LEGAL LIABILITY FOR GLOBAL NAVIGATION SATELLITE SYSTEMS

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I. APPLICABLE LAW

Pinpoint precision is required for some transportation activities. Navigation by reference to the stars or the Earth's surface has become too cumbersome and uneconomical in comparison to the suddenly discovered ease of navigation by artificial satellite. Consequently, the legal community is under pressure to describe a legal framework for navigation by satellite. This paper will focus primarily on liability for the operation of navigation satellites. The broad question is: who may control the space in which navigation satellites function?

A. Chicago Convention

The Chicago Convention, 1/ Article 1, recognizes that states have exclusive sovereignty over the airspace above their territory. The Chicago Convention, Art 37, establishes a legal basis for uniform air navigation standards and procedures. Thus, internationally uniform air navigation standards and procedures are established in ICAO. In sovereign airspace the states regulate air navigation 2/ in accord with ICAO procedures. Over the high seas, where airspace is not sovereign, the applicable navigation rules are those established by ICAO. 3/ ICAO is of the view that future navigation satellite institutions should be regulated by ICAO because Art. 44 of the Chicago Convention establishes ICAO as the only competent body to create minimum Standards and Recommended Practices (SARPS) for the use of airplanes. 4/

B. 1967 Outer Space Treaty

However navigation satellites literally will exist in outer space where a different legal regime applies. Outer space is not sovereign territory and none of the activities of states in outer space can reduce outer space to sovereign territory. 5/ The 1967 Convention on the Law of Outer Space , Art. I, provides that outer space shall be used for the benefit of all countries. There the principle of equality of all states applies. Article III mandates that navigation satellites in outer space must be operated in accordance with international law. 6/

The Outer Space Treaty, Art. VI, provides that contracting states shall bear international responsibility for all national activities in outer space, whether those activities are carried out by public or private enterprises. Thus the U. S. Government, a

contracting party, has accepted legal oversight responsibility for all of its navigation satellite activities whether these activities are conducted by government or by private enterprise. Furthermore, under the Outer Space Treaty, Art. VII, the United States has agreed to be liable to another party of the treaty for damages caused by any satellite launched by, or a launch procured by the United States, or one which originates from a U.S. territory or facility. Art. VII will apply whether the damage caused by the satellite occurs in outer space, in air space or on earth.

C. Liability Convention

The principle of international liability is further elaborated by the Convention on International Liability for Damage Caused by Space Objects. 7/ Under the Liability Convention the launching state assumes liability for all damage caused by its space objects. A launching state is defined as a state which launches or procures launching of a space object, or from whose territory or facility a space object is launched. The launching state is absolutely liable for damage caused by its space objects to aircraft in flight and to the earth's surface. 8/ There is no limitation on liability. The launching state is required to restore the claimant as if the damage had not occurred. 9/ Claims for compensation must be filed within one year after the damage or the identification of the liable launching state. 10/

Whether the Liability Convention applies to personal injury or property damages caused by navigation satellites depends on proof of causation. As Professor Bin Cheng points out in his excellent analysis of the Liability Convention in the Manual on Space Law, 11/ the claimant must prove "adequate casualty "to be entitled to damages as defined by the Convention, Art. 1. 12/ Indirect or delayed damages are not expressly included in the Liability Convention's definition of "damage".

The Liability Convention applies among states and claims may be presented only by governments through diplomatic channels 13/. Therefore, an airline or another user of navigation satellites would have to present a claim under the Convention through its government.

The Liability Convention applies not only to injury and damages to aircraft in flight but also to damages caused by navigation satellites to surface transportation vehicles and to other activities on the surface of the earth. The convention applies both to publicly and privately owned navigation satellites. Users and operators of navigation satellites may agree to shift or waive liability or enter into a crosswaiver agreement. 14/

D. National Torts Law

The Liability Convention does not govern the relationship between a government and its own citizens. That relationship is governed by national law. The option of claiming under national law may be available not only to the citizens of the

launching state but also to citizens of other countries. For example, in the United States claimants may claim against private navigation satellite operators under applicable U.S. law of torts and may claim against the U.S. Government under the Federal Tort Claims Act. 15/

II. Technical Background

Navigation satellites are placed in medium or low earth orbit (LEO). The U. S. navigation satellites orbit 11,000 miles above the Earth. They provide continuous, identical radio signals. A receiver measures distance from at least four satellites "by calculating the time it takes the signal to arrive and thus pinpoints its own location." 16/ The satellites provide airplanes with complete worldwide navigation coverage at both low and high altitudes. The goal is to substitute navigation satellites for most other aviation navigation systems. 17/ The U.S. Federal Aviation Administrator states that satellite navigation will be revolutionary for the airlines; it will "change the way we do business in navigation, landing and surveillance." 18/

The satellite navigation system ..."is expected to save the airlines money by letting more planes use favorable routes, thereby reducing flight time and fuel costs and allowing greater use of the aircraft." 19/ Satellite navigation can also be used by other transportation modes. For ships, the U.S. Coast Guard " is building a chain of radio navigation beacons along the East Coast that will send the corrected GPS signal out to ships within 150 miles. It will allow them to locate their positions within 16 feet." 20/ Trains and cars will be able to use satellite navigation. It will become an integral part of other activities that require accurate time and geographical measurements such as surveying, geology, and map making. 21/

A U.S. government-operated navigation satellite system (GPS) based on 24 satellites will be operational at the end of 1993. 22/ A Russian system (GLONASS) also is being readied. Russia plans to have a 24 satellite system. 23/ There is a certain amount of cooperation among the potential competitors because the United States and Russia are reported to be developing a common GPS/GLONASS aircraft receiver . INMARSAT is planning to get involved in satellite navigation by installing navigation differential correction transmitters in the block of INMARSAT satellites scheduled for launch in early 1995. 24/ Several private operators are preparing navigation satellite services. They may be private enterprises and may be organized by an industry such as the airlines. Some of the existing LEOs, such as Iridium, may get into the navigation satellite business. It is possible that a new separate international organization will develop in the same way that INMARSAT developed from negotiations in IMO to meet the communication satellite needs of the maritime industry.

III. Liability of Navigation Satellite Operators

A. International Organizations

There are several models for international organizations to provide navigation by satellite. The best known model is INMARSAT. The model for INMARSAT was INTELSAT. The Liability Convention, Art. XXII, provides that international organizations may file statements accepting liability under the Convention with the depository of the Convention . The precondition for filing is that a majority of the organization's member states are parties to the Liability Convention and to the Outer Space Treaty.

Therefore, if an international navigation satellite organization is formed, the organization may agree voluntarily to be liable under the Liability Convention. Only where the organization has not paid compensation within six months may the claimant state claim against the individual members of the navigation satellite organization. 25/ Thus the member states have a real interest in having the organization accept liability under the Liability Convention in order to preclude their individual liability, and many satellite organizations have filed their acceptance of liability under the Convention.

A navigation satellite organization may wish to save the cost of risk exposure and decline to file an acceptance of liability under the Convention. For example, INTELSAT has not filed a statement with the treaty depository that it will agree to be liable under the Liability Convention. It may claim to be totally immune from liability except to the extent that it has agreed to be liable in any agreement with a user. If the organization does not accept the risk then this risk passes to the member states as described above.

However, there are ways in which an international organization may be liable outside of the Liability Convention. It may accept liability by contract. For example the users of navigation services, such as the airlines, could stipulate that they will not use an intergovernmental navigation satellite organization unless the organization volunteers to assume liability for its services.

In the absence of filing a statement that the international organization agrees to be liable under the Liability Convention, or a voluntary admission of liability, the international navigation satellite organization would be able to claim governmental immunity. Governmental immunity would totally free the organization from liability. Thus the users would have to seek recourse from other sources such as their own insurance company, if the risk were insured. Users also may seek recovery from the individual members of the international organization under the Liability Convention which holds individual members liable for torts of international organizations to which they are parties. 26/

B. Government Operated Navigation Satellite Systems

Governments would be liable for their navigation satellites under the Outer Space Treaty, Art VII, and under the Liability Convention as described above. Under these treaties governments could be found liable not only for the injury and damage of their own navigation satellites but also for those operated by international organizations to which the governments are members; and Governments may be liable for their privately owned navigation satellites

Furthermore, in the United States a claim against the government for negligently provided satellite navigation service could be brought under the Federal Tort Claims Act. 27/ The claim essentially would be determined under Section 2680 on the issue of whether the provision of navigation satellite service is a discretionary function. If it is a discretionary function, then the statute precludes liability. If the function is not discretionary then there is no immunity and the government may be held liable. A long line of cases 28/ have held that the FAA may be liable for negligently provided air traffic control service. It is uncertain whether negligence would cause the government to be liable under the Federal Tort Claims Act because navigation satellite service is a more passive function of the government than is air traffic control. 29/

C. Privately Operated Navigation Satellite Service

Private operators of navigation satellite services would be liable under applicable tort law like any other private enterprise for negligently provided navigation satellite service. The company's assets would be the limit on liability. The company would be able to protect itself by purchasing liability insurance. Furthermore, as described above, the national government of the satellite company may become liable for the torts of the privately operated navigation satellite company under the Liability Convention.

D. Liability of the Manufacturer of Navigation Satellites.

It is possible that the manufacturer of a navigation satellite may have manufactured the satellite negligently and thereby caused an airplane or other vehicle to fail, with resultant personal injury and property losses. An example of a negligently manufactured satellite is the Hubble Telescope. Manufacturers may think twice before they expose themselves to manufacturer's liability for negligently manufactured navigation satellites. In the United States, the manufacturer's liability depends on who are the users. If the U.S. Government contracts for the manufacture of a navigation satellite, then the manufacturer may come under the umbrella of government immunity. Thus the manufacturer may be able to benefit from a claim that not only were the

government's acts "discretionary" under the U.S. Federal Tort Claims Act, Sec 2680, but the manufacturer's acts are considered to be discretionary because the company is a government contractor. Under case law, the government contractor's defense is particularly strong if the satellite is manufactured for the military. If the satellite is built exactly to government specifications it appears to be unfair to hold the contractor liable for the government's negligent design if the manufacturer conformed to those design specifications. This is an even better defense if the manufacturer warned the government of a potential defective design but the government insisted on manufacture in conformity with its specifications. 30/

Finally the satellite manufacturer may wish to include an indemnification clause in the contract for the manufacture of the navigation satellite. The indemnification clause would provide that the purchaser will indemnify the manufacturer.

III. SUMMARY

Navigation satellite systems are now in the process of becoming available for non-military uses. Both the United States and Russia have made promises in the International Civil Aviation Organization to make their military navigation satellite systems available for aircraft navigation. The civilian satellite navigation systems will be vastly different and more efficient than existing civilian navigation systems. Navigation satellites will provide a revolutionary world-wide reference for navigation

The major breakthrough will be in transportation. Airplanes will be the primary beneficiaries, but other modes of transportation such as ships, automobiles and trains also will benefit in major ways.

There is tension between the legal regimes governing outer space, where navigation systems are located, and those regimes governing sovereign air space, sovereign surface territory, and the high seas, where the airplanes, ships, and surface vehicles being navigated are located. At issue is whether it is possible and desirable to include the operation of navigation satellite systems within one legal regime.

Liability emerges as a significant legal issue affecting the operation of navigation satellites. The risk of personal injury and damages is an economic factor in operating navigation satellite systems. Legal liability of satellites is governed by international law. Article VII of the Outer Space Treaty, together with the Liability Convention, establish a legal regime under which the contracting states ultimately are liable for personal injury and damages caused not only by government operated satellites but also by privately operated satellite systems. Under that legal regime, liability attaches only if the claimant proves causality. Finally, international navigation satellite organizations may be able to avoid

liability under the Liability Convention, but such refusal merely would shift any burden of liability on to the states which are their members

National tort law may govern claims against private navigation satellite companies, and national tort law may also govern claims against the launching state by its citizens as well as by non-nationals. However, governments must have agreed to waive their immunity prior to such claims.

Currently it appears that providers of navigation satellite services can be made to compensate for personal injury and damages either under international law, or under national law subject to waiver of government immunity. It is too early to tell whether a new unified legal regime is necessary and desirable. More experience with this rapidly developing technology is required before that decision can be well made.

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1. Convention on International Civil Aviation (Chicago Convention), 61 Stat. 1180.

2. Id. Art. 28.

3. Id. Art 12.

4. Report of the Tenth Air navigation Conference, Montreal, 5 - 20 September, 1991, at 4-2. Also see Guldiman and Kaiser, Future Air Navigation Systems: Legal and Institutional Aspects (1993).

5. 1967 Treaty of Principles Governing the Activities of States in the Exploitation and Use of Outer Space including the Moon and other Celestial Bodies (Outer Space Treaty), 18 UST 2410.

6. Id. Art. III.

7. 1972 Convention on International Liability for Damage Caused by Space Objects, 24 UST 1973.

8. Id. Arts. I,II.

9. Id. Art. XII.

10. Id. Art. X.

11. Jasentuliyana and Lee, Manual on Space Law, Vol. I, at 115. Also note Bruce A. Hurwitz, State Liability for Outer Space Activities in Accordance with the 1972 Convention on International Liability for Damage Caused by Space Objects, at 31: "The conclusion is however clearly linked: if, as supported here, indirect damage is included within the meaning of the term "damage," then indirect causation must also be accepted. The two cannot logically be separated."

12. Id. Art. I: "The term "damage" means loss of life, personal injury or other impairment of health; or loss of or damage to property of States or of persons, natural or juridical, or property of international inter-governmental organizations."

13. Id. Art. IX.

14. For discussion of crosswaivers, see Larsen, Crosswaivers of Liability, Proceedings on the 35th Colloquium on the Law of Outer Space (1992).

15. 28 U.S.C. 2671, et seq.. The Outer Space Treaty, Art. XI, states that "Nothing in this Convention shall prevent

a State, or natural or juridical persons it might represent, from pursuing a claim in the courts or administrative tribunals or agencies of a launching State."

16. Martin Pozesky, FAA, statement before the Committee on Public Works and Transportation, Subcommittee on Aviation, July 28, 1993, at 6.

17. Id.

18. Washington Post, Sept. 16. 1993, at A27.

19. New York Times, Sept 15, 1993, at A20.

20. Wall Street Journal, Aug. 26. 1993, at A1.

21. New York Times, supra note 20, at A20.

22. Id.

23. International Civil Aviation System, Special Committee on Future Air Navigation Systems, Third Meeting, Montreal, 30 March -15 April, 1992, at 3.

24. Air Transport World, 9/93, at 38.

25. Liability Convention, Art XXII.

26. Id.

27. Supra note 15.

28. Dalehite v. U.S. 346 U.S. 15 (1952); Eastern Airlines v. Union Trust, 221 F.2d 62. Aff'd per curiam sub nom. United States v. Union Trust, 350 U.S. 907 (1955); also see Indian Towing v. U.S. 350 U.S. 61 (1955), in which a ship ran aground owing to the failure of a light in a lighthouse. The Government conceded in this case that the discretionary function exception to liability did not apply.

29. Id. Indian Towing v. U.S. is an interesting factual comparison with government operation of navigation satellites.

30. Boyle v. United Technologies Corp., 487 U.S. 500 (1988). Memorandum by Baker & Hostetler Law Firm, Washington D.C., 1993, on file with the author.