and South American Planning and Implementation Regional Group

1.3 The eleventh meeting of the Caribbean/South American (CAR/SAM) Regional Planning and Implementation Group (GREPECAS/11) was held in Manaus, Brazil, in December 2002. The major activities undertaken by GREPECAS are as follows: regional agreement for the implementation of RVSM in the Caribbean/South America (CAR/SAM) Regions in conjunction with the planned implementation in the United States domestic airspace and southern Canadian airspace with effect from 20 January 2005; establishment of a CAR/SAM regional RVSM monitoring agency and the assignment of this task to Brazil; and establishment of a CAR/SAM regional bird hazard prevention committee. In addition, the meeting called on States to do similar establishment of committees at aerodromes and at national levels. On the subject of protection of the aeronautical frequency spectrum, the region is addressing this issue in a number of fora, such as meetings of Directors General of Civil Aviation and regional preparatory meetings. To expedite the process in resolving the deficiencies, a safety assessment tool that would help in analyzing and prioritizing the deficiencies to be addressed has been developed. Furthermore, the meeting called upon States to adopt the project outline developed by CAR/SAM Regional Planning and Implementation Group (GREPECAS) for the commitment of resources to correct deficiencies. On the subject of GNSS augmentation, GREPECAS agreed for SBAS trials in the CAR/SAM Region using the EGNOS platform. Development of a regional strategy for the introduction of ATM automation in the CAR/SAM regions continues to be ongoing task of GREPECAS. The meeting also strongly supported GREPECAS efforts with regard to the aviation security programme. Responding to the changing needs that called for a fresh approach in planning and implementation of air navigation systems, GREPECAS suggested a revision to its terms of reference.

European Air Navigation Planning Group

1.4 The forty-fourth meeting of the European Air Navigation Planning Group (EANPG/44) was convened in Paris, France in December 2002. A proposal to create a single European upper flight information region (UIR) above flight level (FL) 285, with effect from January 2005, was noted. The meeting was of the view that a division of the European (EUR) Region into component parts was highly undesirable and should be avoided. The EANPG decided that a coordinated plan to expand RVSM in the EUR Region should be developed and that a common implementation date should be agreed upon. The meeting supported further development of the Aeronautical Information Management Strategy as part of a

seamless global information management concept that should encompass all airspace users and all phases of flight. With regard to deficiencies, specifically in connection with the implementation of RVSM, the meeting noted with concern the presence of non-RVSM-approved civil aircraft in RVSM airspace due to either flight planning errors or deliberate abuse of the system. EANPG reviewed its role and activities and, as a result of changing needs, revised its terms of reference. It was noted that several of the most important current regional activities — such as “Single European Sky”, airspace harmonization issues, RVSM safety performance monitoring and 8.33 kHz channel-spacing — would require annual meetings for their successful advancement.

Middle East Air Navigation Planning and Implementation Regional Group

1.5 The eighth meeting of the Middle East Air Navigation Planning and Implementation Regional Group (MIDANPIRG/8) was held in Cairo, Egypt, in September 2003. The major activities undertaken in the field of air navigation are as follows: the draft MID Basic air navigation plan (ANP) and facilities and services implementation document (FASID) have been finalized and will undergo technical and editorial verification at ICAO Headquarters; final preparations and interregional coordination with the ASIA/PAC and EUR Regions have been completed as a part of the project to implement RVSM in the MID Region effective from 27 November 2003; and a Middle East Central Monitoring Agency (MECMA) has been established with initial focus on monitoring RVSM implementation. The terms of reference of MECMA were revised to include additional tasks for carrying out safety and airspace monitoring in respect of required navigation performance (RNP) and area navigation (RNAV) implementation; and a feasibility study for establishing a Middle East Regional very small aperture terminal (VSAT) network for ground-ground data/voice communications has been completed. The Middle East States are to obtain necessary authorization from the respective telecommunications regulatory authorities and to provide feedback in order to proceed with the design phase of the project; an ATN transition plan is under development, with an initial focus on implementation of ground-ground applications such as ATS message handling system (AMHS) and air traffic services (ATS) interfacility data communications (AIDC); the MID Regional plan for CNS/ATM systems has been reviewed and updated; the deficiencies of the Middle East Region were reviewed and addressed as a part of MIDANPIRG’s work programme; and to expedite the process of resolving the deficiencies, a dedicated Safety Working Group has been established. Noting the success achieved at WRC 2003, the meeting reviewed its ongoing efforts to protect the aeronautical frequency spectrum and called upon States to refrain from using or allocating the band 1 559-1 610 MHz to fixed service. Responding to the changing needs that called for a fresh approach in planning and implementation of air navigation systems, MIDANPIRG suggested a revision to its terms of reference.

North Atlantic Systems Planning Group

1.6 The thirty-ninth meeting of the North Atlantic systems planning group (NAT SPG/39) took place in Paris, France, in June 2003. The NAT SPG carried out a review of the air navigation system safety performance for the NAT Region. It confirmed that during 2002, the risk levels in the horizontal plane were within the target level of safety calculated for the NAT Minimum Navigation Performance Specifications (MNPS) airspace. However, in order to contain the number of gross navigation errors, the meeting agreed on further methods of improving the standards of navigation. The meeting expressed its concern regarding the level of risk associated with vertical separation and consequently agreed on a series of actions aimed at reducing and or mitigating the risk. The most important change was the agreement to implement systematic lateral offsets. The efficiency of the NAT air navigation system and of the services

provided to airspace users were revisited, and it was agreed that a new method of measuring efficiency, which would take into account the key performance indicators, should be developed in coordination with similar work being carried out in other fora. With respect to technological developments, the meeting considered questions relating to the use of FANS-1/A avionics and the benefits that could be achieved as a result of the decreased requirement for HF communications.

2. Information on other major implementation activities

High frequency data link (HFDL)

2.1 Fourteen ground stations have already been implemented by ARINC Inc. at geographically diverse locations worldwide which transmit on 30 active frequencies and provide near-global coverage. Installation of additional ground systems has begun. The service is initially intended for aeronautical operational control (AOC) but a number of ATS providers (in Canada, Portugal and the United Kingdom) have started pre-operational trials of the link for air traffic service (ATS) communications (initially for way-point position reporting).

VDL Mode 2

2.2 The first implementation of VDL Mode 2, in support of controller-pilot data link communications (CPDLC) and in an ATN environment, was completed at Miami Air Route Traffic Control Centre (ARTCC) in October 2002. The programme, which was called “CPDLC Build 1” involved thirteen VDL Mode 2 ground stations and a number of suitably equipped aircraft (the number is presently around 30 and is growing). CPDLC has been an operational success in Miami. As an example, the use of data link for routine communications (employing four services, namely “Transfer of Communications”, “Initial Contact”, “Altimeter Setting” and “Informational Menu Text”) has resulted in around 20 hours of savings in the voice channel occupancy time until August 2003.

2.3 Despite the operational success, due to mostly economic considerations, the expansion of the CPDLC programme has been deferred. Factors like uncertainties surrounding airline equipage, cost-benefit analysis and resumption of normal traffic level as well as competing projects have contributed to the decision to defer the expansion. Nevertheless, the Miami CPDLC operation will continue and will be used to help build a better business case for fleet equipage and so on. The projected national deployment of CPDLC over VDL Mode 2/ATN is now expected to occur in 2009.

2.4 As part of the LINK 2000+ programme of EUROCONTROL, CPDLC (over VDL Mode 2 and ATN) is being implemented to supplement air-ground voice communications in Europe. Nine ground stations have already been installed to provide coverage for the Maastricht upper area control centre (UACC) area. To encourage early airline equipage, a pioneer support scheme has been set up whereby support is being provided, in the form of upgrade funding, integration and pre-operational tests, to the first hundred aircraft. So far, forty-five aircraft have been designated to benefit from that scheme. Further incentives are also planned and work is ongoing towards setting a mandate for equipage by the end of the decade.

2.5 CPDLC operations are expected to commence at Maastricht UACC in late 2003. Other major milestones include operation at ACCs by 2005 and the availability of the service over the entire designated airspace by 2007. The main objective of the programme is enhancing ATM capacity and productivity, thus accommodating traffic growth and reducing delays.

2.6 Many report on other activities relating to tests, trials, demonstrations and implementation of various elements of CNS/ATM systems were presented to the Eleventh Air Navigation Conference.

Improvement of VHF spectrum utilization

2.7 As of March 2003, twenty-six States in Europe are implementing 8.33 kHz DSB-AM channel spacing (above FL 245) and three more will implement in 2003. This has resulted in significant frequency management benefits. Over 40 new 8.33 kHz channels are in use for en-route sectors and as a result several 25 kHz channels have been released for other ATC services. The next step in the implementation of 8.33 kHz channels will be to undertake expansion in the phases as identified below, with the understanding that individual States have the right to grant exemptions for aircraft and/or airspace volumes (in the same manner as the initial implementation of 8.33 kHz, on the basis of the requirement and/or the ability to participate):

- a) Phase 1: above FL 195 in the ICAO EUR Region from 2006;
- b) Phase 2: as required in particular terminal control areas (TMAs) and control zones (CTRs) where individual States have determined this to be a practical measure for alleviating VHF congestion; and
- c) Phase 3: in designated controlled airspace in the ICAO EUR Region from 2009 onwards.

GNSS

2.8 First operational SBAS, namely the Wide Area Augmentation System (WAAS), was commissioned in the United States on 10 July 2003 for air navigation including lateral navigation (LNAV)/vertical navigation (VNAV) approaches with vertical guidance (APV). This initial WAAS capability also provides improved guidance to users in en route and departure phases of flight. A modernization programme for GLONASS has begun in the Russian Federation.

ATM Improvements

2.9 Substantial progress was made in all regions towards improving efficiency and capacity based on more accurate air navigation systems. A revised ATS route structure from Asia to the Middle East/Europe south of the Himalayas (EMARSSH) was implemented on 28 November 2002. RVSM will be introduced in the Middle East Region, and the Bay of Bengal within the Asia Region, on 27 November 2003. Planning is underway for the introduction of RVSM in the CAR/SAM Regions and in United States domestic airspace in January 2005.
