

July 2015

The Operator's Liability With Regard To Transport Of Goods By Space Shuttle

I.H. Ph. Diederiks-Verschoor

Please take a moment to share how this work helps you [through this survey](#). Your feedback will be important as we plan further development of our repository.

Follow this and additional works at: <https://ideaexchange.uakron.edu/akronlawreview>



Part of the [Air and Space Law Commons](#)

Recommended Citation

Diederiks-Verschoor, I.H. Ph. (1980) "The Operator's Liability With Regard To Transport Of Goods By Space Shuttle," *Akron Law Review*: Vol. 13 : Iss. 4 , Article 1.

Available at: <https://ideaexchange.uakron.edu/akronlawreview/vol13/iss4/1>

This Article is brought to you for free and open access by Akron Law Journals at IdeaExchange@UAkron, the institutional repository of The University of Akron in Akron, Ohio, USA. It has been accepted for inclusion in Akron Law Review by an authorized administrator of IdeaExchange@UAkron. For more information, please contact mjon@uakron.edu, uapress@uakron.edu.

THE OPERATOR'S LIABILITY WITH REGARD TO TRANSPORT OF GOODS BY SPACE SHUTTLE

I. H. PH. DIEDERIKS-VERSCHOOR*

INTRODUCTION

THE SPACE SHUTTLE, one of the new systems of transportation in space, is bound to stimulate a revolutionary development in outer space. As Stevenson observes, it will afford governments and commercial users an economical and flexible means of transportation in space.¹

One of the Shuttle's main features will be the transportation of goods, such as spacelabs, into cosmic space and back.² It is worthwhile to examine who will be liable for damage caused to these goods, and what rules would apply in case of compensation.

The Convention on International Liability for Damage Caused by Space Objects³ covers only the damage caused to third parties and objects in space. A parallel to the Warsaw Convention of 1929⁴ which regulates the liability of air carriers for injury to transported passengers, luggage and goods, and also for delay in delivery, has not been established in space law. Until now there was no need for such a Convention. With the development of the transportation of goods in space, however, legal rules governing this liability will become desirable, if not necessary.

I. TECHNICAL ASPECTS

The following is a brief sketch of the technical aspects of the Space Shuttle.⁵ The National Aeronautics and Space Administration (hereinafter NASA) Office of Manned Space Flight initiated extensive engineering de-

*Professor of Law, Institute of Public International Law, University of Utrecht. President of the International Institute of Space Law of the International Astronautical Federation. For an earlier expression of views on the same subject see Diederiks-Verschoor, *The Legal Aspects of the Space Shuttle*, 1 ANNALS AIR & SPACE L. 197 (1976).

¹ Stevenson, *Future Directions in Space*, 10 ASTRONAUTICS AND AERONAUTICS 18 (Jan. 1978).

² Agreements have been and will be made by the United States government with certain foreign governments which are members of the European Space Research Organization to establish co-operative international programs concerning the development, procurement, and use of a space laboratory in conjunction with the Space Shuttle Program. See Freiherr von Preuschen, *International Co-operation in the Use of Space Laboratories*, 17 COLLOQUIUM ON THE LAW OF OUTER SPACE, 197 (1974).

³ Convention on International Liability for Damage Caused by Space Objects, Mar. 29, 1972, 24 U.S.T. 2389, T.I.A.S. No. 7762 (effective date Oct. 9, 1973) (hereinafter cited as Liability Space Treaty of 1972).

⁴ Convention on International Air Transportation, Oct. 12, 1929, 49 Stat. 3000, T.S. No. 876 (effective Oct. 29, 1934) (hereinafter cited as Warsaw Convention).

⁵ For technical details see HOUSE COMM. ON SCIENCE AND TECHNOLOGY, 95th Cong., 2nd Sess., STATUS REPORT ON SPACE SHUTTLE 1978 (Comm. Print 1978); Disher, *Space Transportation, Satellite Services and Space Platforms*, ASTRONAUTICS AND AERONAUTICS 42 (April 1979); National Aeronautics and Space Administration, Release No. 74-267, Oct. 1974.

sign and cost studies in early 1970. The Shuttle consists of an orbiter, an external fuel tank, and solid rocket boosters.

The main part of the Shuttle is the orbiter, or spacecraft proper, which will look like a delta-winged airplane about the size of a DC 9 jet-liner. The orbiter's main engines are fueled by ascent propellant which is contained in an external tank. The external tank is expended after each ascent. The orbiter also has two solid rocket boosters which are reusable. At launch time, the two solid rockets and the orbiter's three liquid rocket engines ignite and burn simultaneously. The orbiter, with its crew and payload, remains in orbit until the mission is completed. It then returns to earth. The first Shuttle is expected to fly in 1980 or 1981.

II. THE SHUTTLE'S FUNCTIONS

As Professor DeSaussure points out,⁶ the Space Shuttle has both military and civilian functions. It can carry a total of seven people (crew and passengers) for a period of up to thirty days. The Shuttle can be used as a platform to enable a space tug to put a military assistant satellite into deep orbit. It can also be used to refuel other spacecraft, to rotate crews on long range missions, or to skim the air space for close-in observation.

The Shuttle's primary function will be to provide low cost transportation to and from earth orbit. The first operational goal will be the transportation of spacelabs.⁷ As reported by Grey,⁸ further uses include launching automated rover explorers to the Martian surface and putting into space radiotelescopes which are designed to gather extraterrestrial intelligence. Further, the Shuttle can be used to put satellites into orbit and to maintain and repair them. Also, the Shuttle can be used to transport goods to and from installations already stationed in space.

III. LEGAL ASPECTS

In the "Analysis and Background Data" of the Convention on Registration of Objects Launched into Outer Space, the Space Shuttle has been defined as follows: "The Space Shuttle, being a space vehicle or rocket and a recoverable spacecraft, would be registrable under this Convention as an object launched into outer space."⁹ There is no definition in the Treaties of the term "space vehicle."

⁶ Lecture by H. DeSaussure, Naval War College (Jan. 21, 1976).

⁷ M. Bourély, *Legal Issues Relating to the Flights of the Spacelab*, 21 COLLOQUIUM ON THE LAW OF OUTER SPACE 110 (1978). This is a good survey of all agreements concluded on the subject of the space lab.

⁸ GREY, INTERNATIONAL ASTRONAUTICAL FEDERATION, REPORT FOR THE SCIENTIFIC AND TECHNICAL SUBCOMMITTEE OF THE UNITED NATIONS 13 (1979).

⁹ SEN. COMM. ON AERONAUTICAL AND SPACE SCIENCES, 94th Cong., 1st Sess., CONVENTION ON REGISTRATION OF OBJECTS LAUNCHED INTO OUTER SPACE: ANALYSIS AND BACKGROUND DATA 4 (Comm. Print 1975).

Arguments in favor of regarding the Shuttle as a spacecraft are mainly put forward by technical experts. According to United States federal legislation,¹⁰ the Shuttle is not to be regarded as an "aircraft" as defined in the Federal Aviation Act of 1958: "Any contrivance now known or hereafter invented, used or designed for navigation or flight in the air."¹¹

Nevertheless, when the Shuttle re-enters the earth's atmosphere, it behaves like an aircraft because of its ability to sustain aerodynamic flight. Expert legal opinion is divided on the question of the status of the Shuttle, namely whether it is to be regarded solely as a spacecraft or whether the rules of the air will also be applicable.¹²

With an eye to the special characteristics of the Shuttle, authors also differ on the question of whether a delimitation has to be fixed between air space and cosmic space. Some propose a fixed limit;¹³ others are in favor of the functional theory, which means determining each time what limit will be appropriate.¹⁴

Several studies have been written about these matters, and lengthy discussions have taken place. I shall therefore confine myself to giving my views on the legal issues relating to the transportation of goods by Shuttle.

The crucial issue to be decided is who will be liable when damage has been caused to the payload. First, we have to consider the different phases the payload will go through. Since the transportation of spacelabs will be the first goal, let us first consider the situation regarding this particular object. The spacelab will have a life-support system of its own. During the launching and orbiting phases, however, it will be an integral part of the Shuttle. It will be a part of one unit, with one registration number. The

¹⁰ 42 U.S.C.A. § 2458 (f) (1) (Supp. 1980).

¹¹ Federal Aviation Act of 1958, 49 U.S.C. § 1301 (5) (1976).

¹² Compare Tamm, *Further Reflections Upon the Legal Aspects of Skylab and the Space Shuttle*, 16 PROCEEDINGS, COLLOQUIUM ON THE LAW OF OUTER SPACE 242 (1973) with Bueckling, *Was Ist Raumfahrt System Space Shuttle Rechtlich?* 24 ZEITSCHRIFT FÜR LUFT- UND WELTRAUMRECHTSFRAGEN 183.

¹³ See Gorove, *Legal Aspects of the Space Shuttle*, 13 INT'L. LAW. 1 (1979); at the 1978 COPUOS Meeting, Ambassador Oleg A. Troyanovsky, the U.S.S.R. Permanent Representative to the United Nations, proposed that space above 100-110 kilometers above sea level be considered "outer space," U.N. Doc. A/AC. 105/PV183, at 48 (June 30, 1978); Background Paper Prepared by the Secretariat, Legal Subcommittee on the Peaceful Uses of Outer Space, U.N. Doc. A/AC. 105/C.7/Add.L. (Jan. 21, 1977); Finch, *Outer Space Liability, Past, Present and Future* and Gorbil, *Remarques sur la definition de l'espace extra-atmospherique*, both in 22 PROCEEDINGS, COLLOQUIUM ON THE LAW OF OUTER SPACE 89 (1979).

¹⁴ See Matte, *Matters Relating to the Definition and/or Delimitation of Outer Space and Other Space Activities*; Haanappel, *Definition of Outer Space and Other Space Activities*; Rosenfield, *The Need to Distinguish Air Space from Outer Space*; Sloup, *Why the NASA Space Shuttle Will Not Require a Specific Altitude to be Chosen as the Legal Boundary Between Air Space and Outer Space*, all in 20 PROCEEDINGS, COLLOQUIUM ON THE LAW OF OUTER SPACE (1977).

spacelab program provides for the design and development of mannable laboratory modules and unpressurized instrument platforms suitable for accommodating instruments for conducting research and for application purposes. The spacelab module and pallet will be transported either separately or jointly to and from orbit in the Shuttle payload bay. The term "spacelab" refers to all space laboratories developed under the joint program, which will, in essence, follow the design and specifications of the first spacelab flight unit.¹⁵

After launching, the Space Shuttle, with its payload, will traverse the airspace. The question arises whether during that phase the rules of air are applicable, such as the Convention of Chicago of 1944¹⁶ and the Convention of Warsaw of 1929.¹⁷ On arrival in cosmic space the Space Treaties will clearly be applicable, but after completing its mission the Space Shuttle returns to earth through the airspace as an airplane would. What rules will apply during the latter phase?

Article I of the Chicago Convention states that each State has sovereignty over the air space above its territory. Thus, the legal basis for a State's jurisdiction is "sovereignty," which according to the Treaty of 1967,¹⁸ does not exist in outer space. Moreover, the Chicago Convention applies to civil aircraft only. Therefore, even assuming that the Shuttle would be subject to air law during the period of launching and returning, the rules of that Convention would not be applicable. Can the Shuttle be regarded as a State vehicle? Article III (b) of the Chicago Convention states, "State aircraft are aircraft used in military, customs or police services." For these reasons, I do not think that the Chicago Convention could possibly be applicable to the Shuttle.

As for the first European Space Agency (hereinafter ESA) spacelab, however, rules are given in an Agreement between ESA and NASA.¹⁹ Article VII (D) of this Agreement stipulates that the spacelab shall be delivered to the United States government and that it shall be under that government's unfettered control. Bourély concludes, quite correctly, that the United States government will be solely responsible for its oper-

¹⁵ See Haakma, *Some Legal Aspects Concerning Spacelab and Future Space Laboratories Launched by a Space Shuttle*, 18 PROCEEDINGS, COLLOQUIUM ON THE LAW OF OUTER SPACE 90 (1975).

¹⁶ Convention on International Civil Aviation, Chicago, 1944, 61 Stat. 1180, T.I.A.S. No. 1591. (effective Dec. 7, 1944) (hereinafter cited as Chicago Convention).

¹⁷ Warsaw Convention, *supra* note 4.

¹⁸ Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies, Jan. 27, 1967, 18 U.S.T. 2410, T.I.A.S. No. 6347, 610 U.N.T.S. 205 (effective Oct. 10, 1967) (hereinafter cited as Outer Space Treaty).

¹⁹ Agreement on Space Laboratory: Co-operative Program, Aug. 14, 1973, Memorandum of Understanding, 24 U.S.T. 2049, T.I.A.S. No. 7722.

ation, including liability for any damage occurring to the spacelab.²⁰ Article XI (D) of this Agreement, however, excludes liability resulting from launching, flight or descent of the Shuttle. As far as the launching is concerned liability seems obvious: it is analogous to the way the State or the organization which manufactured the object (in this case the spacelab) can be held liable for damage according to Article I of the Liability Space Treaty of 1972.²¹ During flight the spacelab forms an integral part of the Shuttle. How then can the United States government exclude itself from liability? In my opinion, only when the Shuttle has completed its mission, having brought the spacelab to its destination, will governmental liability end. During the return flight, or descent, of the Shuttle, which again is regarded as an exception, the spacelab will once more form an integral part of the Shuttle. For this reason I would consider it to be reasonable for the United States to be held liable, and I fail to understand why an exception has been made for that phase. Perhaps the risk involved in a first flight could be considered a valid enough reason. In subsequent agreements, however, different liability rules might be agreed upon. For further Shuttle missions it would be desirable to promulgate either bilateral agreements or a multilateral Convention incorporating liability rules specifically concerning the points of who will be liable and during which period. At this time, the United States is excluding all liability for damage to the payload, as is laid down in Article VIII of the reimbursement for Shuttle services provided to civil United States government users and foreign users who have made substantial research investments in the STS Program.²² Article VIII reads as follows: "The price does not include a contingency or premium for damage that may be caused to a payload through the fault of the United States Government or its contractors. The United States Government, therefore, will assume no risk for damage or loss to the user's payload. The users will assume that risk, or obtain insurance protecting themselves against the risk."

Hosenball states that "The Space Transportation System will not be a 'common carrier' because it is not so authorized by Federal statute and because it would conflict with international commitments already entered by the Federal Government."²³

Who are the parties who are likely to suffer damage caused to the payload? As Mossinghoff observes:

²⁰ Bourély, *supra* note 7, at 111.

²¹ The Liability Space Treaty of 1972, *supra* note 3.

²² STAFF OF SENATE COMM. ON COMMERCE, SCIENCE AND TRANSPORTATION, 95th Cong., 2d Sess., SELECTED BASIC DOCUMENTS ON SPACE LAW 587 (Comm. Print 1978). C.P. Dula, *Management of Inter and Third Part Liability for Routine Space Shuttle Operations*, 20 COLLOQUIUM ON THE LAW OF OUTER SPACE 201 (1978).

²³ *Hearings before the House Subcommittee on Space Science, and Applications Committee on Science and Technology*, 96th Cong., 1st Sess., 2 (1979) (Statement of S. Neil Hosenball, General Counsel, National Aeronautics and Space Administration).

Payloads which will be carried in the Shuttle will include freeflying spacecraft for deployment in Earth orbit, owned by the United States, foreign governments, intergovernmental organizations or commercial concerns; "small self-contained payloads" which NASA would fly for small businesses, universities and others for research and development purposes (at a low transportation cost, e.g., \$10,000); and the European-developed Spacelab in which experiments will be performed by NASA, the European Space Agency, other governments and commercial concerns.²⁴

Since the United States government excludes any liability, the users must safeguard themselves by taking out insurance policies.²⁵ As Mossinghoff mentions:

On August 8, 1979, the President approved the National Aeronautics and Space Administration ("NASA") Authorization Act, 1980, which, in addition to authorizing NASA's fiscal year 1980 program, added a new section 308 on "Insurance and Indemnification to the National Aeronautics and Space Act of 1958 (the "Space Act").²⁶

In section 308 definitions are given of the terms "user" and "third party":

The term "user" includes anyone who enters into an agreement with the Administration for use of all or a portion of a space vehicle, who owns or provides property to be flown on a space vehicle, or who employs a person to be flown on a space vehicle.²⁷ The term "third party" means any person who may institute a claim against a user for death, bodily injury or loss or damage to property.²⁸

When Shuttle operations are going to be carried out frequently, more elaborate rules and regulations will be called for. It stands to reason that during the experimental phase rules for liability or exclusion of liability are incorporated in bilateral agreements. Since it is expected that in the next decade the transportation of goods through cosmic space will increase considerably, a draft Convention on the subject will become increasingly desirable.

Unlike the Aviation Convention of Chicago, the Warsaw Convention on the liability of the carrier applies also to State aircraft, but it allows for making a reservation on this point, which the United States has done. Under the Hague Protocol, which supplements the Warsaw Convention, only military aircraft can be excluded by making a reservation.²⁹ If and

²⁴ Mossinghoff, *Managing Tort Liability Risks in the Era of the Space Shuttle*, 7 J. OF SPACE L. 3 (1970).

²⁵ See Finch, *supra* note 13.

²⁶ Mossinghoff, *supra* note 24, at 1.

²⁷ Authorization, Appropriations-National Aeronautics and Space Administration Authorization Act of 1980, § 308(f)(2), 42 U.S.C.A. § 2458 (1980 Supp.)

²⁸ *Id.* § 308(f)(3).

²⁹ 2 SHAWCROSS AND BEAUMONT, AIR LAW A60, A144, A235 (4th ed. 1978).

when a Treaty or Convention on the liability for transported goods and passengers is proposed in space law, the best way to draft it would seem to be to insert a certain limit for risk liability, supplemented by a State compensation insurance scheme along the lines of the Guatemala Protocol of 1971.³⁰ As Shuttle traffic becomes more important and extensive, not only liability for damage to the payload but also liability for injury or death caused by passengers will be an issue. This raises another point worth noting. Every third member of the Shuttle crew will be a mission specialist. The mission specialist has completed a full training program and his duty will be to conduct and carry out experiments with the scientific equipment aboard the Shuttle. The passengers need not be specially trained for space flights. They can take out insurance against the risk. Further, the passengers or their heirs can try to get compensation from the State of registration of the vehicle in which they have sustained the damage. In this context, the observations of Mossinghoff regarding the new section 308 are interesting.

Under the newly enacted section 308 NASA is authorized "on such terms and to the extent it may deem appropriate" to provide liability insurance for any user of the Space Shuttle to compensate all or a portion of claims by third parties for death, bodily injury, or loss of or damage to property resulting from activities carried on in connection with the launch, operations or recovery of the Space Shuttle. NASA's appropriations are specifically made available to acquire such insurance, but only on the condition that they "shall be reimbursed to the maximum extent practicable" by the Space Shuttle users. That reimbursement is to be . . . established under section 203 (c) of the Space Act.³¹

This provision regards only compensation for claims by third parties. Following the example of the Liability Treaty of 1972,³² the person basing his claim on a contract with the carrier may claim compensation through diplomatic channels but only when the State in which the vehicle causing the damage is registered is a State other than the one of which the injured person is a subject. Just as in air law, the crew will have a claim based on their contract of employment. The experts accompanying the crew, however, will be subject to rules based either on bilateral agreements or on the law of the State where the claim is lodged.

IV. WHICH JURISDICTION WILL BE APPLICABLE?

Article VIII of the Space Treaty³³ states that the State on whose

³⁰ *Id.* at A26.

³¹ Mossinghoff, *supra* note 24, at 6.

³² The Liability Space Treaty, *supra* note 3.

³³ Convention on the Registration of Objects Launched into Outer Space, *opened for signature* Jan. 14, 1975, 28 U.S.T. 695, T.I.A.S. No. 8480 (effective Sept. 15, 1976).

registry an object launched into outer space has been entered, shall retain jurisdiction and control over such object and any of its personnel while in outer space. Consequently, each State will have jurisdiction and control over its own space object and the personnel thereof.³⁴ Rules on this point for internationally manned space flights have been made in a bilateral agreement. According to Gorove³⁵ and Bourély,³⁶ jurisdiction and control over spacelab and Shuttle will be exercised during the flight by the Shuttle commander. Hosenball observes:

The Shuttle Commander will have full authority to enforce order and discipline during all phases of any STS mission. This authority extends to any and all persons on board the Shuttle, including Federal officers and employees and all other persons whether or not they are U.S. nationals. It extends to spacelab and to personnel engaged in Extravehicular Activity (EVA).³⁷

Jurisdiction becomes a complex problem because the United States wishes to retain control over the crew of the Shuttle, yet the payload mission specialists will probably be of different nationalities (employees of foreign governments or industries). According to Article VIII of the Space Treaty of 1967,³⁸ the State of the employee will have jurisdiction and control over its personnel, yet control actually lies in the hands of the Shuttle commander.

V. OTHER SYSTEMS OF SPACE TRANSPORT

So far, we have only been concentrating on the Shuttle. There are, however, other systems of space transport.

The Soviet Soyuz Progress I is a vehicle similar to the Shuttle, according to Grey.³⁹ The Soviet Salyut 6 space station is supplied by a combination of two launch systems the Soyuz (manned) and the Progress (unmanned). Both use the same basic A-2 launcher, a conventional Earth orbit and 2400 kg to a geosynchronous transfer orbit. Both the Soyuz and the Progress are capable of maintaining the manned Salyut space station on a permanent, uninterrupted basis.

The Ariane is a three-stage expendable rocket-powered launch vehicle.

³⁴ At the Space Law Colloquium in Munich, Mr. Malorski observed that the term "payload" did not exist in the present treaties. Nevertheless, he felt that the term "space object" in the convention on Liability and Registration covered both components and objects launched from space. See also Dula, *supra* note 22, at 203.

³⁵ See Gorove, *supra* note 13.

³⁶ Bourély, *Towards a Convention on the Legal Status of Manned International Space Flights*, and Menter, *Status of International Space Flights* both in 22 PROCEEDINGS, COLLOQUIUM ON THE LAW OF OUTER SPACE (1979).

³⁷ Hosenball, *supra* note 23, at 3.

³⁸ Outer Space Treaty, *supra* note 18.

³⁹ GREY, *supra* note 8.

Now that the Shuttle operations have been postponed, the Ariane may possibly take over a small portion of the work the Shuttle would have been doing.

CONCLUSION

Many problems still remain to be solved. One thing is certain, however. Transport by Shuttle will be useful and economical. Practice will show the way towards improving the legal framework which will govern this revolutionary means of transport.

