

SATELLITE COMMUNICATIONS IN PRACTICE

BY

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I have called this contribution « Satellite Communications in Practice ». My intention is to illustrate the legal framework within which an international satellite communications organization is required to operate. I write from the perspective of General Counsel of INMARSAT ; and I should begin by recalling briefly the nature of this Organization (1).

The International Maritime Satellite Organization (INMARSAT) is an international, inter-governmental organization with 55 Member States, referred to as Parties. The purpose for which the Organization was established is stated in Article 3(1) of the INMARSAT Convention :

« The purpose of the Organization is to make provision for the space segment necessary for improving maritime communications, thereby assisting in improving distress and safety of life at sea communications, efficiency and management of ships, maritime public correspondence services and radiodetermination capabilities. »

There are now more than 7,000 ships world-wide equipped with ship earth stations communicating with INMARSAT satellites, through which telephone, telex, facsimile, data and other telecommunications services are provided. In addition, INMARSAT intends in the near future to offer aeronautical mobile satellite communications and, in all probability, land mobile communications.

The Organization is based on two international instruments, the Convention and the Operating Agreement (2). Both were adopted in 1976 and

* The views expressed in this paper are personal and not those of any organization with which the author is or has been connected.

(1) For a fuller account see H. H. M. SONDAAL, « The Current Situation in the Field of Maritime Communication Satellites » : « INMARSAT », in (1980) 8 *Journal of Space Law*, p. 9 ; and W.D. VON NOORDEN and P.J. DANN, « Public and Private Enterprise in Satellite Telecommunications : the Example of INMARSAT », in *Proceedings of the Twenty-Ninth Colloquium on the Law of Outer Space*, New York, 1987, p. 193.

(2) Convention on the International Maritime Satellite Organization (INMARSAT), September 3, 1976 ; Operating Agreement on the International Maritime Satellite Organization (INMARSAT), September 3, 1976. In subsequent footnotes these will be referred to respectively as « CONV » and « OA ».

entered into force in 1979. The Organization commenced operations in 1982.

Each State which becomes a Party to the INMARSAT Convention is required either to sign the Operating Agreement itself, or to designate a competent entity, public or private, to do so (3). A Party or other entity which has signed the Operating Agreement is referred to as a Signatory. The present Signatories are diverse in nature : some are national PTT organizations ; others are specialized state enterprises ; while others are private commercial corporations.

The Organization is financed by the capital contributions of its Signatories, in proportion to their investment shares (4). It earns revenues by levying charges for the use of its space segment. These charges are established at such levels that the total revenues received will cover operating expenses, the repayment of capital contributions and the payment to Signatories of compensation for use of capital, at a rate which is at present fixed at 14 per cent (5). There is no provision for the Organization to make any surplus profit. However, the Organization is required to operate on a sound economic and financial basis, having regard to accepted commercial principles (6).

The structure of INMARSAT is broadly similar to that of the INTELSAT, the international organization which provides the space segment for international fixed satellite communications. EUTELSAT, which provides satellite communications in Europe, also has a comparable structure. The three organizations represent a new type of international organization, providing facilities and services for the international community on a commercial, not-for-profit basis. In each case it is the Signatories rather than the Member States which have the principal responsibility for policy-making and for the overall management of the organization (7).

To return to the specific case of INMARSAT : its aim as an organization is to be the world-leader in providing reliable, cost-effective, mobile satellite communications. In seeking to achieve this aim, however, the Organization is subject to various constraints and conflicting demands as a result of the legal framework in which it operates.

The most important of these constraints are perhaps those imposed by the constituent instruments of the Organization. For example, I have already mentioned that INMARSAT was established in order to provide

(3) CONV Art. 2(3).

(4) CONV Art. 5(1).

(5) CONV Art. 19(1).

(6) CONV Art. 5(3).

(7) CONV Art. 15 ; Agreement Relating to the International Telecommunications Satellite Organization « INTELSAT », Arts. VIII and X ; Convention Establishing the European Telecommunications Satellite Organization « EUTELSAT », Art. XII.

maritime satellite communications. From the very beginning, however, it was recognized that there might be considerable economies of scale if the Organization were to offer both maritime and aeronautical services (8). The matter was studied in considerable detail by the Directorate ; and in early 1985 the Council decided in favour of enlarging the Organization's competence in order to provide aeronautical satellite communications (9).

The INMARSAT Council consists of the representatives of twenty-two Signatories, of which eighteen are those with the largest investment shares in the Organization (10). The Council is responsible, among other things, for policies and plans relating to the development of the INMARSAT space segment (11). In the case of a commercial corporation, a management body representing the principal investors in the corporation would typically have full power to decide to enter a new market or to begin some new commercial activity. In the case of INMARSAT, however, the competence of the Organization is limited by its Convention. In order for the Organization to provide aeronautical communications, it was necessary for draft amendments to the Convention and Operating Agreement to be submitted to the Assembly, in which all the Parties are represented (12). At its Fourth Session, in October 1985, the Assembly approved the amendments to the Convention and confirmed the amendments to the Operating Agreement. However, the amendments have not yet entered into force. They will do so 120 days after individual acceptance by two-thirds of the Parties and Signatories holding two-thirds of the investment shares as at the date of adoption of the amendments by the Assembly (13). So far, 25 Parties and their Signatories, representing about 85 per cent of the investment shares, have accepted the amendments. Five additional acceptances are needed. The amendments cannot enter into force before 1989 ; but the demand for aeronautical satellite services is already established, and trials of both equipment and services are already taking place.

The view has been taken within INMARSAT that, although the amendments are not yet in force, the Organization has the competence to plan and prepare for the introduction of aeronautical services ; and even to offer limited services on a provisional basis. There is insufficient time here to develop the reasoning which supports this view ; although it is based in part on the doctrine of implied powers, and in part on the recognition that, where amendments to a treaty have been adopted by the Parties, they have certain legal effects even before they enter into force (14).

(8) See Wolf D. VON NOORDEN, «Space Communications to Aircraft : a New Development in International Space Law », (Part I), (1987), 15 *Journal of Space Law*, p. 25 at p. 33.

(9) *Idem* (Part II), (1987), 15 *Journal of Space Law*, p. 147 at p. 148.

(10) CONV Art. 13(1).

(11) CONV Art. 15(2).

(12) CONV Art. 10.

(13) CONV Art. 34 ; OA Art. XVIII.

(14) See the Vienna Convention on the Law of Treaties (1969), Arts. 18 and 39.

Accordingly, INMARSAT has placed contracts with avionics manufacturers for the development of aeronautical earth stations; it has made available its space segment for technical and commercial trials of aeronautical communications; it has taken into account the likely demand for such communications in planning its future space segment; and it has collaborated in the work of other interested bodies, in particular the International Civil Aviation Organization (ICAO) (15). In addition, INMARSAT is already providing aeronautical satellite communications for the air ambulance service in the Province of Ontario, Canada.

It has at times been uncomfortable to pursue all this activity without the express mandate which the amendments would provide; although any problems of credibility within the aeronautical industry have been overcome. It can be seen from this experience, however, that the institutional structure of INMARSAT — the limited scope of its formal competence and the lengthy amendment process — conflict with the desire for the Organization to respond rapidly to new requirements for mobile satellite services. The experience may soon be repeated: the Council has recommended the adoption of further amendments to the Convention and Operating Agreement which would give INMARSAT the competence to provide land mobile satellite communications. These amendments have been considered and adopted by an extraordinary Session of the Assembly in January 1989. It will again be necessary to secure individual acceptances from a sufficient number of Parties and Signatories. However, the potential market for land mobile services already exists, and certain countries — notably the United States, Canada and Australia — already have firm plans for domestic satellite systems capable of providing mobile services to users on land, in the air and in coastal waters.

Mention of these future domestic satellite systems raises another issue: the extent to which an international telecommunications organization such as INMARSAT is exposed to competition. Article 8 of the INMARSAT Convention, in its original wording, provides as follows:

« A Party shall notify the Organization in the event that it or any person within its jurisdiction intends to make provision for, or initiate the use of, individually or jointly, separate space segment facilities to meet any or all the purposes of the INMARSAT space segment, to ensure technical compatibility and to avoid significant economic harm to the INMARSAT system. »

Similar provisions exist in the constituent instruments of INTELSAT and EUTELSAT (16). These provisions are often said to impose « coordination » requirements, which is an appropriate term. More surprisingly, it has been

(15) See note 9 above, at p. 158.

(16) INTELSAT Agreement, Art. XIV(d) and (e); EUTELSAT Convention, Art. XVI.

suggested that such provisions in effect create monopolies for the respective organizations (17).

This suggestion cannot be sustained. Article 8 of the INMARSAT Convention gives the Organization no power whatsoever to prevent the establishment of competing satellite systems. It provides that, following notification of a proposed separate system, the Council shall express its views in the form of a recommendation with respect to technical compatibility and shall provide its views to the Assembly with respect to economic harm (18). The Assembly is then to express its views in the form of recommendations within a period of nine months from the date of commencing the procedures provided for in the Article (19). In each case it is specified that the recommendations are to be of a non-binding nature. No doubt the Party which initiates the procedure has a duty to consider in good faith these recommendations ; but that is the full extent of the so-called « monopoly ».

Even this modest degree of protection against competition is more limited than it might seem. First, it applies only with respect to separate space segment facilities. From the outset INMARSAT has been exposed to competition from conventional, terrestrial radio services which, although technically inferior, are frequently cheaper. Secondly, there are certain exceptions from the scope of Article 8, particularly in respect of space segment facilities established prior to the entry into force of the Convention. Thirdly, Article 8 applies only in relation to maritime services. When the aeronautical amendments were adopted by the Assembly, it was agreed that Article 8 should be amended so as to refer to separate systems intended to meet any of the « maritime purposes » of the INMARSAT space segment. As regards the recent land mobile amendments, it was uncontroversial that Article 8 should not apply in relation to land-mobile services.

INMARSAT will undoubtedly face competition from other satellite operators in the future. Indeed, in certain cases INMARSAT's competitors may be permitted to operate on a monopoly basis within national or regional boundaries, a point which I shall return. Insofar as direct competition may take place, it is important to note that INMARSAT, far from being in a privileged position, has certain competitive disadvantages resulting from specific provisions of its constituent instruments.

To take one example : INMARSAT has a mission to provide satellite telecommunications on a global basis. The Preamble to the INMARSAT

(17) See, for example, Paul LIPPENS DE CERF, « International Satellite Telecommunications and E.E.C. Law », a paper presented to the *International Institute of Space Law's Thirtieth Colloquium on the Law of Outer Space*, Brighton, 1987.

(18) CONV Art. 8(2).

(19) CONV Art. 8(3).

Convention refers to « the principle set forth in Resolution 1721 (XVI) of the General Assembly of the United Nations that communication by means of satellites should be available to the nations of the world as soon as practicable on a global and non-discriminatory basis ». The Preamble then refers to Article I of the Outer Space Treaty, « ... which states that outer space shall be used for the benefit and in the interests of all countries ». The Preamble later refers to the provision of facilities « for the benefit of ships of all nations » and, in the amended version, confirms that a maritime satellite system « shall also be open for aeronautical communications for the benefit of aircraft of all nations ». Article 3(2) of the Convention, as amended, provides that « the Organization shall seek to serve all areas where there is a need for maritime and aeronautical communications ».

This obligation means that INMARSAT cannot pick and choose those geographical regions in which it will offer satellite communications. A purely commercial organization might find it most profitable to offer maritime services only in coastal waters — for example, as part of a domestic mobile satellite system — or only in the Atlantic Ocean region, which has heavier traffic than the Indian Ocean. In this light, it can be seen that INMARSAT's obligation to « seek to serve all areas where there is a need for maritime and aeronautical communications » is not simply concerned with achieving economies of scale : it reflects the role of INMARSAT as a public service organization. It is on the basis of this commitment that the INMARSAT space segment will become an essential part of the Global Maritime Distress and Safety System of the International Maritime Organization (20).

This global mission is also reflected in the rules relating to the establishment of space segment utilization charges. Article 19(2) of the INMARSAT Convention provides that the rates of utilization charge for each type of utilization shall be the same for all Signatories for that type of utilization. This means that the charge per minute for telephone traffic or per kilobit for data is the same anywhere in the world. The true cost of providing satellite communications, however, is higher for thin routes ; and a purely commercial organization would probably charge at higher rates for thin-route traffic.

To take one final example of an institutional provision which may put INMARSAT at a competitive disadvantage : Article 5(1) of the Convention provides that « the Organization shall be financed by the contributions of Signatories ». The Convention and Operating Agreement envisage such contributions as virtually the sole source of capital for the Organization. In particular, Article X of the Operating Agreement closely restricts the Organization's use of debt financing. Paragraph (1) provides that the

(20) Global Maritime Distress and Safety System, International Maritime Organization, London, 1987.

Organization may enter into overdraft arrangements for the purpose of meeting financial deficiencies pending receipt of adequate revenues or capital contributions. Paragraph (2) provides that « in exceptional circumstances » the Organization may raise loans for the purpose of financing any activity undertaken by the Organization or for meeting any liability incurred by it.

It happens that the rate of compensation for use of capital which is payable to Signatories has been, since it was first established by the Council, somewhat above the market rate for loan finance. The Organization therefore obtains its capital rather expensively. It is not, however, surprising that the rules in the Operating Agreement relating to debt financing are so restrictive. Financial institutions which lend heavily to an organization generally seek to obtain some degree of control over the activities of that organization. It would be entirely inconsistent with the nature and purpose of INMARSAT for control to be exerted other than by its Parties and Signatories.

Fortunately, the Organization has recently been able to enter into finance leasing arrangements for three of its second generation satellites. As such arrangements do not have the legal character of a loan, they fall outside the scope of Article X of the Operating Agreement. As a result, the Organization will obtain external finance at market rates under an arrangement which leaves it in full control of its space segment. The benefits of this transaction will be reflected in a substantially lower revenue requirement for the Organization in the coming years, which in turn should lead to lower space segment utilization charges.

I have pointed to certain constraints imposed by the INMARSAT constituent instruments. I do not wish to suggest, however, that these create an impossible or unreasonable handicap to the Organization as it seeks to achieve its aims. INMARSAT's Member States are remarkably diverse in their political and economic systems and in their respective stages of development. They have created an organization to provide international communications services, some of which have a non-commercial character, such as maritime distress and safety services (21). In these circumstances, it cannot be expected that INMARSAT should be given the same organizational structure or independence as an American or European commercial corporation. The result is that INMARSAT has to operate within certain institutional restrictions which are not shared by its competitors. This presents a challenge, but not an insurmountable obstacle.

I propose next to consider a quite separate category of constraints which may affect an international telecommunications organization : these relate to the domestic jurisdiction of States. The Preamble to the International

(21) See the paper by VON NOORDEN and DANN referred to in Note 1 above.

Telecommunications Convention (1982) refers to the «sovereign right of each country to regulate its telecommunications». It is important to realize that, when a State joins an international telecommunications organization, such membership has very little effect upon this «sovereign right».

I shall give two examples of how the aim of INMARSAT to offer mobile satellite communications on a world-wide basis may face obstacles created by domestic jurisdiction. The first example relates to maritime services. The sovereignty of a State extends not only to its land territory and internal waters, but also to the territorial sea. This sovereignty further extends to the airspace above its territory and above the territorial sea (22).

It follows that, when ships enter the territorial sea or ports, their use of satellite communications may be subject to restrictions imposed by the coastal state. In the case of certain States these restrictions are substantial, extending to an outright prohibition on the use of ship earth stations in the territorial sea or ports (23). Merchant ships spend a considerable amount of time in such waters, either passing through or at anchor. If, during such periods, the ship is not allowed to use its ship earth station, it will be forced to use the local telephone services. In many cases these are manually operated, with resulting delays and language difficulties; and in any event, such facilities are not available offshore. The costs to merchant shipping of such inadequate communications are considerable.

In order to overcome this problem, the Fourth Session of the INMARSAT Assembly, held in October 1985, adopted the text of an International Agreement on the Use of Ship Earth Stations in the Territorial Sea and Ports (24). The Agreement is open for signature and accession by all States (25). It provides for each Party to permit the registered vessels of any other Party to use INMARSAT ship earth stations in the territorial sea and ports. The Agreement has not yet entered into force (26); although several States already permit the use of ship earth stations in ports and the territorial sea, either unilaterally or on the basis of reciprocity. Other States continue to impose restrictions, resulting in inconvenience to merchant shipping and the loss of revenue to INMARSAT. In general, such States are concerned at the potential of loss of revenue to local telecommunications providers. Interestingly, certain of these States are INMARSAT Parties. It is useful to remember that States have to satisfy numerous

(22) Convention on International Civil Aviation, Chicago, 1944, Art. 1; Convention on the Territorial Sea and the Contiguous Zone, Geneva, 1958, Art. 2; United Nations Convention on the Law of the Sea, Montego Bay, 1982, Art. 2.

(23) See Phillip DANN, «The INMARSAT System: Towards Full Global Coverage», *Space Communication and Broadcasting* (1988), p. 195 at p. 198.

(24) *Ibid.*, p. 200.

(25) Art. 7.

(26) The Agreement is to enter into force thirty days after the date on which twenty-five States have become Parties.

competing interests ; so at times they may feel obliged to act against the interests of an international organization of which they are a member.

The second example of domestic jurisdiction as it affects INMARSAT relates to aeronautical services. Article 30 of the Chicago Convention provides that the use of radio transmitting apparatus in the territory of the contracting State whose territory is flown over shall be in accordance with the regulations prescribed by that State. This potentially creates a double problem for INMARSAT. At present, certain States do not permit aircraft radio transmitters to be used in their airspace for public correspondence services. INMARSAT wishes to make available passenger telephone services, in addition to air traffic services and airline operational communications. It is not yet clear whether national regulations will be changed where necessary so as to permit this. States may be favourably influenced by the decision of the International Telecommunications Union's 1987 World Administrative Radio Conference for the Mobile Services, which allows administrations to permit public correspondence services in part of the frequency bands allocated to the aeronautical mobile-satellite (R) service (27).

A more fundamental problem, however, is whether certain States will permit aircraft to use INMARSAT services at all when overflying their territories, whether on domestic or international flights. I have already mentioned that certain countries intend to establish domestic mobile satellite systems, and they may wish to protect these by restricting the use within national territory of competing systems, including INMARSAT. At a recent conference in Washington D.C. the Director General of INMARSAT, Olof Lundberg, posed the following question :

« There are hundreds of aircraft flying in and out of the United States every day and thousands of vessels sailing in and out of your coastal waters. Will users be forced to switch from INMARSAT to a US-Canadian MSS monopoly or from MSS to INMARSAT at those borders ? » (28).

It does not seem that any answer has yet been given to this question. A similar question will, of course, arise when INMARSAT begins to offer land mobile services. It should not be assumed, however, that there are only two possible answers to such a question : that INMARSAT will be permitted to offer services or that INMARSAT will be excluded in favour of a domestic operator. It is also possible that the domestic operator will be given a monopoly, but may seek to lease space segment from INMARSAT.

So far I have touched upon the law of treaties, the law of international institutions, the United Nations, the law of the sea and international air law. It might be thought surprising that I have referred only once to the Outer Space Treaty ; once to the ITU ; and not at all to the Registration

(27) Final Acts of the World Administrative Radio Conference for the Mobile Services (MOB-87), Geneva, 1987, revised Radio Regulation N° 3633 and additional Radio Regulation N° 729B.

(28) *Communications Week*, 2 November 1987.

and Liability Conventions (29). However, I hope to have shown that the legal framework in which INMARSAT operates does not consist only of those bodies of law which we call international space law and international telecommunications law. It extends to the whole of public international law, to which may be added European Community law¹ and national laws, insofar as they apply to the various activities of the Organization. International space and telecommunications law are fundamental to the activities of an international satellite telecommunications organization ; but in practice they do not always raise the most difficult problems.

(29) Convention on Registration of Objects Launched into Outer Space, Art. II ; Convention on International Liability for Damage caused by Space Objects, Art. XI(2).