

REPORT OF THE ELEVENTH AIR NAVIGATION CONFERENCE

Montreal, 22 September to 3 October 2003

GENERAL

The attached constitutes the general part of the report and should be inserted at the appropriate place in the report folder.

**REPORT OF THE
ELEVENTH AIR NAVIGATION CONFERENCE**

LETTER OF TRANSMITTAL

To: President, Air Navigation Commission

From: Chairman, Eleventh Air Navigation Conference

I have the honour to submit the report of the Eleventh Air Navigation Conference which was held in Montreal from 22 September to 3 October 2003.

Albert Lam
Chairman

Montreal, 3 October 2003

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REPORT OF THE ELEVENTH AIR NAVIGATION CONFERENCE

Montreal, 22 September to 3 October 2003

HISTORY OF THE MEETING

1. DURATION

1.1 The Eleventh Air Navigation Conference (AN-Conf/11) was opened by the President of the Council, Dr. A. Kotaite, at 1515 hours on 22 September 2003 in the Assembly Hall of the Headquarters of the Organization in Montreal. The President of the Air Navigation Commission, Mr. D. Galibert, attended and addressed the conference. The closing Plenary was held on 3 October 2003.

2. REPRESENTATION

2.1 The Eleventh Air Navigation Conference was attended by 691 participants from 122 Contracting States and 24 observer delegations. A list of participants may be found on pages v-1 to v-19.

3. OFFICERS

3.1 The following officers were elected at the first Plenary meeting:

Chairman:	Mr. A. Lam (Hong Kong, China)
First Vice-Chairman:	Mr. V. Kuranov (Russian Federation)
Second Vice-Chairman:	Ms. J. Taylor (Canada)

4. SECRETARIAT

4.1 The Secretary of the meeting was Mr. J. Howell, Director, Air Navigation Bureau who was assisted by Mr. M. C. F. Heijl, Deputy Director, Air Navigation Bureau. He was also assisted by officers of the Air Navigation Bureau of ICAO as indicated in paragraph 6 below and by officers of other bureaux and offices of the Organization as necessary.

4.2 General administrative arrangements for the meeting were made under the direction of Mr. A.P. Singh, Director, Bureau of Administration and Services. Language services were provided under the direction of Mr. Y.N. Beliaev, Chief, Language and Publications Branch, assisted by Mrs. R.J. Ezrati, Chief, Interpretation Section, Mr. S.M. Mostafa (Arabic Section), Mr. Li Keli (Chinese Section),

Mr. D. Wilson (English and Publications Section), Mr. P. Butler (French Section), Mr. V. Gapakov (Russian Section) and Mr. H. Scarone (Spanish Section).

4.3 The physical arrangements for the meeting were made by Mr. M. Blanch, Chief, Conference and Office Services Section, Ms. A. Craig, Document Control Officer and Mr. J.D. Daoust, Chief, Printing Section. Other specialist officers of the ICAO Secretariat provided advice to the meeting as required.

5. **ADOPTION OF THE AGENDA**

5.1 The agenda transmitted to the meeting by the Air Navigation Commission was adopted at the first Plenary meeting.

6. **WORKING ARRANGEMENTS**

6.1 The organization plan submitted to States in advance of the meeting was approved without change at the opening Plenary. The plan called for the establishment of two committees. The two committees were constituted as shown below:

Committee A (to consider Agenda Items 1, 2, 3 and 4)

Chairman	Mr. K. Theil (Denmark)
Vice-Chairman	Mr. K. Chamieh (Lebanon)
Secretary	Mr. V. Galotti, assisted by Messrs. C. Dalton, B. Day, G. De León, G. Emausson and N. Karppinen

Committee B (to consider Agenda Items 5, 6 and 7)

Chairman	Mr. P.C. Marais (South Africa)
Vice-Chairman	Mr. N. Araújo de Medeiros (Brazil)
Secretary	Mr. J. Chagas, assisted by Messrs. A. Capretti , V. Iatsouk, M. Paydar, A. Rizvi and R. Witzen

7. **OPENING REMARKS**

7.1 **President of the Council, Dr. Assad Kotaite**

On behalf of the Council and Secretary General of the International Civil Aviation Organization (ICAO), I would like to welcome all of you to the Eleventh ICAO Air Navigation Conference. And on this occasion, it also gives me great pleasure to introduce to you Dr. Taïeb Chérif, our newly-appointed Secretary General. Dr. Chérif has served on the Council of ICAO since 1998 and brings to his new position a great deal of knowledge and experience from the world of international civil aviation.

Over the next 12 days, you will define and agree on the next steps towards fulfilling our vision of an interoperable, seamless and global air traffic management system for international civil aviation in the 21st century.

Those of you who attended the Tenth Air Navigation Conference in 1991, or are familiar with its outcome, will remember it as a pivotal event in the evolutionary process toward an improved air navigation system. We decided then to move from a ground-based to a largely satellite-based air navigation system that also relied on digital communications technologies. At that same time, we endorsed a new concept to meet the future needs of international air transport. Originally known as the Future Air Navigation System or FANS, it is now known as communications, navigation and surveillance and air traffic management (CNS/ATM) systems.

Since then, we have all together made considerable progress in many aspects of implementation of CNS/ATM systems, diligently addressing various technical, operational and institutional issues.

- ICAO has developed and adopted the Standards and Recommended Practices (SARPs) required for enabling the communications, navigation and surveillance technologies to be implemented.
- ICAO has also enhanced the effectiveness of mechanisms for the ICAO Planning and Implementation Regional Groups to foster the introduction of CNS/ATM systems in an orderly and cost-beneficial manner. These regional planning groups have brought uniformity and consistency to the exercise.
- ICAO has developed a Global Plan to align and harmonize the systems planning and implementation process to provide high-level guidance to States, regions, service providers, users and manufacturers on how to realize benefits from the new technologies.
- And all of us as aviation community partners have been making progress in many other areas, often incrementally, and I take this opportunity to express my most sincere appreciation for your excellent contribution.

Now, the time has come to fine-tune our strategy and to embark upon the next phase in establishing the air navigation infrastructure of the future. New technologies necessary for the modernization of the air navigation infrastructure are available, and ICAO has developed the relevant global Standards and Recommended Practices that will help States to implement those new technologies in an orderly and cost-effective manner. During this conference, we will turn our attention to specific elements of a rejuvenated approach to the air traffic management component of the equation and also address the CNS technologies.

This conference will review a proposed global air traffic management operational concept. This global concept is visionary in its description of the services that will be required to operate the global air traffic management system up to and beyond 2025, while outlining a range of changes that can be expected throughout the planning horizon. An important premise of the operational concept is the idea that timely, accurate and quality-assured information will be available and shared on a system-wide basis. The extensive

sharing of information encourages collaborative decision-making, thereby allowing air traffic management to optimize efficiency in the conduct of its operations.

A critical feature of the air traffic management operational concept is its performance orientation. This responds to the need for ensuring that we meet the expectations of various stakeholders for the best possible outcome in terms of safety, efficiency and economics.

Central to the issue of meeting expectations is the type of technologies and systems that will allow us to meet the various performance requirements of the new air traffic management operational concept. We must define what facilities, services and systems are needed to move a set number of aircraft through specific airspaces and airports, in the safest and most efficient manner possible, and based on performance requirements.

These issues will be discussed within the context of the relationship between technological developments and operational requirements. In the past, technological developments were driving operations. We must now shift our approach towards operational needs driving technological developments. Eventually, we must aim for a more symbiotic relationship between the two streams — technology and operations — so that we make optimum use of human and financial resources in developing an operationally sound and productive air navigation system for the 21st century.

Harmonization is another vital factor in providing transparent air traffic services. The ultimate goal of integration and harmonization is to provide transparent services so that users can operate seamlessly across different systems, with a consistent level of safety and with minimum requirements for equipment carriage. We will look at ways to reconcile the differences both within regions and between neighbouring regions by adopting an approach based on cooperation and consensus building.

As you know, the foundation of the global communications, navigation and surveillance infrastructure is the availability of the required radio frequency spectrum that enables the safe operation of all aviation radio systems, be they ground- or satellite-based. In this connection, we will assess the results of the International Telecommunication Union (ITU) World Radio Conference, held earlier this year. The conference was very successful for civil aviation and secured continued availability to aviation of the spectrum. But we cannot rest on our laurels; the next ITU conference will be held in 2007 and we will be starting our preparation here, at our conference.

We will discuss varied and wide-ranging issues related to aeronautical navigation including those surrounding the global navigation satellite system (GNSS). In a few moments, the GNSS service providers will inform the conference of the status of the system's developments and its evolution. This information will aid discussions on a number of concerns over the role of satellite-based navigation in the provision of aeronautical navigation services, today and in the future. Of particular importance are the issues of GNSS' vulnerability to interference and its capabilities to support low minima operations. Subsequently, ICAO's policy for transition to satellite-based navigation will be updated in light of these discussions and conference recommendations which are expected to guide the development of aeronautical navigation services for years to come.

At this conference, we will also review the developments on aeronautical mobile communications since the Tenth Air Navigation Conference and, in particular, consider the planned evolution

of existing communication systems and the potential development of future ones in the framework of the global air traffic management operational concept.

As always, safety remains key to all of these considerations. A highly integrated air traffic management system must be built upon the highest of safety standards. To accomplish this, we need to review the ways that we address safety. The ICAO Council has adopted Standards that require States to implement systematic and appropriate air traffic services safety management programmes to ensure that safety is maintained in the provision of air traffic services. I am pleased that you will be presented at this conference with the new ICAO Air Traffic Services Safety Management Manual and that you will address all aspects of safety, including the work of the Air Navigation Commission on its Global Aviation Safety Plan, the expansion of the ICAO Universal Safety Oversight Audit Programme to air traffic management and the idea of a systems approach to safety. We need to gain a total understanding of the safety implications of the new systems and to identify the measures we must take to maintain and improve upon the excellent safety record of civil aviation.

In light of the events of 11 September 2001, we must also address security. We need to understand the vulnerabilities of air traffic management and of communications, navigation and surveillance infrastructure and to identify practical measures to eradicate or lessen their impact. Indeed, while we forge ahead in the design of our global air navigation system of the future, the fundamentals of both safety and security must be our central focus.

Throughout your deliberations, I am sure you will remain conscious of the vulnerable state of the air transport industry. For the past two years, global air transport has experienced more adversity than in any other period in its history. In 2001, world passenger traffic fell by 3 per cent as a result of a slowing world economy and the events of 11 September. These effects continued into 2002 and were intensified by the build up to war in Iraq. Traffic fell in the first part of 2003 because of the war and particularly the impact of concerns regarding Severe Acute Respiratory Syndrome (SARS). In many parts of the world, airlines are now in crisis, characterized by bankruptcies, unprecedented losses, massive layoffs and radically shifting schedules. As a consequence, many airports have suffered sharp declines in revenues. States have also experienced financial difficulties regardless of whether they are developed or developing countries.

But, recovery is now under way and traffic for 2003 is expected to be about the same as in 2002 on year-on-year basis. We then expect traffic to rebound, with over 4 per cent growth in 2004 and over 6 per cent in 2005. Our forecasts assume gradual restoration of passenger confidence in international travel, improved application and facilitation of aviation security measures, an improving world economy and a stable operating environment. In the longer term, global scheduled passenger traffic growth can be expected to proceed at an average annual rate of around 4 per cent.

This should motivate us in our drive to develop a work plan that will ensure greater efficiency of the global air navigation infrastructure. ICAO itself was born in a period of great chaos near the end of the Second World War, and it has blossomed into one of the most enduring institutions of the 20th century, and now the 21st century. We must press on with our vision, because the progressive realization of a sound, flexible and performance-based air navigation system will ultimately be of immense benefit to all sectors of the industry.

It is now an honour for me to declare open the Eleventh ICAO Air Navigation Conference and to invite the President of the Air Navigation Commission, Mr. Daniel Galibert, to address the conference and elaborate on its agenda.

I wish you very successful deliberations.

**7.2 President of the Air Navigation Commission,
Mr. D. Galibert**

Good afternoon ladies and gentlemen

I am sure you will agree that it is difficult to find something intelligent to say when one intervenes after such a brilliant speaker. So, in order to make sure that I will get your attention, at least for a moment, I will start by telling you something in confidence — when the President of the Council, in late 2000, launched the idea of a worldwide air navigation meeting, this did not initially trigger very much enthusiasm within the Air Navigation Commission. The Rio Conference on CNS/ATM systems was still fairly recent, amendments to Annex 10 on the CNS side, and to Annex 11 and PANS ATM on the ATM side, were well on their way in order to accommodate, on the one hand, the rapid technological evolutions and, on the other hand, the necessary improvements to aviation safety. There were even experiments and implementation projects going on at the regional level. So why hold a Conference? When I see the numerous attendance of today and the amount of working papers which are to be presented and the enthusiasm which has been so evident, I realize that Doctor Kotaite has shown, once more, his visionary perception and wisdom in foreseeing a need for this gathering to address the key subjects of CNS and ATM. We have indeed many reasons to discuss the subjects at hand and, if I may name a few, I would like to consider the following:

- the economic situation of the airlines, of our customers, which is a very difficult one and imposes upon us an overwhelming call for efficiency, quality of service and productivity.
- the need to remove capacity constraints wherever possible in order to improve the efficiency of air traffic services and to prepare for the air traffic growth which will, hopefully, soon come back.
- the technological advances that are so evident. Without quoting all the acronyms that can be found in the documentation, I would like to recall that we see new satellite constellations coming, new augmentation systems, new data links in both fields of communication and surveillance and all this will certainly give us the means to achieve the safe, cost-effective and environmentally friendly system we are dreaming of. But at the same time, I cannot help but think that, probably for the first time in aviation's history, we might have at our disposal more solutions than we have problems and, in some cases, more possibilities than our users can realistically afford to investigate.

I am sure that you will have these considerations in mind when going through your agenda and that you will provide us with sound advice and sensible recommendations to consider.

Speaking of your agenda, I note that two committees will be established to work in parallel on operational and technical aspects of the conference.

Committee A will address operational issues and the core of this work will take place under Agenda Item 1 where you will review an ATM operational concept and several concepts of use and enabling technologies. You will discuss the need to develop ATM requirements, as well as review other planning activities. The ATM operational concept that you will review describes what is envisaged in the future ATM system and was developed on the basis of services to be delivered. You will identify the benefits that can be obtained and to what extent they meet the expectations of the aviation community.

Under Agenda Item 2, the conference will address safety. Since the ATM system is evolving, the conference will need to re-examine the methods that are used to ensure that safety is achieved and maintained. It is no longer acceptable to examine systems, people and procedures and all of the elements of the future ATM system as separate entities, but rather as integrated elements of a much larger system. Addressing safety in this way requires a systems approach. New separation minima and sharing of responsibility between pilots and controllers for some ATM services will also require careful safety studies and new methods for assessing and ensuring that acceptable and agreed to safety levels can be met. The conference will also review several related safety activities under way in ICAO, including the expansion of the universal safety oversight audit programme to ATM, the Organization's Global Aviation Safety Plan, certification and regulation issues, and you will be presented with ICAO's new manual on safety management. This work will lead to a clear safety framework to go along with our operational concept work under Agenda Item 1. Security issues will also be addressed under this item and I hope that the conference will reach agreement on practical measures to eradicate or to lessen the impact of vulnerabilities.

As I said, the operational concept has been developed on the basis of users' expectations and has, therefore, a strong performance orientation. Performance must ultimately be measured — this is the new business reality. The future ATM system must be equitable and accessible; targets for safety and efficiency must be met and it is necessary to measure all of the various technical and operational aspects of the system. Under Agenda Item 3, you will review the latest work of ICAO on performance, which includes the new concept of required total system performance. There is a great deal of work that remains with respect to measuring performance and the methods that are used to do this, but this work must begin now and our discussions at this conference will help set the agenda for accomplishing that work.

Finally, Committee A will address capacity enhancement under Agenda Item 4. This is both an economic and a safety issue. As demand increases in the global ATM system, it is necessary to find the proper solutions to accommodate it and also to ensure that safety margins will not be eroded. This will require a review of ICAO provisions and how they interrelate with each other. You will also be presented with advanced concepts such as collaborative decision-making (CDM) in air traffic flow management or, should I say, in capacity management. Advanced surface movement guidance and control systems will be another subject and ICAO will disclose on this occasion its freshly-produced Manual on A-SMGCS. Not to forget the closely-related subject of runway safety. This area is of concern right now, especially at busy airports, and you will be presented with work being done to implement runway safety programmes, including ICAO's work in this regard. Lastly, I would like to mention another first: ICAO, under that agenda item, will release an advanced copy of its Manual on Simultaneous Operations on Parallel or Near-parallel Instrument Runways.

Ladies and Gentlemen, let me turn now to the technical issues contained in the Agenda of this Conference which will be addressed by the Committee B.

Under Agenda Item 5, the conference will consider the results of the ITU World Radiocommunication Conference 2003, which were very favourable for aviation. The continued availability of adequate spectrum to communications, navigation and surveillance systems, and the protection of those systems from harmful interference are vital to the provision of safe and efficient air navigation services. In that regard, efforts are underway in ICAO to identify spectrum requirements for new or emerging systems and to prevent incursion in our spectrum from non-aeronautical systems. This will form part of the preparation for the next WRC which is currently expected to be held in 2007. I also wish to advise that the Commission has been concerned with the increasing number of reported cases of interference to radio aeronautical systems and would welcome discussion on this subject that could lead to practical ways to eliminate or minimize such occurrences.

Since 1995 when the SP COM/OPS/95 meeting promoted global navigation satellite system (GNSS) as an ICAO standard navigation aid for all phases of flight, ICAO has developed a body of Standards and Recommended Practices (SARPs), Procedures for Air Navigation Services (PANS) and related guidance to support introduction of satellite-based navigation. One clear indication of the amount of work undertaken in this context is the fact that Annex 10 has been amended every year since 1995 and will again be amended at the end of this year and, in 2004, many of those amendments are pertaining to GNSS.

It is widely recognized by now that transition to satellite-based navigation is a long-term commitment, and working papers developed at the request of the Air Navigation Commission for Agenda Item 6 address basic issues associated with further introduction of satellite-based navigation for all phases of flight and development of the GNSS new elements. These papers also suggest updates to the *Global Air Navigation Plan for CNS/ATM Systems* (Doc 9750). When reviewing those papers, it must be kept in mind that we have to ensure a progressive integration of GNSS elements with the existing ground-based navigation infrastructure supporting area navigation (RNAV) and required navigation performance (RNP) operations. This vision was embraced by the Commission when it agreed recently to re-organize the GNSS Panel in order to accommodate the work on both satellite-based and conventional navaids and renamed the panel as the Navigation Systems Panel (NSP). The Commission is also aware of difficulties observed in the introduction of differing RNP types; it recently agreed to establish the RNP Study Group which is expected to address related issues and to develop proposals for harmonization of work in this area.

Lastly, as regards guidance material, you will recall that the SP COM OPS 95 meeting had called for some assistance from ICAO for the introduction of GNSS and this role had been devoted to Circular 267 published in 1996 but, this time, you will be presented under this agenda item with the just-printed and most-awaited draft ICAO GNSS Manual.

Under Agenda Item 7, we expect that the Conference will recognize the need to overcome the saturation of the VHF band, at least in the busiest parts of the airspace, and will recommend solutions for the evolution of the communications infrastructure within the framework of the global ATM operational concept and on the basis of available and emerging technologies. In so doing, the Conference will be able to build on the preliminary work conducted within ICAO on the development of communication scenarios as a common basis for discussion and assessment of the most likely evolution paths. You will note that those

scenarios include potential development of a next generation of terrestrial and satellite systems. Our discussion on the matter has resulted in a set of guidelines which will be brought to the attention of the conference; in a nutshell, we acknowledged the fact that, as I said before, Annex 10 was getting thicker every year and we felt that this Organization should not invest its scarce resources in standardizing any new system without sufficient guarantee that it is technically proven and will provide operational or financial benefits.

Having heard that long description, you will not be surprised to learn that, after the first moment of surprise and hesitation, the Air Navigation Commission strongly supported the convening of this conference and became heavily involved in its preparation. Your deliberations will now take place and they are expected to result in the formulation of a number of recommendations for guiding the future work of the Organization in the field of air navigation. ICAO will do its best to follow up on those recommendations in the most timely manner. However, the overall slowing down of the economy that was mentioned by Dr. Kotaite in his opening remarks might also affect the Organization and, in particular, its budget for the next triennium. I would therefore, recommend that you adopt a prudent and realistic approach when devising your recommendations and bear in mind that it might become difficult to produce always more within a limited budget.

I wish you all, on behalf of the Air Navigation Commission, every success in your deliberations.

8. STATUS REPORTS ON GPS, GLONASS, GALILEO AND MTSAT

8.1 Status report on GPS

Ms. M. Blakey, United States

Thank you, Mr. Chairman. On behalf of the Federal Aviation Administration, I want to thank you for this opportunity to speak at the Air Navigation Conference. Also, I would like to welcome Secretary General Cherif to his first major ICAO global conference as Secretary General. It is also mine, and it's a real pleasure to join you on this occasion.

I would also like to note that the United States is pleased to be the thirtieth Contracting State to ratify the Montreal Convention of 1999 that will modernize the seventy-five year old Warsaw Convention which provides compensation in cases of international air accidents. This is an important effort, and I am proud the United States is supporting this initiative.

It's a privilege to take part in a meeting that means so much for the future of our global air navigation system. This conference will address a wide range of technologies and procedures many of which hold tremendous potential for improving safety and taking us closer to a truly seamless global aviation system. Of the topics on the ANC agenda, there is none more important than how we, as a global community, decide to proceed with the implementation of the global navigation satellite system, or GNSS.

As a major stakeholder in this system, the FAA is grateful for the opportunity to comment on the potential for satellite-based navigation.

The development of satellite-based air navigation has come a long way since the last Air Navigation Conference in 1991. That's when the United States, as the provider of GPS, and the Russians, as the provider of GLONASS, offered free satellite navigation services to civil aviation for the foreseeable future.

Since our initial offering, GPS has become a major component of global air navigation operations. We have taken many satellite navigation technologies and procedures from the conceptual phase, through a rigorous testing phase, and to the operational phase. There is no question that GPS works — and it works well.

In May 2000, the United States further improved the GPS accuracy available to the global civil aviation community by removing Selective Availability, which intentionally degraded the GPS signal. Selective Availability, under current U.S. policy, has not and will not be re-instituted.

As you know, GPS has been under joint civil-military management since 1996. Both our executive and legislative branches of government have a consistent dual use policy in place.

GPS reached an important milestone this past July when we commissioned the wide area augmentation system — known as WAAS — for operational use in U.S. airspace. WAAS is the first satellite-based augmentation system that has been certified for public use, and it is an important step in supporting ICAO's vision of a seamless global navigation satellite system.

WAAS provides such a high level of accuracy, integrity, and availability that it permits properly equipped aircraft to conduct near precision approach and landing operations over most of the contiguous United States. WAAS will also enable the development of required navigation performance, or RNP, operations. We believe that RNP will facilitate more efficient airspace and procedure design. Simply put, it will allow us to fly more planes, closer together, and more safely than ever before.

On a global basis, we will continue to work with other service providers to ensure all future satellite systems are capable of providing interoperable service to all users.

The transition to satellite navigation will advance further with the planned implementation of Galileo. We are pleased with our working relationship with our European counterparts and we look forward to developing bilaterally standards for this new system. We hope that our cooperative efforts will result in a robust GNSS that will provide increased safety and efficiency for users and service providers.

The United States will continue to modernize GPS and provide increased service capabilities for all civil users worldwide. We will also continue to provide these enhancements free of direct user fees. The ability of aircraft to utilize Galileo, along with a modernized GPS and Russian GLONASS, will provide increased GNSS capabilities and overall system availability. We will continue our current efforts, both bilateral and multilateral, to ensure global interoperability of all satellite navigation constellations and related augmentations.

GNSS provides the most effective — and economic means — to implement a modern navigation system suitable for aviation commerce in the 21st century. The future of GNSS looks even more promising, not only in aviation, but also in other modes of transportation.

As we look to the future, GNSS providers should consider the needs and limitations of smaller, less developed States that have the need for modern air navigation systems. Current GNSS constellations, including satellite based augmentation systems, provide service without direct user fees. To assure the maximum benefit to the entire civil aviation community, we strongly believe that all future evolutions of GNSS, including augmentations and safety of life navigation signals, must remain free of direct user charges. GNSS is not a business proposition — it's a safety proposition.

Through your participation in the Air Navigation Conference, we can chart our global action plan for the future. What we accomplish here in Montreal during the next two weeks will affect the direction of ATC modernization for many years to come. When the 12th Air Navigation Conference looks back at recommendations made by this conference, I hope they will see that we have set the right course for the future of our global air navigation system.

I ask that you all join me in making a commitment to work through ICAO in developing a truly seamless and interoperable global system. As ICAO members, we are obligated to look beyond our own borders, and our own airspace, for ways to improve our global system. Always remember that we share one world. . .we share one sky. . . and we share one critical mission — SAFETY! Thank you.

8.2 **Status report on GLONASS**

Mr. A. Neradko, Russian Federation

Mr. Chairman, Conference participants, Ladies and Gentlemen,

I wish to thank you for the opportunity to inform the conference about the state of affairs in Russia with regard to implementation of the CNS/ATM concept. The Russian Federation is still in the position of implementing and making widespread use of CNS/ATM in civil aviation. In recent years, Russia has taken specific steps in this area. One of the major contributions by Russia to the transition to the use of the CNS/ATM concept by the world aviation community is the possibility for aviation users to use the GLONASS satellite navigation system.

The GLONASS global navigation satellite system was developed in the Russian Federation and it was offered in 1996 for use by aviation civil users without any restrictions for 15 years on a cost-free basis. The Council of ICAO accepted this offer.

The orbital segment of the GLONASS system is incomplete at the present time.

In August 2001 the Government of the Russian Federation adopted a long-term federal special programme “Global Navigation System” which is designed for ten years.

The main objectives of the programme are:

- to restore the orbital segment of the GLONASS system to 24 satellites by 2007 to 2008;
- to modernize the navigation satellites, starting with second-generation GLONASS-M satellites which have improved performance and a lifetime increased to seven years, and after 2007 to gradually replace satellites with third-generation GLONASS-K satellites

which, together with improved performance and a lifetime of up to 10 to 12 years, will have the possibility to radiate the navigation signal on the L3 frequency in the aeronautical radio navigation band.

The budget of the Russian Federation has made provision for allocating resources to restore the orbital segment and to create a new generation of satellites. It is intended for a second-generation GLONASS-M satellite to be launched into orbit at the end of 2003 together with two older-generation GLONASS satellites by the Proton launch vehicle from Baikonur Cosmodrome.

Besides better performance than that of satellites of previous generations and the introduction of the third frequency in the aeronautical radio navigation band, the third-generation GLONASS-K satellite will have significantly better size and mass parameters. Its mass will not exceed 700 kg. This will make it possible to launch these satellites using the Proton launch vehicle with six satellites in one launch, which will make it possible to restore the orbital segment in a short period of time, and the Soyuz launch vehicle with two satellites in one launch, which will make it possible to effectively maintain the orbital segment in the future. These capabilities will make it possible to reduce by several times the costs of deploying and maintaining the orbital segment of the GLONASS system.

The programme also provides for undertaking scientific research and experimental design work for the development of the new generation of satellites, for modernizing the ground GLONASS system control complex and for deploying the production of user equipment, augmentations and an orbital segment status monitoring system.

In accordance with existing international agreements on ensuring the electromagnetic compatibility of the GLONASS system with radioastronomy facilities and mobile satellite services, the Russian Federation will implement the decisions of the International Telecommunication Union on the transition of the satellite radiation to the lower part of the occupied frequency sub-bands L1 and L2.

Using the GLONASS system with other navigation satellite systems will make it possible to increase GNSS performance considerably: the accuracy, accessibility, integrity and continuity of navigation services to aviation users.

Thank you for your attention.

8.3 Status report on Galileo **Mr. M. Ayrat, European Community**

8.3.1 Ladies and Gentlemen,

It is a pleasure for me to speak here at the 11th ICAO Air Navigation Conference about the European initiatives on satellite navigation.

Europe follows a two-step approach in its endeavour to enter into satellite navigation. The first step is a space-based augmentation system called EGNOS augmenting GPS and GLONASS and will go into operation in 2004. After a validation and certification phase, EGNOS will provide APV-I and APV-11 capabilities, compliant with the ICAO regulations, over ECAC landmasses.

The second step in our venture is GALILEO, a civil, independent but complementary European satellite navigation system.

At a later stage, EGNOS will be integrated into GALILEO.

2003 was an important year for GALILEO

The European Member States decided to go ahead with GALILEO and initiated the development phase. The GALILEO joint undertaking, which will manage this phase, is operational since 1 September.

The frequencies for GALILEO have been secured at the World Radio Conference in Geneva.

The contracts for the first two GALILEO satellites have been signed in July to occupy those frequencies.

GALILEO is on the right track and we are confident that it will become reality in 2008.

What will GALILEO offer to the User Community?

GALILEO will be a global system for multi modal users. To meet all the different requirements GALILEO will provide five services:

- a) the free to air Open Access Service;
- b) the Commercial Service;
- c) the Safety of Life Service;
- d) the Search and Rescue Service; and
- e) the Public Regulated service.

The Safety of Life Service will especially meet the requirements of the aviation community. This service is designed to meet APV-11 requirements worldwide and will provide integrity information along with service guarantees.

GALILEO as distinct to the currently available systems will provide integrity information worldwide and service guarantees. GALILEO is a civil system and will be developed and operated in a transparent way allowing for full service certification. This feature is important for all safety of life applications but especially for aviation with its strict safety regulations. The need for service guarantees for safety of life applications has been taken into account already in the design of the system. Legal implications of service level commitments are driving the GALILEO system implementation. The aviation community will especially profit from this thorough and clear process as it supports the strict safety and performance regulations of ICAO and allows establishing clear responsibilities and liabilities for service provision later on.

GALILEO will be operated by a private concessionaire in a public private partnership to guarantee long term viability. The process to select this concessionaire has already started.

It will support the implementation of the Single European Sky that will benefit from a significant technological change and an investment in the modernization and consolidation of the air traffic management infrastructure and related services.

This global satellite navigation infrastructure will provide services to all modes of transport as well as to the widest range of applications; additionally Galileo will indeed represent a fundamental tool for the aviation and in particular for the implementation of the Single European Sky.

The way forward sees the provision of EGNOS next year and the implementation of GALILEO services by 2008.

With GALILEO, along with the other satellite systems, the transition to a global satellite navigation infrastructure for aviation becomes feasible. Therefore, we ask ICAO to standardise GALILEO and to consider the European Satellite Navigation Systems in its future strategy.

8.4 Status report on MTSAT **Mr. T. Iwasaki, Japan**

Dr. Assad Kotaite, the President of the Council of ICAO, Dr. Taieb Cherif, the Secretary General of ICAO Secretariat, distinguished Delegates from States, representatives of international organizations, ladies and gentlemen. On behalf of the Government of Japan, it is my honour and privilege to report to you on the current status of the MTSAT programme in Japan and also to present how MTSAT has been designed in order to implement global air navigation services, which will be the main focus of this conference.

As you recall, the Tenth Air Navigation Conference (AN-Conf/10) endorsed the Future Air Navigation Systems or FANS Concept. The fundamental idea behind the FANS concept was to adopt new CNS/ATM systems by utilizing satellite-based technologies to overcome the limitation of the current ground-based systems. Taking this concept into full consideration, Japan has decided to develop and implement Multi-functional Transport Satellite or MTSAT.

The MTSAT is designed to accommodate a continuous increase of air traffic as well as improve aviation safety. It will not only provide aeronautical mobile satellite services (AMSS) but also provide augmentation of global navigation satellite systems (GNSS). The first MTSAT is scheduled to launch in 2004 and will be stationed on a geostationary orbit of 140 degrees east longitude covering areas throughout the Asia/Pacific Region. The second MTSAT will follow in 2005. In designing the MTSAT, two aspects were considered as the utmost importance, that is, high redundancy and full interoperability.

In order to ensure the high redundancy, Japan has established a system composing of two MTSAT and two dedicated aeronautical satellite centres on the ground. This system architecture will ensure that AMSS and GNSS services will be maintained continuously, even in failure of some components or in the event of natural disasters. This is the essential feature for the reduction of the longitudinal aircraft separation

that is less than half of the current separation minimum to increase the air traffic capacity over the North Pacific.

The second aspect is the full interoperability among the systems, one of the issues to be discussed at this conference. While MTSAT is covering areas throughout the Asia/Pacific Region, we clearly understand that the satellite would not be used unless it offers global and seamless services. Therefore, we have made various efforts to establish and assure full interoperability with other systems.

As to AMSS, MTSAT is fully in compliance with the ICAO SARPs. In order to achieve this, Japan has made an agreement with Inmarsat to ensure the interoperability with their AMSS network. In addition, Japan has selected a data link service provider for delivering messages internationally with the use of their ground network. These measures will ensure that anyone utilizing MTSAT will enjoy global and seamless AMSS all over the world.

As to the augmentation of GNSS, MTSAT is again fully in compliance with the ICAO SARPs. Japan has tried to assure the full interoperability among the SBAS service providers, that is, the U.S. WAAS, European EGNOS and our MSAS through coordination at the Interoperability Working Group (IWG). Several new States, which have recently announced to develop SBAS, have also joined the IWG to ensure the full interoperability with each other.

In conclusion, the Government of Japan would like to ensure that the MTSAT will provide a global and seamless AMSS as well as GNSS network maintaining interoperability with other systems. Japan strongly believes that MTSAT will play a significant role in the capacity and safety enhancement in the Asia/Pacific Region. Japan hopes that MTSAT will be utilized as a common aeronautical infrastructure in the region. Japan is fully committed to make continuous efforts to contribute to the development of international air transport and aviation safety. Thank you very much for your attention.

9. JOINT MEETING OF COMMITTEES A AND B

On 2 October 2003, at a joint meeting of Committees A and B, highlights of the results of the committees were presented and the following topics of common interest were discussed: security of aviation infrastructure; data quality (including integrity); status of the *Global Air Navigation Plan for CNS/ATM Systems* (Doc 9750); performance objectives; and aviation frequency spectrum.

LIST OF PARTICIPANTS

CD	—	Chief Delegate	ADV	—	Adviser
ACD	—	Alternate Chief Delegate	COBS	—	Chief Observer
D	—	Delegate	OBS	—	Observer
ALT	—	Alternate			

State/Territory/International Organization	Name	Designation
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	Arroudj, S.	D
	Hamed Abdelouahab, F.	D
	Larfaoui, H.	D
Argentina	Alvarez, J.	CD
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	Cocchi, G.	D
	Moreira, D.	D
	Rodino, E.	D
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Austria	Fürst, M.	CD
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Bangladesh	Khan, M.	CD
Barbados	Archer, E. Beckles, M.	CD D
Belarus	Mazaï, N.	CD
Belgium	Cottyn, J. Callebaut, H.	CD D
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State/Territory/International Organization	Name	Designation
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State/Territory/International Organization	Name	Designation
	Li, X.	D
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	So, K.	D
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	Wong, D.F.	D
	Yeung, H.	D
	Zhang, J.	D
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	Tam, A.	D
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	Delgado, G.	D
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Costa Rica	Ramos, M.	CD
	Fernandez, J.	D
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Côte d'Ivoire	Elefteriou, G.	D
Cuba	Ojeda Vives, A.	CD
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	Ayón Alfonso, J.	D
	Cid Jiménez, G.	D
	Fabelo Corzo, O.	D
	Ibáñez Cruz, L.I.	D
	Morales Lorenzo, P.	D
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	Materna, P.	D
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	Chol, R.	D
	Kang Ki, K.	D
	Ri, H.	D
	Ri, K.	D
	So Won Ho, S.	D

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State/Territory/International Organization	Name	Designation
Democratic Republic of the Congo	Tabora Afata, G. Marie Omanga, O. Milinganyo, M.	CD ACD D
Denmark	Theil, K. Jensen, L. Andresen, S. Halskov-Jensen, S.	CD ACD D D
Dominican Republic	Reyes Rodriguez, R.	CD
Djibouti	Farah, I.	D
Ecuador	Bonilla, R. Salas, I.	D ADV
Egypt	El Bagoury, M. El Azab, S. El Shanabary, M. Ragheb, M. Sadek, H. Ryad, M. El Kady, M.	CD ACD ACD D D ALT ADV
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Ethiopia	Belayneh, M. Hunde, G. Mekonnen, T.	D D D
Fiji	Yee, N. Baba, O. Vave, J.	ACD D ALT
Finland	Talvitie, M. Jaakkola, H. Nyberg, M. Salonen, K. Lampi, M. Solatie, T. Tupamaki, M.	CD ACD D D ADV ADV ADV
France	Guyard, M.	CD

State/Territory/International Organization	Name	Designation
	Morisseau, F.	ACD
	Andriamonje, M.	D
	Bousquet, C.	D
	Calvet, M.	D
	Chevallier, J.	D
	Colin de Verdiere, D.	D
	Coulardot, F.	D
	Delhay, J.	D
	Lacaze, E.	D
	Rosso, R.	D
	Dobelle, J.	ALT
	Anton, R.	ADV
	Aqallal, A.	ADV
	Dabin, M.	ADV
	Dedryvere, A.	ADV
	Dumas, C.	ADV
	Fischer, S.	ADV
	Lagarigue, G.	ADV
	Wonneberger, L.	ADV
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	Ndoutoumou, C.	D
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	Saine, P.	ADV
Germany	Froböse, H.	CD
	Mürl, H.	CD
	Mickler, T.	ACD
	Nitschke, D.	ACD
	Radusch, M.	ACD
	Hoebel, A.	ADV
Ghana	Boachie, J.A.	CD
	Addo, E.	D
	Boateng, P.	D
Greece	Konstantinidis, S.	CD
	Kyriakakis, K.	ACD
	Koukoulas, P.	D
	Malikoutis, E.	D
	Neonakis, E.	D
	Passas, T.	D

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State/Territory/International Organization	Name	Designation
Guinea	Keita, E.	CD
	Bah, E.	D
	Diallo, T.	D
	Kaba, M.	D
Haiti	St. Juste, F.	CD
	Legagneur, M.	D
Hungary	Kiss, L.	CD
	Szekely, Z.	ACD
	Kiss, A.	D
	Kovács, A.	D
	Mudra, I.	D
	Sipos, Z.	D
	Bakos, J.	A
Iceland	Pálsson, T.	CD
	Hauksson, H.	ACD
	Pálsson, A.	ACD
	Gudmundsson, B.	D
India	Roy Paul, K.	CD
	Zaidi, N.	ACD
	Gohain, K.	D
	Kannayan, R.	D
	Kaul, S.	D
	Khurana, R.	D
Indonesia	Suprojo, C.	CD
	Syachrudin, E.	ACD
	Sjioen, J.	ACD
	Ichwanul, I.	D
	Abubakar, R.	D
	Darsosuwignyo, M.	D
	Dima, W.	D
	Idrus, I.	D
	Loftus, A.	D
	Mala, A.	D
	Pangastuti, N.	D
	Setiawan, A.	D
	Silooy, E.	D
	Sitompul, Y.	D
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State/Territory/International Organization	Name	Designation
Iran, Islamic Republic of	Mahdavi, G.	CD
Iraq	Polis, B. Mohammed, F.	CD ACD
Ireland	Doyle, K. Brennan, E. McGinley, A. Ryan, P.	CD D D D
Israel	Attali, M.	CD
Italy	Sciacchitano, S. Cecchi, R. D'Aloia, P. Pilotto, A. Ciancaglioni, P. Del Duca, G. Falessi, L. Ferraro, E. Ferri, P. Kalpakjian, K. Podiani, F. Scazzola, G. Sparpaglia, F. Adami, S.	CD ACD ACD ACD D D D D D D D D D D ADV
Jamaica	Baker, J. Stern, P.	CD ACD
Japan	Iwasaki, T. Kosaka, S. Suzuki, Y. Udaka, K. Imamura, J. Kawakami, M. Kono, H. Morishima, T. Yamaguchi, S. Yamaguchi, S. Takeda, H. Oshimo, H. Shirakawa, M.	CD ACD ACD ACD D D D D D D ALT ADV ADV

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State/Territory/International Organization	Name	Designation
Kenya	Kuto, C. Amukowa, B. Nyikuli, S. Otiende, P. Yagomba, W.	CD D D D D
Kuwait	Alfozan, F. Al-Adwani, A. Al-Jenae, Y.	CD D D
Latvia	Khankhaldov, S.	A
Lebanon	Chamieh, K. Yehia, H. Shaaban, F.	CD ACD D
Libyan Arab Jamahiriya	Abughres, M.	CD
Lithuania	Danilevicius, V. Chadasevicius, J. Jakas, K. Matulaitis, G.	CD D D D
Madagascar	Robinson, A.	CD
Malawi	Matiya, A. Matemba, J.	ACD D
Malaysia	Zolfakar, A. Ismail, K. Lim, Y. Nathan, V.	CD D D D
Mali	Tradore, C.	ACD
Mauritius	Gungah, A.	CD
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State/Territory/International Organization	Name	Designation
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Morocco	Yaalaoui, A. Bousfiha, A. Moumni, H. Alaoui, A. Fahim, S.	CD ACD D ADV ADV
Namibia	Günzel, T.	CD
Nepal	Dhital, U. Adhikari, M. Sakya, L.	CD D D

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State/Territory/International Organization	Name	Designation
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Nigeria	Oyelade, T. Oyudo, C. Eniojukan, D. Gowon, M. Inyamkume, B. Modu, A. Onasanya, E. Oteghile, K. Oti, I.	CD ACD D D D D D D D
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Oman	Al-Adawy, A. Alharithy, A. Bouëdo, P.	CD ADV ADV
Pakistan	Nawaz, A. Awan, M. Khan, J.	CD D ADV
Panama	Chavarria Castillo, H. Barahona, A. Dutary, C. Garcia de Paderes, R.	CD D D ADV
Paraguay	Farias Servin, C.	CD
Peru	Hurtado, R. Muñoz, J.	CD CD

State/Territory/International Organization	Name	Designation
	Nunez, F.	ACD
	Avila, P.	D
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	Munete Lozano, J.	ALT
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	Santos, R.	ADV
Poland	Mikrut, C.	CD
	Nawroki, B.	ACD
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	Paraiba, A.	D
	Ventura, A.	D
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	Park, M.	ACD
	Chang, M.	D
	Kim, G.	D
	Nam, G.	D
	Han, D.	ADV
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	Vartik, V.	D
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	Kramer, R.	ADV
	Nita, S.	ADV
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	Korovkin, V.	D
	Kozlov, V.	D
	Laletin, S.	D
	Levshunova, N.	D
	Lobachev, E.	D
	Lysenko, I.	D

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State/Territory/International Organization	Name	Designation
	Mikhaylov, B.	D
	Rudakov, V.	D
	Saleyev, V.	D
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	Shcherbakov, L.	D
	Talalai, M.	D
	Burykin, I.	ADV
	Chesnokov, V.	ADV
	Klimov, V.	ADV
	Kuranov, V.	ADV
	Lebedev, B.	ADV
	Mednikov, A.	ADV
	Nartov, V.	ADV
	Oleynik, V.	ADV
	Shilov, A.	ADV
Saint Lucia	Wilson, H.	CD
Saudi Arabia	Al-Salmi, M.	CD
	Al-Alawi, M.	ACD
	Al-Ghamdi, A.	D
	Abu-Dawood, H.	D
	Jahdli, S.	D
	Al-Aufi, H.	D
	Al-Jabri, I.	D
	Mannan, A.	D
	Fairaq, T.	D
	Al-Motirey, S.	D
	Al-Ghorabi, H.	ADV
Senegal	Gueye, B.	CD
	Bessane, M.	D
	Sall, A.	ALT
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Singapore	Wong, W.	CD
	Bong, K.	ACD
	Cheng, H.	D
	Fernando, M.	D
	Tan, V.	D
	Tay, T.	D
	Yap, P.	D
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State/Territory/International Organization	Name	Designation
	Lim, S.	ADV
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Slovenia	Jansa, S.	CD
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	Arias Serrano, A.	D
	Calvo Fresno, J.	D
	Galan, C.	D
	Gonzalez Diez, E.	D
	Quereda Rubio, F.	D
	Rivero Hidalgo, C.	D
	Rodriguez Gil, L.	D
	Seco Dominguez, J.	D
	Adrover, L.	ADV
	Hernandez Fernandez, M.	ADV
	Herrero, J.	ADV
	Morales Lopez, J.	ADV
	Negrete, L.	ADV
Sri Lanka	Rajapakse, H.	CD
	Silva, R.	ADV
	Wimalshanthi, W.	ADV
Sudan	Abd El Karim, A.	CD
	Abdella, I.	ACD
	Mohamed, H.	D
	Martin, D.	ADV
Swaziland	Dube, S.	D
Sweden	Hietala, A.	CD
	Danielsson, J.	ACD
	Standar, M.	D

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State/Territory/International Organization	Name	Designation
Switzerland	Redeborn, B.	ADV
	Stucki, P.	D
	Vonlanthen, L.	ALT
	Bertz, G.	ADV
	Schubert, F.	ADV

State/Territory/International Organization	Name	Designation
Syrian Arab Republic	Alkhatib, N. Dib, A.	ACD D
Thailand	Hetrakul, P. Kalayanajati, R. Rongthong, S. Sang-Ngurn, N. Wongsongsarn, S.	CD D D D D
The former Yugoslav Republic of Macedonia	Hamidi, F.	CD
Togo	Amelete, B. Latta, D. Dobou, K.	CD CD D
Tonga	Faletau, A. Maake, V.	CD D
Tunisia	Berrajah, A. Chettaoui, N. Benkhelifa, H. Cherif, M. Dridi, R. Hedfi, A. Becheikh, M.	CD ACD D D D D ADV
Turkey	Calisar, S. Enc, F. Cendek, U. Birdal, O. Kilic, M. Ergin, A. Sarigul, G. Aygün, C. Zeren, A.	CD D D D D D D D D
Uganda	Akandonda, A. Kagoro, J. Musoke, A.	CD D D
Ukraine	Petriv, L. Afanasyev, V. Avramenko, O.	CD ACD D

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State/Territory/International Organization	Name	Designation
	Babeychuk, D.	D
	Bezmal, V.	D
	Cherednichenko, Y.	D
	Melnyk, O.	D
	Nastasiyenko, V.	D
	Prystaiko, V.	D
United Arab Emirates	Al Amoudi, A.	D
	Roberts, P.	D
United Kingdom	Elder, R.	ACD
	Evans, D.	ACD
	Coombs, B.	D
	Daly, H.	D
	Jackson, J.	D
	Knill, A.	D
	Lawson, J.	D
	Roberts, P.	D
	Sayce, A.	D
	Ashton, K.	ADV
United Republic of Tanzania	Alloo, M.	CD
	Nundu, O.	ACD
	Makoroma, G.	D
	Mpinga Mgana, C.	D
	Paul, L.	D
	Sajan, I.	D
United States	Blakey, M.	CD
	Keegan, C.	ACD
	Salvano, D.	ACD
	Aguilera, F.	D
	Carmody, J.	D
	Chew, R.	D
	Cirillo, M.	D
	Coulson, R.	D
	Eck, J.	D
	Fagan, C.	D
	Howell, T.	D
	Jennison, M.	D
	Lavin, D.	D
	Levine, G.	D
	MacKenzie, W.	D
	Mandel, D.	D

State/Territory/International Organization	Name	Designation
	McGraw, J.	D
	Phillips, B.	D
	Price, F.	D
	Scardina, J.	D
	Serwer, C.	D
	Stimpson, E.	D
	Storm, A.	D
	Voss, W.	D
	Westover, M.	D
	Williams, J.	D
	Schanne, J.	ALT
	Brown, J.	ADV
	Decleenes, B.	ADV
	Fee, J.	ADV
	Herishen-Smith, S.	ADV
	Orlando, J.	ADV
	Pozesky, M.	ADV
	Valentine, B.	ADV
Uruguay	Olmedo, D.	CD
	Tardaguila, A.	D
	Tissoni, A.	D
Venezuela	Paz Fleitas, F.	CD
	Blanco, R.	D
	Guerra Pinto, F.	D
	Velasquez Leon, L.	D
Viet Nam	Bui Van, V.	CD
	Le Quoc, K.	D
	Nguyen, H.	D
Yemen	Abdulkader, M.	CD
	Bafaqih, A.	ACD
	Jawlah, A.	D
Zambia	Kabalika, C.	CD
	Chishala, H.	D
	Kapwepwe, C.	D
	Mambwe, E.	D
	Sinjwala, P.	D
	Mwanza, P.	ALT

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State/Territory/International Organization	Name	Designation
OBSERVERS		
Palestine	Abu Halib, S. Abu-Halim, S. Salman, M.	OBS OBS OBS
Aeronautical Radio, Inc. (ARINC)	Glennon, R. Belcher, J. Hutchinson, K. Jeffers, B. Montgomery, E. Nagowski, V. Oischi, R.	COBS OBS OBS OBS OBS OBS OBS
African Civil Aviation Commission (AFCAC)	Heshmat, M.	OBS
Agency for Air Navigation Safety in Africa and Madagascar (ASECNA)	Fokoua, T. Guitteye, A. Jaquard, P. Ndiaye, M.	OBS OBS OBS OBS
Airports Council International (ACI)	Gamper, D. Heitmeyer, R.	OBS OBS
Arab Civil Aviation Commission (ACAC)	Daoudi, A. Lahboubi, A.	COBS OBS
Central American Corporation for Air Navigation Services (COCESNA)	Oyuela Martine, J. Mendoza, G. Urbizo Fley, U.	COBS OBS OBS
Civil Air Navigation Services Organization (CANSO)	Ter Kuile, T.A.	OBS
Common Market for Eastern and Southern Africa (COMESA)	Van Der Westhuizen, V.	OBS
European Civil Aviation Conference (ECAC)	Benjamin, R. Mariadassou, J. Stastny, P.	COBS OBS OBS

State/Territory/International Organization	Name	Designation
European Community (EC)	Ayral, M.	COBS
	Bernabei, C.	OBS
	Chatre, E.	OBS
	Ureher, J.	OBS
	Van Houtte	OBS
European Organisation for the Safety of Air Navigation (Eurocontrol)	Aguado, V.	COBS
	Bauchet, J.	OBS
	Bozsa, I.	OBS
	Cerasi, E.	OBS
	Hendriks, A.	OBS
	Miaillier, B.	OBS
	Philipp, W.	OBS
	Rees, M.	OBS
	Sauvage, J.	OBS
	Stastny, P.	OBS
	Van Dam, R.	OBS
International Air Transport Association (IATA)	Matschnigg, G.	COBS
	Comber, M.	OBS
	Davies, J.	OBS
	Dumsa, A.	OBS
	Heighes, R.	OBS
	Kneeland, A.	OBS
	Kritter, E.	OBS
	Lay, P.	OBS
	Rochat, P.	OBS
	Shand, A.	OBS
	Thompson, R.	OBS
	Van den Boogaard, K.	OBS
	Wilson, G.	OBS
International Association of Institutes of Navigation (IAIN)	Carel, O.	OBS
International Business Aviation Council (IBAC)	Spruston, D.	COBS
	Ingleton, P.	OBS
	Longmuir, S.	OBS
	Paine, T.	OBS
	Stine, B.	OBS
International Coordinating Council of Aerospace Industries Associations (ICCAIA)	Camus, P.	OBS
	Murphy, T.	OBS
	Potocki, P.	OBS

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State/Territory/International Organization	Name	Designation
International Council of Aircraft Owner and Pilot Associations (IAOPA)	Sheehan, J. Hofmann, F.	COBS OBS
International Federation of Air Traffic Controllers' Associations (IFATCA)	Ruitenbergh, B. Baumgartener, M. Beadle, A. Churchill, D. Iavorskaia, T.	COBS OBS OBS OBS OBS
International Federation of Air Line Pilots' Associations (IFALPA)	McCarthy, P. Denke, C. Frühwirth, H. Marin, M. Meyer, H. Newman, L. Torn, R.	COBS OBS OBS OBS OBS OBS OBS
International Federation of Air Traffic Safety Electric Association (IFATSEA)	Dillman, A. Ouellette, Y. Efford, C.	OBS OBS ADV
International Mobile Satellite Organization (IMSO)	Norrish, L.	OBS
International Transport Workers Federation (ITF)	Enright, S. Magee, J. Marlin, R. Myles, G. Weiland, R.	COBS OBS OBS OBS OBS
Inter-State Aviation Committee (IAC)	Ermolov, O. Filatov, A. Rukhlinskiy, V.	OBS OBS OBS
Société internationale de télécommunications aéronautiques (SITA)	Clinch, P. Charlton, A. Mattos, A. Sharma, A.	COBS OBS OBS OBS

AGENDA OF THE MEETING

Agenda Item 1: Introduction and assessment of a global air traffic management (ATM) operational concept

- 1.1: The global ATM operational concept
- 1.2: Enabling concepts in support of the global ATM operational concept
- 1.3: The need for a global air navigation plan
- 1.4: The role of airborne collision avoidance systems (ACAS) technologies

Agenda Item 2: Safety and security in air traffic management (ATM)

- 2.1: Safety management systems and programmes
- 2.2: Safety certification of ATM systems
- 2.3: Safety regulation
- 2.4: Global Aviation Safety Plan (GASP)
- 2.5: Safety and security of the ATM infrastructure

Agenda Item 3: Air traffic management (ATM) performance targets for safety, efficiency and regularity and the role of required total system performance (RTSP) in this respect

- 3.1: Performance targets for ATM
- 3.2: The concept of RTSP

Agenda Item 4: Capacity-enhancement measures

- 4.1: Global measures
- 4.2: Regional measures

Agenda Item 5: Review of the outcome of the ITU World Radio Conference (2003) (WRC-2003) and its impact on aeronautical electromagnetic spectrum utilization

Agenda Item 6: Aeronautical navigation issues

- 6.1: Global navigation satellite system (GNSS) development status based on reports from States, service providers and industry organizations
- 6.2: Navigation policy issues in the light of present and envisaged GNSS services and architectures, integration and back-up options
- 6.3: Amendments on aeronautical navigation subjects in relevant ICAO documents including the *Global Air Navigation Plan for CNS/ATM Systems* (Doc 9750), Annex 10 — *Aeronautical Telecommunications* and other documents as necessary
- 6.4: Directions for future development of aeronautical navigation services

Agenda Item 7: Aeronautical air-ground and air-to-air communications

GLOSSARY OF TERMS

AAC	aeronautical administrative communication
AAI	Airports Authority of India
AAIM	aircraft autonomous integrity monitoring
ABAS	aircraft-based augmentation system
ACARS	aircraft communications addressing and reporting system
ACAS	airborne collision avoidance system
ACP	Aeronautical Communications Panel
ADP	aeronautical data package
ADREP	Accident/Incident Data Reporting
ADS	automatic dependent surveillance
ADS-B	automatic dependent surveillance — broadcast
ADS-C	ADS contract
ADSP	Automatic Dependent Surveillance Panel
AEEC	Airlines Electronic Engineering Committee
AES	aircraft earth station
AGAS	AGAS
AIM	aeronautical information management
AIP	aeronautical information publication
AIS	aeronautical information services
AMSS	aeronautical mobile-satellite service
AOA	ACARS over aviation
AOC	aeronautical operational control
APANPIRG	ASIA/PAC Air Navigation Planning and Implementation Regional Group
APC	aeronautical public communications
APT	Asia Pacific Telecommunity
ARINC	Aeronautical Radio, Inc.

ARTCC	air route traffic control centre
ASAS	airborne separation assistance system
ASECNA	Agence pour la Sécurité de la Navigation Aérienne en Afrique et à Madagascar (ASECNA)
ASMG	Arab Spectrum Management Group
ATC	air traffic control
ATM	air traffic management
ATMCP	Air Traffic Management Operational Concept Panel
ATN	aeronautical telecommunication network
ATS	air traffic services
ATU	African Telecommunication Union
AW	aerial work
C/A code	coarse acquisition code
CAIS	computerized aeronautical information services
CAR/SAM	Caribbean/South American
CC	compliance checklist
CENPAC	Central Pacific
CEPT	European Conference of Postal and Telecommunications Administrations
CIS	Commonwealth of Independent States
CITEL	Comisión Interamericana de Telecomunicaciones
CNS/ATM	communications, navigation, and surveillance/air traffic management
CNS	communications, navigation, and surveillance
COTS	commercial off-the-shelf
CPDLC	controller-pilot data link communications
CS	commercial service
CSA	channel of standard accuracy (GLONASS)
D-ATIS	data link-automatic terminal information service
D-VOLMET	VOLMET data link service
DFIS	data link flight information services

DME	distance measuring equipment
DOP	dilution of precision
ECAC	European Civil Aviation Conference
EGNOS	European Geostationary Navigation Overlay Service
ENRI	Electronic Navigation Research Institute
ESA	European Space Agency
ETG	European Tripartite Group (ETG)
EUROCAE	European Organisation for Civil Aviation Equipment
Eurocontrol	European Organisation for the Safety of Air Navigation
FAA	Federal Aviation Administration
FANS	future air navigation systems
FIR	flight information region
FIS-B	flight information services — broadcast
FL	flight level
FOC	final operating capability
GA	general aviation
GAGAN	GEO augmented navigation
GASP	Global Aviation Safety Plan
GBAS	ground-based augmentation system
GEO	geostationary earth orbit
GLONASS	GLobal NAVigation Satellite System
GNSS	global navigation satellite system
GNSSP	Global Navigation Satellite System Panel
GPS	Global Positioning System
GRAS	ground-based regional augmentation system
GREPECAS	CAR/SAM Regional Planning and Implementation Group
HF	high frequency
IAOPA	International Council of Aircraft Owner and Pilot Associations
IATA	International Air Transport Association

IBAC	International Business Aviation Council
ICCAIA	International Co-ordinating Council of Aerospace Industries Associations
IFALPA	International Federation of Airline Pilots' Associations
IFATCA	International Federation of Air Traffic Controllers' Associations
ILS	instrument landing system
IMO	International Maritime Organization
INS	inertial navigation system
IRS	inertial reference system
ISRO	Indian Space Research Organisation
ITU	International Telecommunication Union
IWG	Interoperability Working Group
JAA	Joint aviation authorities
JCAB	Japan Civil Aviation Bureau
JTSO	JAA technical standing order
LEO	low earth orbit(ing satellite)
LNAV	lateral navigation
LOSA	line operations safety audit
MASPS	minimum aviation system performance standards
MCS	master control station
MDR	multimode digital radio
MEL	minimum equipment list
MEO	medium earth orbit
MET	meteorology
MLS	microwave landing system
MMR	multi-mode receiver
MNPS	minimum navigation performance specification
MRS	monitor and ranging station
MSAS	MTSAT satellite-based augmentation system
MTSAT	multi-functional transport satellite

NAS	national airspace system
NEXCOM	Next Generation Air/Ground Communications
NOPAC	North Pacific
NOSS	normal operations safety survey
NSE	navigation system error
OCP	Obstacle Clearance Panel
OPLINKP	Operational Data Link Panel
OS	open service
P-code	(GPS/GLONASS) precision code
PA	precision approach
PANS-OPS	<i>Procedures for Air Navigation Services — Aircraft Operations</i> (Doc 8168)
PANS	Procedures for Air Navigation Services
PANS-ATM	<i>Procedures for Air Navigation Services — Air Traffic Management</i> (Doc 4444)
PDC	pre-departure clearance
PIRG	planning and implementation regional group
PPS	precise positioning service (GPS)
PZ-90	parameters of the Earth 1990 co-ordinate system
R&D	research and development
RAIM	receiver autonomous integrity monitoring
RASP	required ATM system performance
RCC	rescue coordination centre
RCP	required communication performance
RF	radio frequency
RMP	required monitoring performance
rms	root mean square
RMS	remote monitoring station
RNAV	area navigation
RNP	required navigation performance

RNSS	radionavigation satellite service
RPP	required planning performance
RSP	required surveillance performance
RTSP	required total system performance
RVSM	reduced vertical separation minimum
SA	selective availability (GPS)
SAAQ	State Aviation Activity Questionnaire
SAR	search and rescue
SARPs	Standards and Recommended Practices
SATCOM	satellite communication
SBAS	satellite-based augmentation system
SCAT-I	Special Category I (approach system)
SCRSP	Surveillance and Conflict Resolution Systems Panel
SDU	satellite data unit
SID	standard instrument departure
SITA	Airline Telecommunications and Information Services
SoL	safety of life
SPS	standard positioning service (GPS)
SSR	secondary surveillance radar
STAR	standard instrument arrival
STDMA	self-organizing time-division multiple access
SV	space vehicle
TACAN	tactical air navigation
TDMA	time division multiple access
TEM	threat and error management
TIS-B	traffic information service — broadcast
TLAT	Technical Link Assessment Team
TSE	total system error
TSO	(FAA) technical standard order

UACC	upper area control center
UAT	universal access transceiver
UHF	ultra-high frequency
USOAP	universal safety oversight audit programme
UTC	Co-ordinated Universal Time
VDL	VHF digital link
VHF	very high frequency
VNAV	vertical navigation
VOR	VHF omnidirectional range radio
WAAS	wide area augmentation system
WGS-84	world geodetic system-1984
WRC-2003	World Radiocommunication Conference (2003)
XML	extensible mark-up language

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