WORKING PAPER

INTERNATIONAL CIVIL AVIATION ORGANIZATION

A35-WP/75
LE/5
28/07/04

ASSEMBLY - 35th SESSION

LEGAL COMMISSION

Agenda Item 36: Report on the establishment of a legal framework with regard to CNS/ATM systems including GNSS

REPORT ON THE ESTABLISHMENT OF A LEGAL FRAMEWORK WITH REGARD TO CNS/ATM SYSTEMS INCLUDING GNSS

SUMMARY

This paper reports to the Assembly for its consideration the work on legal aspects of CNS/ATM systems.

Action by the Assembly is in paragraph 5.

1. INTRODUCTION

1.1 The 32nd Session of the Assembly adopted in 1998 Resolution A32-20: *Development and elaboration of an appropriate long-term legal framework to govern the implementation of GNSS*, instructing the Council and the Secretary General, within their respective competencies, and beginning with a Secretariat Study Group, to consider, *inter alia*, the elaboration of an appropriate long-term legal framework to govern the operation of GNSS systems, including consideration of an international convention for this purpose. In September/October 2001, based on A33-WP/34: Progress Report on the Establishment of a Legal Framework with Regard to CNS/ATM Systems including GNSS, the 33rd Session of the Assembly decided, *inter alia:*

a) that further work on the legal aspects of CNS/ATM systems be carried out so as to finalize the concept of a contractual framework for CNS/ATM as an interim framework and provide a path toward its implementation, including the consideration of an international convention, having regard to the following guidance to:

1) be mindful of States' reliance on others to provide all or part of their CNS/ATM services;

2) consider carefully the kinds of relationships States should have with providers of services or elements of services; and

3) ensure that States retain full responsibility under the Chicago Convention for services provided on their behalf; and

b) that a report be presented to the next ordinary session of the Assembly.

1.2 Pursuant to this decision, the Secretariat Study Group on Legal Aspects of CNS/ATM systems finalized its work in January 2004. It reviewed the current legal framework applicable to CNS/ATM systems, identified certain inadequacies, discussed in detail a contractual framework for the systems, and studied the possibility of an international convention for this purpose. The Final Report on the Work of the Secretariat Study Group on Legal Aspects of CNS/ATM Systems is set out in the **Appendix**.

2. MAIN POINTS OF THE FINAL REPORT OF THE STUDY GROUP

2.1 Part I of the Final Report describes the current legal framework applicable to CNS/ATM systems. The work of the Study Group was based on the premise that it has been generally agreed that there is no legal obstacle to the implementation of CNS/ATM systems and that there is nothing inherent in CNS/ATM systems that is inconsistent with the *Convention on International Civil Aviation* (Chicago, 1944, hereinafter referred to as the "Chicago Convention"). There is also consensus that the Chicago Convention and its Annexes are applicable to CNS/ATM systems and that GNSS shall be compatible with the Chicago Convention, its Annexes and other principles of international law. Other elements of the current framework include the ICAO Council Statement of Policy, the Exchange of Letters of ICAO respectively with the United States and the Russian Federation, and Assembly Resolution A32-19: *Charter on the Rights and Obligations of States Relating to GNSS Services* (*cf.* paragraph 2.1 of the Final Report). The current framework also includes national law, since certain legal aspects of CNS/ATM systems are governed by national law, particularly in relation to liability rules. The Group concluded that the implementation of GNSS leaves unaffected the responsibility of States under Article 28 of the Chicago Convention for provision of air navigation services within their respective airspace. The Group also recognized that in providing the services under Article 28 when GNSS is implemented, most States have to rely on signals-in-space and their augmentation provided by others. Accordingly, a link between the provider or providers of signals and the States having jurisdiction under Article 28 should be established. The Final Report of the Group also deals with issues relating to certification, authorization for use of signals, services or other facilities, and delegation of responsibility.

2.2 Part II of the Final Report identifies inadequacies of the current legal framework relating to liability. While the substantive law may be reasonably adequate to determine or apportion liability from accidents involving failure or malfunction of GNSS systems, the procedural rules and, in particular, the applicable rules on jurisdiction may not be adequate to bring all parties to the court in order to ensure prompt and equitable compensation in these cases. In particular, application of the doctrine of sovereign immunity and related principles may in many cases render court action against foreign States or foreign governmental entities providing ATC or GNSS signals, facilities and services in countries other than their home States difficult or impossible.

2.3 Part III of the Final Report reflects consideration of a contractual framework, which was the focus of the work of the Study Group. A contractual framework may provide a link between the provider or providers of signals and the State having jurisdiction under Article 28 of the Chicago Convention as regards the terms and conditions, under which GNSS services are provided. A contractual framework may also provide the necessary provisions regarding the issue of liability. The Study Group discussed in detail and concluded on a set of contractual clauses in the form of "**Draft Contractual Framework Relating to the Provision of GNSS Services**", as set out in **Attachment F** to the Final Report of the Group. While the Draft Contractual Framework was supported by the majority of the Group, differences exist with respect to the scope and mandatory nature of the framework. Some Members regarded the framework as an optional, non-binding model contract, in respect of which States or other parties retain freedom to accept. Other Members believed that in order to maintain a desired degree of uniformity and to provide essential assurances of confidence in CNS/ATM systems, the framework should contain a number of mandatory common elements binding upon the parties, which should take the form of an intergovernmental agreement, and which may gradually evolve in the future into an international convention.

2.4 Part IV of the Final Report relates to the consideration of an international convention. In spite of detailed discussions during several meetings of the Group, the Group could not find a consensus on this subject. One view was that since a great number of States would have to authorize the use of GNSS signals over which they have no control, the only way to secure confidence in the system would be by committing both providers and users to accept certain rights and obligations in a form of a binding international legal instrument. It was further pointed out that the liability issue is an essential element in the legal framework for GNSS. A second view was that ICAO's existing legal framework, namely the Chicago Convention, its Annexes offered continued serviceability and no deficiencies had been found to impede the implementation of CNS/ATM systems. It was unnecessary to establish a new universal liability system or a liability convention for GNSS, since there was no indication that the current liability regime under domestic law could not cope with GNSS. A third group of Members shared a similar aspiration for an international convention as the first group viewed this as the necessary and long-term solution to the issue of a legal framework for GNSS. At the same time, they believed that a mandatory contractual framework could serve as an interim solution between the *status quo* and the long-term elaboration of an international convention.

2.5 In summary, there were two schools of thought in the Study Group regarding an international convention as a long-term legal framework to govern the operation of GNSS systems: one was that, at present, not enough experience had been gained with the implementation of CNS/ATM systems, and GNSS in particular, and that it was therefore premature at this point to elaborate and draft an international convention; the other was that an international convention was necessary and desirable.

2.6 Part V of the Final Report addressed certain issues relating to communications and surveillance.

3. CONSIDERATION BY THE COUNCIL OF THE FINAL REPORT OF THE STUDY GROUP

3.1 When the Council considered the Final Report of the Study Group on 5 March 2004 during the ninth meeting of its 171st Session, a view was expressed that since there had not been any consensus on the need for an international convention, it was proposed that the Council acknowledge that ICAO's studies of the legal aspects of CNS/ATM systems implementation had been exhaustive and that the Council

recommend to the 35th Session of the Assembly that ICAO consider its legal research complete and concentrate its efforts on the technical aspects of CNS/ATM systems implementation for at least the upcoming triennium. A number of Representatives on the Council also supported the view that it was premature at this stage to elaborate and draft an international convention.

3.2 Another view was expressed that the study on the legal aspects of CNS/ATM systems must continue. Since satellite radio communication should ultimately become the single tool for use in air traffic management, the need for new international arrangements to govern the implementation and operation of the future GNSS should be recognized. Such arrangements should, in particular, provide adequate legal certainty for those States which would be relying on signals provided by others regarding their obligations under Article 28 of the Chicago Convention. The arrangements should also provide a comprehensive, consistent and coordinated liability framework for GNSS-related activities.

3.3 It was further pointed out that the three approaches mentioned in paragraph 2.4 could be regarded as four approaches, since the third approach, namely that of a contractual framework, comprises two separate and distinct options: a flexible approach and a binding approach. Under the flexible approach, a number of model clauses would be drafted and it would be for the negotiating parties to decide whether or not to use them in the contract. Under the binding approach, the contractual framework should include a number of mandatory common elements which should bind on all parties. Accordingly, the contractual framework should include a framework agreement among States at governmental level mainly to define the mandatory common elements.

3.4 In conclusion, the Council observed that the subject of the legal aspects of CNS/ATM systems implementation is of a high degree of importance. This subject, which is complex not only from the legal point of view but also from the technological and technical point of view, is one of the items on the General Work Programme of the Legal Committee which was approved by the Assembly and reviewed by the Council on a yearly basis. It is for the 35th Session of the Assembly to determine what further action could be taken. The Council also emphasized the need to distinguish the two approaches to the contractual framework as indicated in paragraph 3.3 of this paper.

4. FINANCIAL IMPACT OF THE PROPOSED ACTION

4.1 The financial impact of the work in this area is dependent upon the decision of the Assembly under paragraph 5.1 b).

5. ACTION BY THE ASSEMBLY

5.1 The Assembly is invited to:

a) note this paper and its appendix; and

b) give guidance, as appropriate, concerning the work in this respect.

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APPENDIX

FINAL REPORT ON THE WORK OF THE SECRETARIAT STUDY GROUP ON LEGAL ASPECTS OF CNS/ATM SYSTEMS

(Presented by the Secretariat)

1. INTRODUCTION

1.1 The Secretariat Study Group on Legal Aspects of CNS/ATM Systems was established pursuant to a decision of the Council, taken at the tenth meeting of its 154th Session (C-DEC 154/10) and endorsed by Assembly Resolution A32-20: *Development and elaboration of an appropriate long-term legal framework to govern the implementation of GNSS*, which *instructed* the Council and the Secretary General, within their respective competencies, and beginning with a Secretariat Study Group, to:

"a) ensure the expeditious follow-up of the recommendations of the worldwide CNS/ATM Systems Implementation Conference, as well as those formulated by the Panel of Legal and Technical Experts on the Establishment of a Legal Framework with regard to GNSS (LTEP), especially those concerning institutional issues and questions of liability; and

b) consider the elaboration of an appropriate long-term legal framework to govern the operation of GNSS systems, including consideration of an international Convention for this purpose, and to present proposals for such a framework in time for their consideration by the next ordinary Session of the Assembly."

1.2 The 33rd Session of the Assembly in 2001 decided that further work on the legal aspects of CNS/ATM systems be carried out so as to finalize the concept of a contractual framework for CNS/ATM as an interim framework and provide a path toward its implementation.

1.3 The Group held eleven meetings between 1999 and January 2004 to consider the legal aspects of CNS/ATM systems, particularly those related to GNSS.

1.4 The Global Navigation Satellite System (GNSS), which is one of the key elements of the CNS/ATM systems, is a worldwide position and time determination system, which includes satellite constellations, aircraft receivers, and system integrity monitoring, augmented as necessary to support the Required Navigation Performance for the actual phase of operation. At present, there are two satellite navigation systems in operation: the Global Positioning System (GPS), developed by the United States, and the Global Orbiting Navigation Satellite System (GLONASS), developed by the Russian Federation. There is also the development of a new system in Europe, called Galileo, intended to become a new element of GNSS as of 2008.

1.5 Consideration of the legal aspects of CNS/ATM systems has been based on the following basic assumptions: (1) The long-term GNSS, which will be the evolution of the existing systems, will be composed of different global and regional systems. (2) These systems could be civilian-controlled, military-controlled or a mixture of them. (3) The long-term GNSS will include core elements (primary signals in space) and augmentation systems. In this context, the Secretariat Study Group reviewed the current legal framework applicable to CNS/ATM systems, identified certain inadequacies, discussed in detail a contractual framework for the systems, and studied the possibility of an international convention for this purpose.

2. PART I – CURRENT LEGAL FRAMEWORK

2.1 The work of the Study Group was based on the premise that it has been generally agreed that there is no legal obstacle to the implementation of CNS/ATM systems and that there is nothing inherent in CNS/ATM systems that is inconsistent with the *Convention on International Civil Aviation*, (Chicago; 1944, hereinafter referred to as the "Chicago Convention"). (Report of the 28th Session of the Legal Committee, Doc 9588–LC/188, 3-12). There is also consensus that the Chicago Convention and its Annexes are applicable to CNS/ATM systems and that GNSS shall be compatible with the Chicago Convention, its Annexes and other principles of international law. Furthermore, ICAO has adopted or concluded:

1) the *Statement of ICAO Policy on CNS/ATM Systems Implementation and Operation* (approved by the Council on 9 March 1994), copy of which is reproduced as **Attachment A** to this report;

2) the Exchange of Letters between ICAO and the United States of America concerning GPS, 14 and 27 October 1994, copies of which are reproduced as **Attachment B** to this report;

3) the Exchange of Letters between ICAO and the Russian Federation concerning GLONASS, 4 June and 29 July 1996, copies of which are reproduced as **Attachment C** to this report; and

4) Assembly Resolution A32-19: *Charter on the Rights and Obligations of States Relating to GNSS Services* (hereinafter referred to as the "Charter"), copy of which is reproduced as **Attachment D** to this report.

2.2 Chicago Convention

2.2.1 In light of its discussions, the Study Group reached the following conclusions and recommendations:

2.2.2 Responsibility under Article 28

2.2.2.1 Under Article 28 of the Chicago Convention, Contracting States undertake to provide air navigation services, including the relevant air navigation facilities, in accordance with ICAO Standards and Recommended Practices (SARPs). The implementation of GNSS leaves unaffected the responsibility of States under Article 28 for provision of air navigation services within their respective airspace. States having

undertaken to provide for the provision of air navigation facilities in their territory, whether using their own signals, services or facilities or procuring their provision by others, remain responsible under Article 28 of the Convention. In providing such services once GNSS is implemented, most States have to rely on signals-in-space and their augmentation provided by others. In this connection, a question arises whether the implementation of GNSS should also involve additional arrangements establishing a link between the provider or providers of signals and the State having jurisdiction under Article 28. The Study Group was of the view that in implementing GNSS, a Contracting State should satisfy itself that the following comply with the relevant ICAO SARPs: (a) the signals-in-space; (b) its own implementation facilities; and (c) the equipment and procedures of operators. It was recommended by the Group that the procedures laid down in Recommendations 1 to 7 of LTEP (**Attachment E** to this report refers) should be used to facilitate the decision-making process of Contracting States in this respect.

2.2.3 **Certification**

2.2.3.1 In accordance with their responsibility under Article 28, States providing signals-in-space, or under whose jurisdiction such signals are provided, should certify the signals-in-space by attesting that they are in conformity with the ICAO SARPs, and the State having jurisdiction under Article 28 should ensure that avionics, ground facilities and training and licensing requirements comply with the ICAO SARPs.

2.2.4 **Authorization for use of signals, services or other facilities**

2.2.4.1 In providing air navigation facilities, States making use of the signals, services or other facilities provided by others, including other States and international organizations, should require that the use of such signals, services or other facilities provided by others in its airspace be subject to authorization. In line with the Recommendations of LTEP (in particular, Recommendations 1 to 8) and emerging practice, and subject to further study, States in authorizing the use of GNSS signals for air navigation purposes should take into account issues such as:

a) application of safety management processes;

b) attestation of conformity with the ICAO SARPs;

c) commitments relating to continuous signal availability;

d) licencing and training;

e) coordination and contingency procedures; and

f) establishment of channels for exchange of information.

2.2.5 **Delegation of responsibility**

2.2.5.1 The Group concluded that for the implementation of CNS/ATM systems, no amendment to Article 28 of the Chicago Convention is warranted at the present time. Article 28 does not prevent Contracting States from delegating to another State the responsibility for establishing and providing air navigation services in flight information regions, control areas or control zones extending over the territories of the former. Annex 11, paragraph 2.1.1, to the Convention provides for such delegation. These provisions, as well as contractual arrangements, may provide a basis for delegation of responsibility relating to the provision of air navigation services from one State to another State or entity.

2.2.6 Responsibility vs. liability

2.2.6.1 The Group also pointed out that responsibility under Article 28 should not be seen to be the same as liability. From the point of view of international law, Article 28 regulates the relationship between States only and does not give a cause of action to private persons to claim compensation for damage. Such claims should rather be handled at the level of the applicable domestic law.

2.3 Council Statement of Policy

2.3.1 The ICAO Council issued on 9 March 1994 its: *Statement of ICAO Policy on CNS/ATM Systems Implementation and Operation*, which laid the foundation for certain legal principles to be applied to GNSS services, including the principle of universal accessibility without discrimination, sovereignty, authority and responsibility of Contracting States, responsibility and role of ICAO, continuity and quality of service, and cost recovery. It also addressed the issues of technical cooperation, institutional arrangements and implementation, global navigation satellite system, and airspace organization and utilization.

2.4 Exchange of Letters with the United States and the Russian Federation

2.4.1 The ICAO Council further exchanged letters with the United States regarding GPS in October 1994, and with the Russian Federation regarding GLONASS in June/July 1996. Both countries have offered their systems for use by the international community free of direct charge for a period of at least ten years in the case of GPS and fifteen years in the case of GLONASS. These letters reiterated certain principles in the aforementioned Statement of Policy, such as the provision of signals on a nondiscriminatory basis to all users of civil aviation, the maintenance of the integrity and reliability of the service, and the rights of any State to control the operations of aircraft and enforce safety regulations within its sovereign airspace.

2.5 The Charter

2.5.1 In October 1998, based on the work of the LTEP, the 32nd Session of the Assembly adopted Resolution A32-19: *Charter on the Rights and Obligations of States Relating to GNSS Services*. The Charter embodied fundamental principles which shall apply in the implementation and operation of GNSS.

2.5.2 With respect to the status of the Charter, one school of thought within the Study Group was of the view that, while the Charter was a significant declaration, it was non-binding. Another school of thought believed that the legal value of the Charter should not be underestimated. A Charter adopted unanimously in the form of an Assembly resolution was not devoid of all legal effects. The key factor was the willingness of States to agree on standards of conduct, rather than the form of such standards.

2.5.3 Discussions after the adoption of the Charter centered around the question whether and how further arrangements should be made with regard to the long-term legal framework applicable to CNS/ATM systems.

2.6 National law

2.6.1 A number of legal aspects of CNS/ATM systems are currently covered by applicable national law, particularly in relation to the issue of liability. In this context of the current legal framework, the Study Group reviewed the national law of certain States representing different legal systems in relation to liability rules which would be applicable to GNSS activities. The review showed that the substantive law

governing the liability of air traffic control (ATC) agencies, which would likely apply in case of failure or malfunction of GNSS, is in all cases based on fault principles. It is, in particular, based on negligence (wrongful action or omission, in the case of one State on gross negligence) and it requires proof of fault of the ATC agency, or its employees or agents.

3. PART II – IDENTIFIED INADEQUACIES OF THE CURRENT LEGAL FRAMEWORK RELATING TO LIABILITY

3.1 On the basis of the review of the current legal framework as set out in Part I above, the Group then examined whether any inadequacies of the current legal framework could be identified, in particular in relation to liability arising from an accident caused by the malfunction or failure of GNSS.

3.2 Principles governing liability

3.2.1 Based on the study mentioned in paragraph 2.6.1 above, the Study Group expressed the view that in the provision of GNSS facilities within their territory, States remain liable under domestic law for loss or damage resulting from their own negligence or fault, or that of their agents, whether they provide their own signals, services or facilities or procure their provision by others, to the extent that such negligence or fault is proven.

3.2.2 Similarly, States or international organizations providing GNSS signals, services or other facilities to other States are liable under domestic law for damage resulting from their negligence or fault, or that of their agents.

3.2.3 Accordingly, States should ensure in their domestic legislation that persons suffering damage, as a result of negligence or fault of the State or its agents in the provision of CNS/ATM signals, services or other facilities, will be provided with adequate remedies to obtain prompt, just and equitable compensation regardless of sovereign immunity.

3.3 Inadequacies of the current legal framework

3.3.1 While the substantive law referred to above may be reasonably adequate to determine or apportion liability from accidents involving failure or malfunction of GNSS system, the procedural rules and, in particular, the applicable rules on jurisdiction may not be adequate to bring all parties to the court in order to ensure prompt and equitable compensation in these cases. In particular, the application of the doctrine of sovereign immunity and related principles may in many cases render court action against States or governmental entities providing ATC services by making use of GNSS signals, facilities and services difficult or impossible, when such action is brought abroad.

3.3.2 Approaches to the issue of liability

3.3.3 The Group identified three possible approaches to the problem of liability relating to GNSS:

a) to ensure that the doctrine of sovereign immunity and related principles will not be an obstacle to bringing all potential defendants, including all parties involved in the provision of the GNSS services, into legal proceedings before the court where the victim of an accident involving failure or malfunction of GNSS has brought action;

b) to establish an adequate recourse action mechanism for the State having jurisdiction under Article 28 and the aircraft operator to take recourse against the other party or parties (mainly the primary signal provider and the augmentation signal provider) involved in the provision of the services, to the extent that such other party or parties have been negligent in the provision of the signals; or

c) to ensure adequate compensation coverage through compensation fund arrangements, as have been set up in the field of maritime transport and other fields.

3.3.4 The Group had detailed and lengthy discussions concerning the possible approaches to the problem of liability. A part of the Group believed that in order to achieve universality and certainty of the new air navigation system, the issue of liability should be dealt with under a universal regime and should not be left to national law. Another part of the Group, however, did not consider it necessary to establish a new universal liability system or a liability convention for GNSS, since there was no indication that the current liability regime under domestic law could not cope with GNSS, and further, since there was no connection between GNSS and the perceived gaps in the liability system. Eventually, the Group supported a middle ground, namely to explore the approach of a contractual framework. It was recommended that a number of common elements, some of which are relating to liability, could be incorporated into the contractual framework. Such common elements should include at least the following:

a) participants in GNSS, including the contractual provider of services, shall comply with the SARPs of ICAO;

b) the issue of sovereign immunity;

c) while an Article 28 State remains entirely responsible for provision of ATC services in its territory, other participants also at the same time are responsible for the services or elements they undertake to perform; consequently, Article 28 States may wish to ensure that an adequate recourse mechanism is established;

d) participants in GNSS shall ensure that they have adequate means of risk coverage; and

e) liability should be based on fault.

3.3.5 Certain Members of the Group maintained that these common elements should be mandatory for all parties to the contractual framework. Therefore, they should be incorporated into the framework agreement as illustrated in **Attachment G** to this report. Other Members supported the inclusion of the common elements in the contractual framework, under the condition that each party retains freedom whether to enter into the contractual framework.

4. PART III – CONSIDERATION OF CONTRACTUAL FRAMEWORK

4.1 Pursuant to its mandate as confirmed by the 33rd Session of the ICAO Assembly (paragraph 1.2 above refers), the Study Group also focussed on the consideration of a contractual framework as an interim framework for CNS/ATM systems.

4.2 **Concept of contractual framework**

4.2.1 A contractual framework may provide a link between the provider or providers of signals and the State having jurisdiction under Article 28 of the Chicago Convention as regards the terms and conditions, under which GNSS services are provided. A contractual framework may also provide the necessary provisions regarding the issue of liability.

4.2.2 The discussion of the Group clarified that in principle a contractual framework would be a non-mandatory framework, although several Members expressed the view that a set of mandatory common elements was required. The framework would cover the relationships among different players in various stages of the provision of GNSS services, including primary signal providers, augmentation signal providers, and States having jurisdiction under Article 28 of the Chicago Convention. In view of the possibility that the contracts relating to GNSS would be negotiated separately among different and numerous parties, certain Members of the Group believed that in order to maintain a desired degree of uniformity and to provide essential assurances of confidence in CNS/ATM systems, a set of common elements should be applicable to all the contracts. These common elements are intended to have considerable persuasive force in the search for uniformity. Some of the common elements relating to liability have been identified in paragraph 3.1 above. These arrangements must be consistent with the Charter.

4.3 **Elements of contractual framework**

4.3.1 The Study Group discussed in detail and concluded on a set of contractual clauses in the form of a **"Draft Contractual Framework Relating to the Provision of GNSS Services"** as set out in **Attachment F** (hereinafter referred to as the "Draft Contractual Framework"), which was supported by the majority of the Group. The following elements form part of the Draft Contractual Framework:

4.3.2 **Parties**

4.3.2.1 Article 1 of the Draft Contractual Framework defines the parties under the framework and the scope of application of the framework. The framework is principally designed for the relationship between the Air Traffic Service (ATS) provider and the GNSS signal provider, which is defined in Article 2, but may also be used to cover the relationship between the ATS provider and the augmentation signal provider and potentially other parties. Each contract would be applicable to the airspace where the respective ATS provider is responsible for providing its services.

4.3.3 **Obligations of the GNSS signal provider**

4.3.3.1 Article 3 sets out the basic obligations of the GNSS signal provider, including provision of the signals, obtaining of licence if required, compliance with the safety management provisions, and provision of relevant aeronautic information. Detailed technical criteria should be spelled out in an annex, which should be drafted by experts.

4.3.4 **Obligations of the ATS provider**

4.3.4.1 Article 4 sets out the basic obligations of the ATS provider, including obtaining the necessary authorization for the use of GNSS signals, coordination with the GNSS signal provider with a view to facilitating the transmission of the signals, compliance with the safety management provisions, and payment of the service charges to the GNSS signal provider, if applicable.

4.3.5 **Cost recovery**

4.3.5.1 Article 5 allows the GNSS signal provider to establish a cost recovery mechanism for the purpose of recovering the cost of such services from the users of GNSS signals. It was suggested that such mechanism shall ensure the reasonable allocation of costs among civil aviation users themselves and among civil aviation users and other system users, in view of the current statistics that aviation users only amount to a small percentage of the users of the signals.

4.3.6 **Liability**

4.3.6.1 Article 6 provides that the liability of each party for failure to perform its obligations under this contract shall be governed by the liability regime applicable to its activity. This clause focuses on liability between the parties in the contractual context, without addressing the issue of liability towards a third party.

4.3.7 **Other matters**

4.3.7.1 Article 7 addresses the issue of recourse and indemnification; Article 8 deals with waiver of sovereign immunity, in order to facilitate the resolution of the liability issues as identified in Part II of this report; Article 9 provides for the settlement of disputes.

4.3.8 When **Attachment F** was introduced and discussed in the Group, a large majority was of the view that the contractual framework set out therein represents a realistic approach to the issue of a legal framework for CNS/ATM systems and accepted it.

4.4 **Alternative proposal by certain Group Members**

4.4.1 Some strong views were expressed by some Members of the Group, however, that the contractual framework should go beyond the content of **Attachment F**, namely that it should not be limited to a series of contracts between the various stakeholders in the implementation of CNS/ATM systems, but should include a framework agreement among States at governmental level mainly to define the mandatory common elements which should apply. In their view, the agreement should not only address the relationship between States but should also govern certain aspects of the contractual relationships involving the system operators and service providers. Essential in the agreement is a set of mandatory common elements, which would be respected by all players. Such mandatory elements could include, *inter alia*, compliance with ICAO Standards and Recommended Practices, compliance with the Charter, compulsory risk coverage, recourse to arbitration, waiver of right to invoke sovereign immunity, and a central role for ICAO as global coordinator. These views are reflected in **Attachment G**.

5. PART IV – CONSIDERATION OF AN INTERNATIONAL CONVENTION

5.1 **Discussion of an international convention in other ICAO fora**

5.1.1 It was part of the mandate of the Group to consider an international convention for the purpose of elaborating a long-term legal framework for CNS/ATM systems. The question whether there is a need for an international convention on GNSS had already previously been the subject of extensive discussions in ICAO fora, including the 28th and 29th Sessions of the Legal Committee, the World-wide

CNS/ATM Systems Implementation Conference held in Rio de Janeiro from 11 to 15 May 1998, and the 32nd and 33rd Sessions of the Assembly.

5.1.2 The Rio Conference recommended that the complex legal aspects of the implementation of CNS/ATM, including GNSS, require further work by ICAO. Such further work should seek to elaborate an appropriate long-term legal framework to govern the operation and availability of CNS/ATM, including the consideration of an international convention for this purpose. Such further work should not, however, delay implementation of CNS/ATM.

5.1.3 Further to Assembly Resolution A32-20, the 33rd Session of the Assembly decided that further work on the legal aspects of CNS/ATM systems be carried out so as to finalize the concept of a contractual framework for CNS/ATM as an interim framework and provide a path toward its implementation, including the consideration of an international convention.

5.2 Discussion of an international convention in the Study Group

5.2.1 Pursuant to the decisions of the 32nd and 33rd Sessions of the Assembly, the Group considered the subject of an international convention which would set out rights and obligations of States in relation to GNSS services. However, in spite of detailed discussions during several meetings of the Group, the Group could not find a consensus on this subject.

5.2.2 One view was that since a great number of States would have to authorize the use of GNSS signals over which they have no control, the only way to secure confidence in the system would be by committing both providers and users to accept certain rights and obligations in a form of a binding international legal instrument. In the view of these Members, the international convention should set out, *inter alia*, such principles as the acknowledgement of the paramount importance of safety of international civil aviation, the unlimited access to GNSS services on a non-discriminatory basis, the sovereign right of every State to control operations of aircraft and enforce safety regulations within its airspace, and the obligation of providers to assure continuity, availability, accuracy, transparency and liability of GNSS services. It was further pointed out that the liability issue is an essential element in the legal framework for GNSS, particularly in view of the multiplicity of the players and possible litigations taking place at the same time for the same event in a number of countries. According to this view, the implementation of a worldwide seamless and interoperable system such as CNS/ATM would not be compatible with a scattered liability regime. These Members supported the development of an international convention, which they believed had been an option favoured by the vast majority at the Rio Conference, and the 32nd and 33rd Sessions of the Assembly. They saw the contractual framework as a flexible interim solution from which an international convention or other binding instruments might evolve.

5.2.3 A second view was that ICAO's existing legal framework, namely the Chicago Convention, its Annexes and the other elements discussed in Part I above, including applicable domestic law, offered continued serviceability and no deficiencies had been found to impede the implementation of CNS/ATM systems. It was unnecessary to establish a new universal liability system or a liability convention for GNSS, since there was no indication that the current liability regime under domestic law could not cope with GNSS, and further, since there was no connection between GNSS and the perceived gaps in the liability system. While legal issues had been discussed in various bodies of ICAO, at no point had any ICAO body achieved consensus on a proposal for new global conventional law. At the same time, every ICAO body which had considered legal issues relating to CNS/ATM had been careful to state that work on legal issues must not be permitted to delay technical implementation of CNS/ATM systems.

5.2.4 A third group of Members shared a similar aspiration for an international convention as those Members referred to in paragraph 5.2.2 above and indeed viewed this as the necessary and long-term solution to the issue of a legal framework for GNSS. The constraint was in their view not a legal one but one of practicality in that a convention would clearly take longer to put in place than a contractual framework. Meanwhile, a contractual solution would not only help to bridge the gap, but also a convention would be likely to evolve more smoothly from a workable interim solution. Therefore, a contractual framework as referred to in paragraph 4.4.1 above could serve as an interim solution between the *status quo* and the long-term elaboration of an international convention. It may be recalled that the framework referred to in paragraph 4.4.1 above would require, *inter alia,* a framework agreement among States at governmental level.

5.2.5 The Members referred to in the preceding paragraph submitted a proposed draft convention which covered elements derived from the Charter, elements inspired by the LTEP recommendations, and other elements considered necessary to create a binding and embracing instrument of international law. The *Proposal by Certain Members of the Group relating to Main Elements of an International Convention* is set out in **Attachment H** for information; it should be noted, however, that this draft does not represent the view of the majority of the Group.

5.2.6 At the end of the discussion on the subject of a draft convention and its specific clauses, most Members present observed that since the implementation of GNSS was in progress, there was not enough experience on which the drafting of an international convention could be based. It was therefore advocated not to pursue this matter, pending further development of GNSS.

5.2.7 In summary, when the issue of an international convention was on the agenda of the tenth meeting for final consideration by the Group, the majority view was that, at present, not enough experience had been gained with the implementation of CNS/ATM systems, and GNSS in particular, and that it was therefore premature at this point to elaborate and draft an international convention. Another view expressed was that an international convention was necessary and desirable.

6. PART V – OTHER ISSUES CONSIDERED BY THE GROUP

6.1 Two additional items had been included in the mandate of the Study Group, namely consideration of issues relating to communications and to surveillance in the framework of CNS/ATM.

6.2 Issues relating to communications

6.2.1 With respect to the issue of liability and other legal principles relating to communications by satellite, the Group noted the widespread use of liability disclaimer clauses in the telecommunications industry, including the satellite communications industry. The Group reached consensus with respect to the finding that despite the current practice on limited liability, the legal regime for telecommunications had not impeded public confidence in the system. The use of communication satellites, as compared to the use of terrestrial systems, did not present any new legal issues at the current stage. The disclaimer clause was almost universally used. It was the air traffic service providers' responsibility to arrange redundancy of communication services to satisfy the requirements relating to reliability, availability and continuity of the services. On the other hand, in the light of further experience with CNS/ATM, and if deemed necessary and opportune, the issue of the limitation of liability in communication services could be further studied in the future.

6.3 Issues relating to surveillance

6.3.1 The Group also discussed the legal issues relating to surveillance. Since the issues relating to surveillance was not the major part of its mandate, the Group limited itself to a general discussion. It was noted that, since surveillance was linked to both communications and navigation, the legal framework for this activity would largely depend upon the legal regimes applicable to these latter two elements of CNS/ATM systems. The Group further observed that, since surveillance would depend more on automated systems, a shift of focus from human error liability to the equipment manufacturers' liability could be expected. However, no separate legal issues regarding surveillance, which may need to be addressed at this stage, were identified by the Group.

7. CONCLUSIONS

7.1 GNSS, which is one of the key elements of the CNS/ATM systems, is in the process of implementation. The work of the Study Group was based on the premise that it has been generally agreed that there is no legal obstacle to the implementation of CNS/ATM systems and that there is nothing inherent in CNS/ATM systems that is inconsistent with the Chicago Convention.

7.2 Current legal framework

7.2.1 Under the current legal framework, the Chicago Convention, in particular its Article 28, is applicable to CNS/ATM. Other elements of the current framework include the ICAO Council Statement of Policy, the Exchange of Letters of ICAO respectively with the United States and the Russian Federation, and Assembly Resolution A32-19: *Charter on the Rights and Obligations of States Relating to GNSS Services*. The current framework also includes national law, since certain legal aspects of CNS/ATM systems are governed by national law, particularly in relation to liability rules.

7.2.2 Under Article 28 of the Chicago Convention, Contracting States undertake to provide air navigation services, including the relevant air navigation facilities, in accordance with the ICAO SARPs. The implementation of GNSS leaves unaffected the responsibility of States under Article 28 for provision of air navigation services within their respective airspace. In fulfilment of such responsibility, certain issues relating to certification and authorization of the use of GNSS, as well as the delegation of responsibility, will have to be resolved by the relevant States.

7.2.3 The Group also recognized that, in providing the services under Article 28 when GNSS is implemented, most States have to rely on signals-in-space and their augmentation provided by others. Accordingly, a link between the provider or providers of signals and the States having jurisdiction under Article 28 should be established.

7.3 Inadequacy of the current legal framework

7.3.1 The Group concluded that, while the substantive law governing liability may be reasonably adequate to determine or apportion liability from accidents involving failure or malfunction of GNSS system, the procedural rules and, in particular the applicable rules on jurisdiction, may not be adequate to bring all parties to the court in order to ensure prompt and equitable compensation in these cases. In particular, the application of the doctrine of sovereign immunity and related principles may in many cases render court action

against States or governmental entities providing ATC services by making use of GNSS signals, facilities and services difficult or impossible, when such action is brought abroad.

7.4 Consideration of contractual framework

7.4.1 Pursuant to the decision of the 33rd Session of the Assembly, the Group focussed on the consideration of a contractual framework, which may provide a link between the provider or providers of signals and the State having jurisdiction under Article 28 of the Chicago Convention as regards the terms and conditions, under which GNSS services are provided. The contractual framework may also provide the necessary provisions regarding the issue of liability. A set of clauses for this contractual framework, in the form of **Attachment F** to this report, was supported by the majority of the Group. Differences exists, however, with respect to the scope and mandatory nature of the contractual framework. Some Members regarded the framework as an optional, non-binding model contract, in respect of which States or other parties retain freedom to accept. Other Members maintained that the framework should contain a number of mandatory common elements binding upon the parties, which should take the form of an intergovernmental agreement, and which may gradually evolve in the future into an international convention.

7.5 Consideration of an international convention

7.5.1 With respect to the subject of an international convention, in spite of detailed discussions during several meetings of the Group, no consensus could be reached on this subject. When the issue of the international convention was on the agenda of the tenth meeting for final consideration by the Group, the majority view was that, at present, not enough experience had been gained with the implementation of CNS/ATM systems, and GNSS in particular, and that it was therefore premature at this point to elaborate and draft an international convention. Another view expressed was that an international convention was necessary and desirable.

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ATTACHMENT A

STATEMENT OF ICAO POLICY ON CNS/ATM SYSTEMS IMPLEMENTATION AND OPERATION

STATEMENT OF ICAO POLICY ON CNS/ATM SYSTEMS IMPLEMENTATION AND OPERATION

Approved by the ICAO Council on 9 March 1994 and amended on 28 June 1996

In continuing to fulfil its mandate under Article 44 of the *Convention on International Civil Aviation* by, *inter alia*, developing the principles and techniques of international air navigation and fostering the planning and development of international air transport so as to ensure the safe and orderly growth of international civil aviation throughout the world, the International Civil Aviation Organization (ICAO), recognizing the limitations of the present terrestrial-based system, developed the ICAO communications, navigation and surveillance/air traffic management (CNS/ATM) systems concept, utilizing satellite technology. ICAO considers an early introduction of the new systems to be in the interest of healthy growth of international civil aviation.

The implementation and operation of the new CNS/ATM systems shall adhere to the following precepts:

1. UNIVERSAL ACCESSIBILITY

The principle of universal accessibility without discrimination shall govern the provision of all air navigation services provided by way of the CNS/ATM systems.

2. SOVEREIGNTY, AUTHORITY AND RESPONSIBILITY OF CONTRACTING STATES

Implementation and operation of CNS/ATM systems which States have undertaken to provide in accordance with Article 28 of the Convention shall neither infringe nor impose restrictions upon States' sovereignty, authority or responsibility in the control of air navigation and the promulgation and enforcement of safety regulations. States' authority shall be preserved in the co-ordination and control of communications and in the augmentation, as necessary, of satellite navigation services.

3. RESPONSIBILITY AND ROLE OF ICAO

In accordance with Article 37 of the Convention, ICAO shall continue to discharge the responsibility for the adoption and amendment of Standards, Recommended Practices and Procedures governing the CNS/ATM systems. In order to secure the highest practicable degree of uniformity in all matters concerned with the safety, regularity and efficiency of air navigation, ICAO shall co-ordinate and monitor the implementation of the CNS/ATM systems on a global basis, in accordance with ICAO's regional air navigation plans and global co-ordinated CNS/ATM systems plan. In addition, ICAO shall facilitate the provision of assistance to States with regard to the technical, financial, managerial, legal and co-operative aspects of implementation. ICAO's role in the co-ordination and use of frequency spectrum in respect of communications and navigation in support of international civil aviation shall continue to be recognized.

4. TECHNICAL CO-OPERATION

In the interest of globally co-ordinated, harmonious implementation and early realization of benefits to States, users and providers, ICAO recognizes the need for technical co-operation in the implementation and efficient operation of CNS/ATM systems. Towards this end, ICAO shall play its central role in co-ordinating technical co-operation arrangements for CNS/ATM systems implementation. ICAO also invites States in a position to do so to provide assistance with respect to technical, financial, managerial, legal and co-operative aspects of implementation.

5. INSTITUTIONAL ARRANGEMENTS AND IMPLEMENTATION

The CNS/ATM systems shall, as far as practicable, make optimum use of existing organizational structure, modified if necessary, and shall be operated in accordance with existing institutional arrangements and legal regulations. In the implementation of CNS/ATM systems, advantage shall be taken, where appropriate, of rationalization, integration and harmonization of systems. Implementation should be sufficiently flexible to accommodate existing and future services in an evolutionary manner. It is recognized that a globally co-ordinated implementation, with full involvement of States, users and service providers through, *inter alia*, regional air navigation planning and implementation groups, is the key to the realization of full benefits from the CNS/ATM systems. The associated institutional arrangements shall not inhibit competition among service providers complying with relevant ICAO Standards, Recommended Practices and Procedures.

6. GLOBAL NAVIGATION SATELLITE SYSTEM

The global navigation satellite system (GNSS) should be implemented as an evolutionary progression from existing global navigation satellite systems, including the United States' global positioning system (GPS) and the Russian Federation's global orbiting navigation satellite system (GLONASS), towards an integrated GNSS over which Contracting States exercise a sufficient level of control on aspects related to its use by civil aviation. ICAO shall continue to explore, in consultation with Contracting States, airspace users and service providers, the feasibility of achieving a civil, internationally controlled GNSS.

7. AIRSPACE ORGANIZATION AND UTILIZATION

The airspace shall be organized so as to provide for efficiency of service. CNS/ATM systems shall be implemented so as to overcome the limitations of the current systems and to cater for evolving global air traffic demand and user requirements for efficiency and economy while maintaining or improving the existing levels of safety. While no changes to the current flight information region organization are required for implementation of the CNS/ATM systems, States may achieve further efficiency and economy through consolidation of facilities and services.

8. CONTINUITY AND QUALITY OF SERVICE

Continuous availability of service from the CNS/ATM systems, including effective arrangements to minimize the operational impact of unavoidable system malfunctions or failure and achieve expeditious service recovery, shall be assured. Quality of system service shall comply with ICAO Standards of system integrity and be accorded the required priority, security and protection from interference.

9. COST RECOVERY

In order to achieve a reasonable cost allocation between all users, any recovery of costs incurred in the provision of CNS/ATM services shall be in accordance with Article 15 of the Convention and shall be based on the principles set forth in the *Statements by the Council to Contracting States on Charges for Airports and Air Navigation Services* (Doc 9082), including the principle that it shall neither inhibit nor discourage the use of the satellite-based safety services. Cooperation amongst States in their cost-recovery efforts is strongly recommended.

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ATTACHMENT B

EXCHANGE OF LETTERS BETWEEN ICAO AND THE UNITED STATES CONCERNING GPS

U.S. Department of Transportation
Federal Aviation Administration

Office of the Administrator

800 Independence Ave., S.W.
Washington, D.C. 20591

OCT 14 1994

Dr. Assad Kotaite
President of the Council
International Civil Aviation Organization
1000 Sherbrooke Street West
Montreal, Quebec, Canada H3A 2R2

Dear Dr. Kotaite:

This letter supersedes my letter of April 14, 1994.

I would like to commend, on behalf of the United States, the Committees on Future Air Navigation Systems (FANS) of the International Civil Aviation Organization (ICAO) for pioneering progress in the development of global statellite navigation for civil aviation. I note in this regard that the ICAO Council, on December 11, 1991, requested the Secretary General of ICAO to initiate an agreement between ICAO and Global Navigation Satellite System (GNSS) provider states concerning the duration and quality of the future GNSS.

I would like to take this opportunity to reiterate my Government's offer of the Standard Positioning Service (SPS) of the United States Global Positioning System (GPS) for use by the international community. As the United States made clear at the ICAO Tenth Air Navigation Conference and the 29th ICAO Assembly, the United States intends, subject to the availability of funds as required by United States law, to make GPS-SPS available for the foreseeable future, on a continuous, worldwide basis and free of direct user fees. This offer satisfies ICAO requirements for minimum duration of service (10 years) and freedom from direct charges. This service, which will be available as provided in the United States Government's technical sections of the Federal Radio Navigation Plan on a nondiscriminatory basis to all users of civil aviation, will provide horizontal accuracies of 100 meters (95 percent probability) and 300 meters (99.99 percent probability). The United States shall take all necessary measures to maintain the integrity and reliability of the service and expects that it will be able to provide at least 6 years notice prior to termination of GPS operations or elimination of the GPS-SPS.

The GPS/SPS is a candidate component of the future GNSS as envisioned by FANS. The United States believes that making the GPS available to the international community will enable states to develop a more complete understanding of this valuable technology as a component of the GNSS. The availability of GPS-SPS, of course, is not intended in any

way to limit the rights of any state to control the operations of aircraft and enforce safety regulations within its sovereign airspace.

In the coming years, the international community must decide how to implement an international civil global navigation system based on satellite technology. The United States pledges its full cooperation in that endeavor and in working with ICAO to establish appropriate standards and recommended practices (SARP) in accordance with Article 37 of the Convention on International Civil Aviation (Chicago Convention). Consistent with this goal, the United States expects that SARP's developed by ICAO will be compatible with GPS operations and vice versa and that states will be free to augment GPS-SPS in accordance with appropriate SARP's. The United States will also undertake a continuing exchange of information with ICAO regarding the operation of the GPS to assist the ICAO Council in carrying out its responsibilities under the Chicago Convention.

I would be grateful if you could confirm that International Civil Aviation Organization is satisfied with the foregoing, which I submit in lieu of an agreement. In that event this letter and your reply will comprise mutual understandings regarding the Global Positioning System between the Government of the United States of America and the International Civil Aviation Organization.

Sincerely,

David R. Hinson
Administrator

INTERNATIONAL CIVIL AVIATION ORGANIZATION
ORGANISATION DE L'AVIATION CIVILE INTERNATIONALE
ORGANIZACIÓN DE AVIACIÓN CIVIL INTERNACIONAL
МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ГРАЖДАНСКОЙ АВИАЦИИ
منظمة الطيران المدني الدولي

INTERNATIONAL AVIATION SQUARE, 1000 SHERBROOKE STREET WEST, MONTREAL, QUEBEC, CANADA H3A 2R2
TEL.: (514) 285-8011 FACSIMILE TEL.: (514) 288-4772 CABLES: ICAO MONTREAL TELEX: 05-24513

THE PRESIDENT OF THE COUNCIL

Ref.: LE 4/49.1
(F.LEB0513)

27 October 1994

Sir,

I have the honour to acknowledge receipt of your letter dated 14 October 1994 which supersedes your letter of 14 April 1994.

The letter of 14 October 1994 reads as follows:

" I would like to commend, on behalf of the United States, the Committees on Future Air Navigation Systems (FANS) of the International Civil Aviation Organization (ICAO) for pioneering progress in the development of global satellite navigation for civil aviation. I note in this regard that the ICAO Council, on December 11, 1991, requested the Secretary General of ICAO to initiate an agreement between ICAO and Global Navigation Satellite System (GNSS) provider states concerning the duration and quality of the future GNSS.

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.../

Mr. David Hinson
Administrator, Federal
Aviation Administration
U.S. Department of Transportation
800 Independence Ave., S.W.
Washington, D.C. 20591
U.S.A.

Fax No.: 202 267 5047

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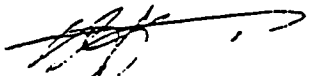
The GPS-SPS is a candidate component of the future GNSS as envisioned by FANS. The United States believes that making the GPS available to the international community will enable states to develop a more complete understanding of this valuable technology as a component of the GNSS. The availability of GPS-SPS, of course, is not intended in any way to limit the rights of any state to control the operations of aircraft and enforce safety regulations within its sovereign airspace.

In the coming years, the international community must decide how to implement an international civil global navigation system based on satellite technology. The United States pledges its full cooperation in that endeavor and in working with ICAO to establish appropriate standards and recommended practices (SARP) in accordance with Article 37 of the Convention on International Civil Aviation (Chicago Convention). Consistent with this goal, the United States expects that SARP's developed by ICAO will be compatible with GPS operations and vice versa and that states will be free to augment GPS-SPS in accordance with appropriate SARP's. The United States will also undertake a continuing exchange of information with ICAO regarding the operation of the GPS to assist the ICAO Council in carrying out its responsibilities under the Chicago Convention.

I would be grateful if you could confirm that International Civil Aviation Organization is satisfied with the foregoing, which I submit in lieu of an agreement. In that event this letter and your reply will comprise mutual understandings regarding the Global Positioning System between the Government of the United States of America and the International Civil Aviation Organization. "

At the 12th Meeting of its 143rd Session on 26 October 1994, the Council of ICAO considered the offer contained in your letter, and I am pleased to inform you that the arrangements outlined in the offer are acceptable to the International Civil Aviation Organization. This offer will be communicated to all ICAO Contracting States.

Accept, Sir, the assurances of my highest consideration.



Assad Kotaite

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ATTACHMENT C

EXCHANGE OF LETTERS BETWEEN ICAO AND RUSSIAN FEDERATION CONCERNING GLONASS

ENGLISH TRANSLATION

MINISTRY OF TRANSPORT
OF THE RUSSIAN FEDERATION

Moscow, 4 June 1996

Sir,

This letter supersedes my letter of 5 February 1996.

The introduction of satellite technologies into world civil aviation operations marks a new stage in the practical implementation of the future CNS/ATM concept developed by the International Civil Aviation Organization (ICAO). On behalf of the Russian Federation, I would like to congratulate ICAO on its great achievements in planning for the future air navigation system and express my hopes for its successful implementation in practice.

One of the most important parts of the future air navigation system is the global navigation satellite system (GNSS). At the Tenth ICAO Air Navigation Conference in 1991, the Government of the USSR offered the world aviation community free use of the GLONASS global satellite navigation system. It was guaranteed that the system would operate for at least 15 years from the time of its full deployment in 1995.

The Russian Federation has now completed the full deployment of the space constellation and ground control system for GLONASS, and the GLONASS system is operational, providing the intended aircraft position determination performance.

Using the powers conferred on me, I would like to confirm, on behalf of the Government of the Russian Federation, the proposal made at the Tenth Air Navigation Conference concerning the provision of a standard-accuracy GLONASS channel to the world aviation community on a non-discriminatory basis for a period of at least 15 years with no direct charges collected from users, subject to the allocation of resources, as required under the legislation of the Russian Federation. This channel will be accessible to all civil aviation users and will provide position information with an accuracy of up to 60 metres in the horizontal plane (with a probability of 0.997) and up to 75 metres in the vertical plane (with a probability of 0.997). It is not intended that any methods will be used to degrade accuracy.

The Russian Federation will take all necessary measures to maintain the integrity and reliability of the service and expects that it will be able to provide at least 6 years' notice prior to termination of services.

To ensure GNSS use by world civil aviation, the Russian Federation is prepared to co-operate in every way with ICAO in preparing appropriate GNSS Standards and Recommended Practices (SARPs) in accordance with the provisions of Article 37 of the Chicago Convention, and also to keep ICAO constantly informed of the operational status of the GLONASS system.

The Russian Federation hopes that the SARPs developed by ICAO will be compatible with GLONASS system characteristics and, conversely, that the various States will be free to introduce the augmentations which they require to increase the effectiveness of GLONASS use, in accordance with the ICAO SARPs.

The Russian Federation will also undertake a continuing exchange of information with ICAO regarding the operation of GLONASS to assist the ICAO Council in carrying out its responsibilities under the Chicago Convention.

The provision of the GLONASS system to the world aviation community is not intended in any way to limit the right of any State to control aircraft operations and enforce flight safety regulations in its sovereign airspace.

Since ICAO is to act as the international co-ordinating body for the global implementation of the future air navigation system, we are prepared to conclude an agreement with ICAO for the use of the GLONASS system by the world aviation community as an element of the GNSS with the above-mentioned characteristics.

I would be grateful if you would confirm that the International Civil Aviation Organization is satisfied with the positions set out above. If that is the case, this letter and your reply will constitute a mutual agreement between the Government of the Russian Federation and the International Civil Aviation Organization concerning the GLONASS satellite navigation system.

Yours truly,

N. P. Tsakh
Minister of Transport

Dr. Assad Kotaite
President of the Council of ICAO
Montreal

ENGLISH TRANSLATION

Ref.: LE 4/49.1

29 July 1996

Sir,

I have the honour to acknowledge receipt of your letter dated 4 June 1996 which supersedes your letter of 5 February 1996.

The letter of 4 June 1996 reads as follows:

" This letter supersedes my letter of 5 February 1996.

The introduction of satellite technologies into world civil aviation operations marks a new stage in the practical implementation of the future CNS/ATM concept developed by the International Civil Aviation Organization (ICAO). On behalf of the Russian Federation, I would like to congratulate ICAO on its great achievements in planning for the future air navigation system and express my hopes for its successful implementation in practice.

One of the most important parts of the future air navigation system is the global navigation satellite system (GNSS). At the Tenth ICAO Air Navigation Conference in 1991, the Government of the USSR offered the world aviation community free use of the GLONASS global satellite navigation system. It was guaranteed that the system would operate for at least 15 years from the time of its full deployment in 1995.

The Russian Federation has now completed the full deployment of the space constellation and ground control system for GLONASS, and the GLONASS system is operational, providing the intended aircraft position determination performance.

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Mr. N.P. Tsakh
Minister of Transport
Ministry of Transport
of the Russian Federation
Sadovaja Samotechnaja, 10
101438 Moscow GSP-4

The Russian Federation will take all necessary measures to maintain the integrity and reliability of the service and expects that it will be able to provide at least 6 years' notice prior to termination of services.

To ensure GNSS use by world civil aviation, the Russian Federation is prepared to co-operate in every way with ICAO in preparing appropriate GNSS Standards and Recommended Practices (SARPs) in accordance with the provisions of Article 37 of the Chicago Convention, and also to keep ICAO constantly informed of the operational status of the GLONASS system.

The Russian Federation hopes that the SARPs developed by ICAO will be compatible with GLONASS system characteristics and, conversely, that the various States will be free to introduce the augmentations which they require to increase the effectiveness of GLONASS use, in accordance with the ICAO SARPs.

The Russian Federation will also undertake a continuing exchange of information with ICAO regarding the operation of GLONASS to assist the ICAO Council in carrying out its responsibilities under the Chicago Convention.

The provision of the GLONASS system to the world aviation community is not intended in any way to limit the right of any State to control aircraft operations and enforce flight safety regulations in its sovereign airspace.

Since ICAO is to act as the international co-ordinating body for the global implementation of the future air navigation system, we are prepared to conclude an agreement with ICAO for the use of the GLONASS system by the world aviation community as an element of the GNSS with the above-mentioned characteristics.

I would be grateful if you would confirm that the International Civil Aviation Organization is satisfied with the positions set out above. If that is the case, this letter and your reply will constitute a mutual agreement between the Government of the Russian Federation and the International Civil Aviation Organization concerning the GLONASS satellite navigation system."

At the 15th Meeting of its 147th Session on 14 March 1996, the Council of ICAO had considered this matter and the terms on which the offer of the Russian Federation should be accepted. Based on the decision of the Council at that meeting, I am pleased to inform you that the arrangements set forth in the offer are acceptable to the International Civil Aviation Organization. Accordingly, I confirm that your letter dated 4 June 1996 and my present letter of acceptance constitute a mutual agreement between the Government of the Russian Federation and the International Civil Aviation Organization concerning the GLONASS satellite navigation system. Your offer as well as my present letter of acceptance, will be communicated to all ICAO Contracting States.

Accept, Sir, the assurances of my highest consideration.

Assad Kotaite

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ATTACHMENT D

ASSEMBLY RESOLUTION A32-19: CHARTER ON THE RIGHTS AND OBLIGATIONS OF STATES RELATING TO GNSS SERVICES

A32-19: Charter on the Rights and Obligations of States Relating to GNSS Services

Whereas Article 44 of the *Convention on International Civil Aviation*, signed on 7 December 1944 (the "Chicago Convention"), mandates the International Civil Aviation Organization (ICAO) to develop the principles and techniques of international air navigation and to foster the planning and development of international air transport;

Whereas the concept of the ICAO communications, navigation and surveillance/air traffic management (CNS/ATM) systems utilizing satellite-based technology was endorsed by States and international organizations at the ICAO Tenth Air Navigation Conference, and was approved by the 29th Session of the Assembly as the ICAO CNS/ATM systems;

Whereas the Global Navigation Satellite System (GNSS), as an important element of the CNS/ATM systems, is intended to provide worldwide coverage and is to be used for aircraft navigation;

Whereas GNSS shall be compatible with international law, including the Chicago Convention, its Annexes and the relevant rules applicable to outer space activities;

Whereas it is appropriate, taking into account current State practice, to establish and affirm the fundamental legal principles governing GNSS; and

Whereas the integrity of any legal framework for the implementation and operation of GNSS requires observance of fundamental principles, which should be established in a Charter;

The Assembly:

Solemnly declares that the following principles of this Charter on the Rights and Obligations of States Relating to GNSS Services shall apply in the implementation and operation of GNSS:

1. States recognize that in the provision and use of GNSS services, the safety of international civil aviation shall be the paramount principle.

2. Every State and aircraft of all States shall have access, on a non-discriminatory basis under uniform conditions, to the use of GNSS services, including regional augmentation systems for aeronautical use within the area of coverage of such systems.

3. a) Every State preserves its authority and responsibility to control operations of aircraft and to enforce safety and other regulations within its sovereign airspace.

b) The implementation and operation of GNSS shall neither infringe nor impose restrictions upon States' sovereignty, authority or responsibility in the control of air navigation and the promulgation and enforcement of safety regulations. States' authority shall also be preserved in the co-ordination and control of communications and in the augmentation, as necessary, of satellite-based air navigation services.

4. Every State providing GNSS services, including signals, or under whose jurisdiction such services are provided, shall ensure the continuity, availability, integrity, accuracy and reliability of such services, including effective arrangements to minimize the operational impact of system malfunctions or failure, and to achieve expeditious service recovery. Such State shall ensure that the services are in accordance with ICAO Standards. States shall provide in due time aeronautical information on any modification of the GNSS services that may affect the provision of the services.

5. States shall co-operate to secure the highest practicable degree of uniformity in the provision and operation of GNSS services.

States shall ensure that regional or subregional arrangements are compatible with the principles and rules set out in this Charter and with the global planning and implementation process for GNSS.

6. States recognize that any charges for GNSS services shall be made in accordance with Article 15 of the Chicago Convention.

7. With a view to facilitating global planning and implementation of GNSS, States shall be guided by the principle of co-operation and mutual assistance whether on a bilateral or multilateral basis.

8. Every State shall conduct its GNSS activities with due regard for the interests of other States.

9. Nothing in this Charter shall prevent two or more States from jointly providing GNSS services.

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ATTACHMENT E

RECOMMENDATIONS 1 TO 8 BY THE PANEL OF EXPERT ON THE ESTABLISHMENT OF A LEGAL FRAMEWORK WITH REGARD TO GNSS (LTEP)

LTEP Recommendation 1 to 8

"**Recommendation 1**

ICAO SARPs on GNSS should cover the system performance criteria of relevant satellite components, signal-in-space, avionics, ground facilities, training and licensing requirements, and the system as a whole.

Such ICAO SARPs should contain adequate system performance and failure mode information to enable States to reasonably determine the safety impact on their air traffic service.

Recommendation 2

With respect to all ICAO SARPs on GNSS, signal-in-space provider States and provider international organizations should be involved in the proposed ICAO verification and validation process so that SARPs and supporting ICAO documentation will be of high integrity.

Recommendation 3

States providing signals-in-space, or under whose jurisdiction such signals are provided, shall certify the signal-in-space by attesting that it is in conformity with SARPs.

The State having jurisdiction under the Chicago Convention should ensure that avionics, ground facilities and training and licensing requirements comply with ICAO SARPs.

Recommendation 4

States providing signals-in-space, or under whose jurisdiction such signals are provided, should ensure application of ongoing safety management processes which demonstrate continued compliance with signal-in-space SARPs.

Recommendation 5

States providing signals-in-space, or under whose jurisdiction such signals are provided, should produce a safety management system document using the ICAO forum referred to in Recommendation 8 below. To the extent possible, such document should be consistent as regards format and content. ICAO should distribute such signal-in-space safety management system documentation.

Recommendation 6

Each State should define and ensure the application of safety regulations for the use of the signal-in-space as part of air traffic services in its own airspace.

Recommendation 7

For the purpose of authorization by a State of the use of the signal-in-space in its airspace, additional information which may be required for such authorization should be made available and distributed through ICAO. Other sources for obtaining such information may be used, including, *inter alia*, bilateral and multilateral arrangements, Safety Case and NOTAMs.

Recommendation 8

States recognize the central role of ICAO in co-ordinating the global implementation of GNSS and in particular:

a) establishing appropriate Standards, Recommended Practices and procedures in accordance with Article 37 of the Chicago Convention in the implementation and operation of GNSS;

b) co-ordinating and monitoring the implementation of GNSS on a global basis, in accordance with ICAO's regional air navigation plans and global co-ordinated CNS/ATM systems plan;

c) facilitating the provision of assistance to States with regard to the technical, financial, managerial, legal and co-operative aspects of the implementation of GNSS;

d) co-ordinating with other organizations in any matter related to GNSS, including the use of frequency spectrum bands in which GNSS constituent elements operate in support of international civil aviation; and

e) carrying out any other function related to GNSS within the framework of the Chicago Convention, including functions under Chapter XV of the Convention.

More specifically, the ICAO forum for exchange of information on GNSS certification could have the following functions:

a) to provide liaison between State ATS providers, regulatory authorities, and signal-in-space providers;

b) to provide liaison between signal-in-space providers and other States with respect to the format and contents of safety management system documents;

c) to identify the failure modes of the signal-in-space and their impact on the safety of air traffic services nationally, and to refer them to an appropriate body as determined by the Council;

d) to identify what States require from signal-in-space providers in order to be confident that performance and risks associated with the signal-in-space are adequately managed over the life cycle of the system;

e) to facilitate information-sharing between signal-in-space providers and other States as to the continued compliance with the relevant SARPs, in order to maintain confidence in the reliability of the system."

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ATTACHMENT F

DRAFT CONTRACTUAL FRAMEWORK RELATING TO THE PROVISION OF GNSS SERVICES

DRAFT CONTRACTUAL FRAMEWORK
RELATING TO THE PROVISION OF GNSS SERVICES

Whereas the Global Navigation Satellite System (GNSS), as an important element of the communications, navigation and surveillance/air traffic management (CNS/ATM) systems, is intended to provide worldwide coverage and is to be used for aircraft navigation;

Whereas the Parties are desirous to develop the long-term GNSS for civil aviation purposes in accordance with the principles enunciated in the *Charter on the Rights and Obligations of States Relating to GNSS Services*, adopted by the 32nd Session of the Assembly of the International Civil Aviation Organization (ICAO) (A32-19), as set out in the Appendix (hereinafter referred to as the "Charter");

Whereas the Parties aim at ensuring technical and operational accessibility, continuity, availability, integrity, accuracy and reliability of GNSS services;

Whereas the Parties to this contract which are States reaffirm their commitment to act in conformity with international law and the principles governing GNSS, in particular the *Convention on International Civil Aviation* (the Chicago Convention), its Annexes, the Charter and the relevant rules applicable to outer space activities; and the Parties which are not States are committed to act in accordance with applicable law;

Therefore, the Parties have agreed as follows:

Article 1 – Parties and Scope of Application

The present contract prescribes the rights and obligations of [*insert Name of Party*], hereinafter "the Air Traffic Service (ATS) Provider", and [*insert Name of other Party*], hereinafter "the GNSS Signal Provider", in respect of all services related to the GNSS signals for the purpose of air navigation. The contract is applicable to the airspace for which the ATS Provider is responsible in relation to its services.

Article 2 – GNSS Signal Provider

For the purposes of the present contract, the term "GNSS Signal Provider" may refer to either:

a) a primary signal provider from the core satellite constellation; or

b) an augmentation signal provider,

as the case may be.

Article 3 – Obligations of the GNSS Signal Provider

The GNSS Signal Provider undertakes to:

a) provide the signals during the term of this contract with the required continuity, availability, integrity, accuracy and reliability, as specified in multilaterally agreed standards, in particular the minimum standards of ICAO;

b) if the GNSS Signal Provider is not a State entity, obtain a licence as required by the State in the territory of which the signals are controlled;

c) comply with any requirements arising from the safety management provisions of the relevant Standards and Recommended Practices and Procedures for Air Navigation Services of ICAO; and

d) provide in due time aeronautical information on any modification of the GNSS Signals which may affect the services provided by the ATS provider.

Article 4 – Obligations of the ATS Provider

The ATS Provider undertakes to:

a) if it is not a State entity, obtain from the relevant State the necessary authorization for the use of GNSS signals provided by the GNSS Signal Provider for air traffic services within the airspace under the jurisdiction of that State;

b) coordinate with the GNSS Signal Provider with a view to facilitating the transmission of the signals and other matters relating to the operation of the GNSS;

c) comply with any requirements arising from the safety management provisions of the relevant Standards and Recommended Practices and Procedures for Air Navigation Services of ICAO; and

d) pay the service charges to the GNSS Signal Provider, if applicable.

Article 5 – Cost Recovery

Pursuant to Article 15 of the Chicago Convention and paragraph 6 of the Charter, the GNSS Signal Provider shall be entitled to establish a cost recovery mechanism, for the purpose of recovering the cost of such services from the users making use of GNSS signals so provided. Such mechanism shall ensure the reasonable allocation of costs among civil aviation users themselves and among civil aviation users and other system users.

Article 6 – Liability

The liability of each Party for failure to perform its obligations under this contract shall be governed by the liability regime applicable to its activity.

Article 7 – Recourse and Indemnification

Nothing in this contract shall prevent any of the Parties from exercising a right of recourse against, or from seeking indemnification from, the other Party or Parties to this contract pursuant to the applicable law.

If the loss or damage has been caused by the acts or omissions of more than one Party, the right of recourse and indemnification of a Party may be limited by the proportion of its respective fault, if the applicable law so provides.

Article 8 – Waiver of Sovereign Immunity

Any Party to this contract which is a State or State entity, hereby agrees to waive its sovereign immunity with respect to any arbitral proceedings in accordance with Article 9 of this contract.

Article 9 – Settlement of Disputes

The Parties shall use their best efforts to settle any dispute, disagreement or claim arising from or relating to the interpretation or performance of this contract by negotiation. Any dispute, disagreement or claim which cannot be settled by negotiation shall be submitted to conciliation in accordance with the UNCITRAL Conciliation Rules.

Any such dispute, disagreement or claim which cannot be settled under the preceding paragraph shall, upon the request of one Party, be referred to arbitration in accordance with the UNCITRAL Arbitration Rules then prevailing. The place of arbitration shall be [....] and it shall be conducted in the [....] language.

Article 10 – Applicable Law

The law of [....] shall govern this contract.

Article 11 – Duration of the Contract

This contract shall enter into force at the date of signature for a term of [....] years and shall be automatically renewable for the same term. Each Party may, however, give notice of termination of [....] months to the other Party, which shall become effective at the end of the term of the Contract.

Article 12 – Registration of the Contract

Pursuant to Article 83 of the Chicago Convention, if at least one Party to this contract is a Contracting State of ICAO, the contract shall be registered with ICAO.

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ATTACHMENT G

Framework Agreement between the Governments of
……..
Concerning the Implementation, Provision, Operation
and Use of a Global Navigation Satellite System
for Air Navigation Purposes

1. OBJECTIVES

1.1 The objective of this Agreement is to establish a legal framework for the implementation, provision, operation and use of GNSS for the purpose of air navigation over the territory of Contracting Parties, as well as to regulate the relationships between the entities and persons involved in such GNSS activities.

1.2 This Agreement aims at ensuring technical and operational accessibility, continuity, availability, integrity, accuracy and reliability of GNSS services world-wide. The Contracting Parties reaffirm their commitments to act in conformity with international law and the principles governing GNSS, in particular the Chicago Convention, its Annexes, the Charter on the Rights and Obligations of States Relating to GNSS Services and the relevant rules applicable to outer space activities.

1.3 This Agreement addresses the conditions under which GNSS services, including signals-in-space, can be safely used for air navigation purposes over the territory of Contracting Parties. It also aims at clarifying the obligations of the parties involved.

2. DEFINITIONS

2.1 For the purpose of this Agreement, the terms listed below are used with the following meanings:

Certification: The process which results in a formal attestation that a specified system, element thereof or service complies with pre-determined requirements.

Damage: Loss of life, injury. damage to property […].

GNSS Entity: A public or private body/organisation, or public-private partnership, created for the purpose of managing, or mandated to manage, by means of contractual arrangements, relationships between GNSS system operators and GNSS service providers involved in the operation of a GNSS system for air navigation purposes.

GNSS service: An added value service to support air navigation, based upon signals emitted by a GNSS system.

GNSS service provider: An entity engaged in the activity of providing a GNSS service for air navigation purposes.

GNSS signal: A signal emitted by an element forming part of a GNSS system.

GNSS system: An infrastructure comprising satellites and other space and/or ground based facilities, capable of supporting air navigation based on signals-in-space.

GNSS system element: Any individual component of a GNSS system.

GNSS system operator: A body/organisation engaged in the operation and/or maintenance of a GNSS system or elements thereof.

GNSS user: An aircraft which uses GNSS signals or GNSS services for air navigation purposes.

Local augmentation system: A GNSS system, the purpose of which is to enhance the accuracy, reliability, continuity and integrity of a primary GNSS signal at a given location.

Primary signal system: A GNSS system, the purpose of which is to produce a primary signal-in-space.

Regional augmentation system: A GNSS system, the purpose of which is to enhance the accuracy, reliability, continuity and integrity of a primary signal within a given region.

3. SCOPE

3.1 The provisions of this Agreement shall apply to the Contracting Parties implementing, providing, operating and/ or using GNSS for air navigation purposes.

3.2 This Agreement governs the creation of the GNSS Entity or the mandate to an existing entity to perform such function. It addresses, inter alia, the relationships of the Entity with the GNSS system operators and GNSS service providers operating from the territory of a Contracting State or having a registered office on the territory of a Contracting State.

3.3 When Contracting Parties have agreed to undertake responsibilities in respect of providing Air Navigation Services over parts of the high seas, this Agreement shall also apply to the exercise of those responsibilities over those parts of the high seas.

4. SOVEREIGNTY

4.1 This Agreement does not affect in any way the complete and exclusive sovereignty of Contracting Parties in respect of the airspace over their territory.

4.2 The Contracting Parties recognise that the implementation, provision, operation and use of GNSS shall neither infringe nor limit State's authority or responsibility in the control of air navigation and the promulgation and enforcement of safety regulations. States' authority shall also be preserved in the

co-ordination and control of communications and in the augmentation, as necessary, of satellite-based Air Navigation Services.

5. CONTRACTING PARTIES RESPONSIBILITIES

5.1 Contracting Parties shall define, in accordance with the provisions of this Agreement, the conditions under which a GNSS system or element thereof may be used for air navigation purposes over their territories.

5.2 Contracting Parties may authorise any public, private or public-private organisations, including foreign bodies, to provide GNSS signals or services to support air navigation over their territory, provided these bodies/organisations operate in accordance with the requirements set forth in this Agreement.

5.3 It remains the responsibility of each Contracting Party to ensure that GNSS signals and services are provided and used over its territory in accordance with the relevant provisions of the Chicago Convention.

5.4 Contracting Parties shall establish appropriate processes:

a) to ensure that organisations engaged in the implementation, provision, operation and use of a GNSS system or elements thereof, comply with the requirements of this Agreement; and

b) to ensure that the activities performed by the GNSS Entity established or mandated in accordance with article 6 of this Agreement comply with the requirements of this Agreement.

6. GNSS ENTITY

6.1 An Entity shall be established under this Agreement and will be referred to as the GNSS Entity. It shall be made up of an Administrator supported by a Secretariat.

Contracting Parties may mandate an already established organisation or body to undertake the tasks of the GNSS Entity described in this Agreement.

6.2 The GNSS Entity shall have legal personality. It shall enjoy in the territory of its Contracting Parties such legal capacity as may be necessary for the performance of its tasks.

6.3 The GNSS entity shall be charged with facilitating and [managing] [establishing], by means of contractual arrangements, the relationships between the various GNSS system operators and GNSS service providers falling under the scope of this Agreement.

6.4 The GNSS Entity may be entrusted with, inter alia, the following tasks, upon decision by the Contracting Parties:

a) specification of GNSS signals and services;

b) drafting, negotiation, implementation of contractual and service level agreements between the GNSS entity, GNSS system operators and GNSS service providers, in accordance with Article 8 of this Agreement;

c) definition of processes for the allocation of responsibilities among GNSS parties;

d) management of a compensation GNSS fund if set up in accordance with article 9.2 of this Agreement; and

e) definition of applicable risk coverage requirements.

6.5 The financial and institutional consequences of the establishment of the GNSS Entity shall be addressed by the Contracting Parties.

7. ROLE OF ICAO

7.1 Contracting Parties recognise the central role of ICAO in co-ordinating the global implementation of GNSS and in particular:

a) establishment of the SARPs;

b) collection, processing, management and distribution of relevant aeronautical information pertaining to the GNSS systems and services falling within the scope of this Agreement;

c) co-ordination of the activities of the GNSS Entity or body/organisation mandated to undertake its tasks with those of other entities created under similar Agreements and/or with similar functions in other regions; and

d) monitoring of compliance by GNSS system operators and/or service providers with the applicable technical, operational and legal requirements, including the terms of relevant contractual arrangements.

8. CONTRACTUAL AGREEMENTS

8.1 Contracts referred to in Articles 6.3 and 6.4 of this Agreement shall be concluded in conformity with the requirements of this article and the terms of this Agreement.

8.2 Contracting Parties undertake that the contracts entered into in pursuance to this Agreement shall contain the following mandatory elements:

a) compliance with SARPs;

b) compliance with the Charter with regard to continuity, availability, integrity, accuracy and reliability;

c) liability shall be based on fault;

d) compulsory risk coverage;

e) mandatory recourse to arbitration; and

f) recognition that State organisations/bodies are subject to the same rules as private parties.

9. RISK COVERAGE

9.1 The Contracting Parties shall ensure that GNSS system operators and service providers provide adequate insurance or other risk coverage to compensate for loss or damage that may arise out of or in relation to the non-performance of their activities.

9.2 Contracting Parties may set-up a dedicated fund to compensate for any loss or damage that may arise from the non-performance of the activities of system operators or service providers to the extent of a shortfall in the recovery from the body/organisation who is liable.

10. INCIDENT/ACCIDENT INVESTIGATION

10.1 Investigations pertaining to air navigation incidents or accidents involving a possible malfunction, failure or improper use of GNSS shall be conducted in accordance with the provisions of Annex 13 to the Chicago Convention. In this regard, system operators shall ensure that signals shall be recorded for the purposes of evidence.

11. CERTIFICATION

11.1 Contracting Parties shall ensure that GNSS systems and elements including avionics as well as GNSS services shall be certified prior to entry into operation.

11.2 Contracting Parties and their regulators shall ensure, through their established safety management system that GNSS is safe for use. Integrity of the national safety management systems shall be monitored by ICAO [through its Universal Safety Oversight Audit Programme].

12. LIABILITY

12.1 In the event of loss or damage arising out of a failure, malfunction or improper use of GNSS, each entity or person involved shall be liable to the extent it has contributed to the occurrence of the loss or damage.

12.2 The liability of the parties shall be ruled by the material liability regime normally applicable to its activity, in accordance with applicable existing international and national laws.

12.3 Contracting Parties and other public parties shall submit themselves to arbitration and be subject to the same rules as private partners.

12.4 In the event that loss or damage can be attributed to a GNSS failure, malfunction or improper use, but cannot clearly be traced to a specific defendant, the defendants involved in the chain of events which resulted in the occurrence of the loss or damage shall be declared jointly liable for the entire amount of the loss or damage.

13. ARBITRATION

13.1 All liability claims shall be consolidated and brought to arbitration, in accordance with the rules of arbitration established under this Agreement and detailed in Annex [X]. The consolidated claims shall include those against the concerned GNSS Entity, GNSS system operators, GNSS service providers, aircraft operators, air carriers, Air Navigation Services Providers, equipment manufacturers and regulators.

13.2 Nothing in this Agreement shall prejudice the rights of any individuals with regard to the Warsaw/Montreal Conventions.

13.3 Decisions of the arbitration panel shall be final and binding on the Parties to the arbitration procedure.

14. ICAO REGISTRATION

14.1 This Agreement shall be registered with the ICAO Council, in accordance with the provisions of Article 83 of the Chicago Convention.

15. AMENDMENT

15.1 Any proposed amendment to this Agreement shall be subject to the approval of [two-thirds] of its Contracting Parties.

16. ADMISSION OF OTHER PARTIES

16.1 This Agreement is opened for admission to other Parties […]

17. TERMINATION

17.1 This Agreement may be terminated […]

Effect on GNSS Entity established under this Agreement […]

18. ENTRY INTO FORCE

18.1 This Agreement shall enter into force at the date of signature.

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ATTACHMENT H

Proposal by Certain Members of the Group relating to Main Elements for inclusion in a draft Convention

Preamble

The Preamble refers to the relevant legal basis for the convention, in particular the Chicago Convention and its Annexes, and recalls the need for GNSS to be compatible with them and other relevant international law rules applicable to outer space activities. The Charter on the Rights and Obligations of States Relating to GNSS Services, adopted by the 32nd Session of the ICAO Assembly (1998), established certain fundamental principles that need to be elaborated in an international convention, in order to make them binding.

Definitions

In view of the legal consequences of GNSS, it will be necessary to define certain terms for the purposes of the convention. Such terms as "GNSS service", "GNSS service provider", "GNSS system", "GNSS System operator", "GNSS user", "primary signal provider", "regional augmentation system" and "local augmentation system" will need to be defined, in line with state-of-the-art working terminology.

Scope

The convention should apply to activities employing satellites and ground-based equipment, technologies and systems.

Safety of Air Navigation

Safety of air navigation should be the paramount principle in the implementation and operation of GNSS systems and the provision and use of GNSS services. Commercial considerations should not be allowed to override safety requirements. Provision should be made to respect this principle in the case of war and emergency conditions.

Universal Accessibility

Every aircraft registered in the territory of the Contracting Parties should have access on a non-discriminatory basis and under uniform conditions to the use of regional augmentation systems for aeronautical use within the area of coverage of such systems. The article should also propose means of achieving universality.

State Sovereignty

The implementation and operation of GNSS systems and the provision and use of GNSS services should neither infringe nor limit a State's authority or responsibility in the control of air navigation or the promulgation and enforcement of safety regulations. The article should provide for the delegation of the provision of services to other suitable parties, should a State wish to do so.

GNSS Elements Performance Specifications

A party providing GNSS services should ensure that those services meet the system performance requirements with regard to accuracy, integrity, continuity, availability, including effective arrangements to minimise the operational impact of system malfunctions or failures.

The Contracting Parties should ensure that the systems comply, at least, with ICAO SARPS, including but not limited to Annex 10, which should be of mandatory application.

The necessity to record GNSS signals and to retain such recordings for use as evidence in accident investigations should also be included in the convention to ensure legal effect. Inclusion in Annex 10 may not be adequate.

Uniformity

Contracting Parties should work together to ensure uniformity in the provision and operation of GNSS services. This could entail ensuring that systems are interoperable in the interests of global aviation safety.

Charges

Provision should be made to cater for the situation that some (future) systems may be subject to charges. In that event, a charging mechanism should ensure the reasonable allocation of costs among civil aviation users and among civil aviation users, as a group, and other system users. The work of ANSEP should be taken into account.

Cooperation and Mutual Assistance and role of ICAO

In order to facilitate global planning and worldwide implementation of GNSS in an effective manner, Contracting Parties should conduct their activities with due regard for the interests of other Parties. ICAO could play an essential role in this regard by

- Co-ordinating with regional bodies or other entities which are managing, facilitating or otherwise co-ordinating relationships between system operators or service providers

- Monitoring, through the Universal Oversight Audit Programme, compliance by GNSS system operators and service providers with the applicable technical standards, operational and legal requirements

- Facilitating the provision of assistance to States with regard to the technical, financial, managerial, legal and co-operative aspects of GNSS.

Certification

GNSS systems, services and elements thereof, including avionics and ground facilities, should be certified against the applicable technical requirements prior to entry into operation and training and licensing requirements should comply with ICAO SARPS.

Unlawful interference

Provision should be made for measures to prevent and protect against harmful interference.

Liability

Provision should be made for a strict liability up to a certain determined limit and fault based thereafter, in line with the Montreal Convention of 1999 for loss or damage caused by the failure, malfunction or improper use of a GNSS system or service. In the event that the loss or damage was caused by more than one systems or services, the providers thereof should be jointly and severally liable, to the extent to which they were at fault. An alternative solution could be a fault-based liability regime but with the burden of proof reversed.

Force majeure

Provision could be made to exclude liability in situations which were beyond the control of a party such as Act of God, war, etc.

Sovereign immunity

Provision should be made for the conditions under which sovereign immunity could not be invoked, to avoid situations where parties would be unable to seek redress due to this rule.

Recourse and indemnification

The convention should allow any entity or person found liable for loss or damage to have a right of recourse against any other person or entity.

Competent jurisdiction / Arbitration

GNSS-related events present the characteristic of possibly involving a multiplicity of parties in a variety of actions in several jurisdictions. The convention could propose a single jurisdiction to neutralise the complexity of all the liability claims.

As an alternative to the single jurisdiction and to overcome the principles of foreign jurisdiction immunity, recourse to arbitration mechanisms could be considered which could follow established UNCITRAL Rules or the Rules of the Permanent Court of Arbitration in The Hague.

Applicable law

The convention could provide that the competent court or arbitration tribunal applies the liability regime applicable in accordance with existing international and internal rules.

Period of limitation

The convention could provide that the right to take legal action would be extinguished if an action was not brought within a specified number of years from the date of the act or event which caused the damage for which the compensation was sought.

Compulsory risk coverage

Contracting Parties should ensure that their system operators and service providers maintain adequate insurance or have other means of risk coverage in respect of their liability. As an aviation-related GNSS accident could have significant liability consequences, the possibility of setting up a dedicated fund to compensate for any shortfall in recovery from the persons held to be liable ought to be considered.

Joint operation of GNSS services

The convention should not prevent two or more Contracting Parties from jointly providing services using GNSS.

Other Provisions

The Convention should contain the standard procedural provisions with respect to Amendments, Settlement of Disputes, Entry into Force and Denunciation.

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