

## CHAPTER TWELVE SPACE LAW

In 1978, Cosmos 954 fell from orbit. Unfortunately, it was powered by a nuclear reactor. The radioactive debris fell over thousands of square mile of uninhabited Northwestern Canada. Canada spent \$14,000,000 in the clean-up.

In 1979, Skylab, all 77 tons of it, fell back to Earth. Kennedy Space Center forewarned the world that Skylab was in a decaying orbit, and estimated the range of dates that it might come down. But Kennedy Center could not tell where on Earth it would finally hit. It was forecast that widespread destruction would occur wherever it came down. Fairly wide-spread panic occurred around the world, even here in the Bay Area. The San Francisco Chronicle provided \$1 million in "Skylab insurance" to anyone who subscribed to the paper and was hurt or killed by the debris. It eventually was determined that it broke up and crashed in the Indian Ocean and the deserts of western Australia

Apollo 13's return to Earth was by "seat of the pants" navigation. There was no telling where, or in which country or territorial waters, the capsule would alight. Would the astronauts be captives of their host nation? Would the country even look and try to rescue the astronauts?

In 1988 President Reagan proceeds ahead with funding for the Star Wars satellite anti-missile warhead despite heated protests from the USSR. Stars Wars can, in theory, shoot a powerful laser beam at incoming warheads, thereby disabling them. However, a "miss" could destroy large areas of civilization on the earth --- not from the warhead, but from the powerful x-ray laser beam.

It is 2000, and a Turner geostationary television satellite is shot down by an Ecuadorian Scud missile after Turner refused to pay Ecuador a "parking" fee.

In 2001, a Vietnamese space-pilot of a Chinese spacecraft is in high-earth orbit when the head of an old explosive rivet from a Vanguard satellite traveling 23,000 mph in the opposite direction pierces the spacecraft and kills the space-pilot, causing the ship to fall back to earth and devastates the metropolitan center of Paris. Who, if anyone, is liable?

In 2033, the Burmese space program collects both orbiting space junk and operating satellites to serve as ion particle fuel on its next Mars expedition. CBS loses another satellite.

These questions and issues are the subject of much concern by nations and lawyers alike.

### Outline of the

#### Outer Space Treaty of 1967

Over 90 states, including the US, are parties to it.

Drew heavily on the Antarctic Treaty.

Has broad acceptance, with many principles taken from international customary law.

The Treaty:

-Pertains to the exploration and use of outer space, including the Moon and other celestial bodies.

- Activities shall be for the benefit and in the interest of all countries.

- Space shall be the preserve of all Mankind.

-Provides free access to all nations.

-Provides for freedom of scientific investigation and encourages international cooperation.

-States that outer space is not subject to national appropriation.

-Provides that the Moon and other celestial bodies shall be used only for peaceful purposes.

-Provides that state parties shall be responsible for continuing supervision of

national activities.

-States that activities will be conducted with due regard to interests of other parties.

-Provides that a state party retain jurisdiction and control over objects it places in outer space.

-States that activities on the Moon and other celestial bodies will be conducted so as to avoid their harmful contamination.

-Provides for consultation if there is a potential for harmful interference with the activities of others.

-Provides for the disclosure of the nature of activities undertaken in outer space.

-Provides for reciprocal inspection rights.

-Provides for an amending process.

-Provides for withdrawal upon a one year notice.

No specific rules for mineral development on the Moon.

-Mineral development not precluded.

-Activities governed by the Treaty and other international law.

-Moon can be used for peaceful purposes.

-Activities not restricted to scientific purposes.

-Territorial claims are precluded, but "use" is not.

-National or private ownership of resources removed is not preclude.

-General, but unspecified obligation to share benefits with all countries.

-Exclusive use of installations implied by the provision for advance notice of inspection and right of jurisdiction.

-Activities by non governmental entities are permitted.

-Entities obligated to avoid harmful contamination but broader obligations not spelled out.

-Strong commitment to advance notification and consultation if interference with others is a possibility.

-States are internationally liable for their activities and those under their jurisdiction.

What follows are portions of the space treaties that have been enacted.

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TREATY ON PRINCIPLES GOVERNING THE ACTIVITIES  
OF STATES IN THE EXPLORATION AND  
USE OF OUTER SPACE, INCLUDING THE  
MOON AND OTHER CELESTIAL BODIES.  
(1967)

The States Parties to this Treaty,

Inspired by the great prospects opening up before mankind as a result of man's entry into outer space,

Recognizing the common interest of all mankind in the progress of the exploration and use of outer space for peaceful purposes,

Believing that the exploration and use of outer space should be carried on for the benefit of all peoples irrespective of the degree of their economic or scientific development.

Desiring to contribute to broad international co-operation in the scientific as well as the legal aspects of the exploration and use of outer space for peaceful purposes,

Recalling resolution 1962 (XVIII) entitled "Declaration of Legal Principles Governing

the Activities of States in the Exploration of Outer Space) which was adopted unanimously by the United Nations General Assembly on 13 December 1963,

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Convinced that a Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies, will further the Purposes and Principles of the Charter of the United Nations, HAVE AGREED ON THE FOLLOWING:

ARTICLE I

The exploration and use of outer space, including the moon and other celestial bodies, shall be carried out for the benefit and in the interest of all countries, irrespective of their degree of economic or scientific development and shall be the province of all mankind.

Outer space, including the moon and other celestial bodies shall be free for exploration and use by all States without discrimination of any kind, on a basis of equality and in accordance with international law, and there shall be free access to all areas of celestial bodies. There shall be freedom of scientific investigation in outer space, including the moon and other celestial bodies, and States shall facilitate and encourage international co\_operation in such investigation.

ARTICLE II.

Outer space, including the moon and other celestial bodies, is not subject to national appropriation by claim of sovereignty, by means of use or occupation, or by any other means

ARTICLE III.

States Parties to the Treaty shall carry on activities in the exploration and use of outer space, including the moon and other celestial bodies, in accordance with international law, including the Charter of the United Nations, in the interest of maintaining peace and security and promoting inter\_national co\_operation and understanding.

ARTICLE IV.

States Parties to the Treaty undertake not to place in orbit around the earth any object carrying nuclear weapons or any other kinds of weapons of mass destruction install such weapons on celestial bodies, or station such weapons in outer space in any other manner.

The moon and other celestial bodies shall be used by all States Parties to the Treaty exclusively for peaceful purposes. The establishment of military bases, installations and fortifications the testing of any type of weapons and conduct of military maneuvers on celestial bodies shall be forbidden. The use of military personnel for scientific research or for any other peaceful purposes shall not be prohibited. The use of any equipment or facility necessary for peaceful exploration of the moon and other celestial bodies shall also not be prohibited .

ARTICLE V.

States Parties to the Treaty shall regard astronauts as envoys of mankind in outer space and shall render to them all possible assistance in the event of accident, distress, or emergency landing on the territory of another State Party or on the high seas. When astronauts make such a landing, they shall be safely and promptly returned to the State of Registry of their space vehicle.

In carrying on activities in outer space and on celestial bodies, the astronauts of one State Party shall render all possible assistance to the astronauts of other States Parties.

States Parties to the Treaty shall immediately inform the other States Parties to the Treaty or the Secretary\_General of the United Nations of any phenomena they discover in outer space, including the moon or other celestial bodies which could constitute a danger to the life or health of astronauts.

\_\_\_\_\_Article VI omitted\_\_\_\_\_

## ARTICLE VII

Each State Party to the Treaty that launches or procures the launching of an object into outer space, including the moon or other celestial bodies, and each State Party from whose territory or facility an object is launched, is internationally liable for damage to another State Party to the Treaty or to its natural or juridical persons by such object or its component parts on the Earth, in air space or in outer space, including the moon and other celestial bodies.

## ARTICLE VIII

A State Party to the Treaty on whose registry an object launched into outer space is carried shall retain jurisdiction and control over such object and over any personnel thereof, while in outer space or on a celestial body. Ownership of objects launched into outer space, including objects landed or constructed on a celestial body, and of their component parts, is not affected by their presence in outer space or on a celestial body or by their return to the Earth. Such object or component parts found beyond the limits of the State Party to the Treaty on whose registry they are carried shall be returned to that State, which shall, upon request, furnish identifying data prior to their return.

\_\_\_\_\_ balance of Convention is omitted \_\_\_\_\_

## AGREEMENT ON THE RESCUE OF ASTRONAUTS, THE RETURN OF ASTRONAUTS AND THE RETURN OF OBJECTS LAUNCHED INTO OUTER SPACE.

(1968)

The Contracting Parties,

Noting the great importance of the Treaty on Principles Governing the Activities of States in the Exploration of Outer Space, including the Moon and Other Celestial Bodies which calls for the rendering of all possible assistance to astronauts in the event of accident, distress or emergency landing the prompt and safe return of astronauts and the return of objects launched into outer space,

Desiring to develop and give further cooperation in the peaceful exploration of and use of outer space, have agreed as follows:

### ARTICLE I.

Each Contracting Party which receives information or discovers that the personnel of a spacecraft have suffered accident or are experiencing conditions of distress or have made an emergency or unintended landing in territory under its jurisdiction or on the high seas or in any other place not under the jurisdiction of any State shall immediately:

a. Notify the launching authority or, if it cannot identify and immediately communicate with the launching authority, immediately make a public announcement by all appropriate means of communication at its disposal: and

b. Notify the Secretary General of the United Nations who should disseminate the information without delay by all appropriate means of communication at his disposal;

### ARTICLE II.

If, owing to accident, distress, emergency or unintended landing, the personnel of a spacecraft land in territory under the jurisdiction of a Contracting Party, it shall immediately take all possible steps to rescue them and render them all necessary assistance. It shall inform the launching authority and also the Secretary General of the United Nations of the steps it is taking and also of their progress. If assistance by the launching authority would help to effect a prompt rescue or would contribute substantially to the effectiveness of search and rescue operations, the launching authority shall cooperate with the Contracting Party with a view to the effective conduct of search and rescue operations. Such operations shall be subject to

the direction and control of the Contracting Party which shall act in close and continuing consultation with the launching authority.

#### ARTICLE III.

If information is received or it is discovered that the personnel of a spacecraft have alighted on the high seas or in any other place not under the jurisdiction of any State, those Contracting Parties which are in a position to do so shall, if necessary, extend assistance in search and rescue operations for such personnel to assure their speedy rescue. They shall inform the launching authority and the Secretary General of the United Nations of the steps they are taking and their progress.

#### ARTICLE IV.

If owing to accident, distress, emergency or unintended landing, the personnel of a spacecraft land in territory under the jurisdiction of a Contracting Party or have been found on the high seas or in any other place not under the jurisdiction of any State, they shall be safely and promptly returned to representatives of the launching authority.

#### ARTICLE V.

1. Each Contracting Party which receives information or discovers that a space object or its component parts has returned to Earth in the territory under its jurisdiction or on the high seas or in any other place not under the control of any State, shall notify the launching authority and the Secretary General of the United Nations.

2. Each Contracting Party having jurisdiction over the territory on which space object or its component parts have been discovered shall, upon request of the launching authority and with the assistance from that authority if requested, take such steps as it finds practicable to recover the object or component parts.

3. Upon request of the launching authority, objects launched into outer space or their component parts found beyond the territorial limits of the launching authority shall be returned to or held at the disposal of representatives of the launching authority, which shall, upon request, furnish identifying data prior to their return.

4. Notwithstanding paragraphs 2 and 3 of this article, a Contracting Authority which has reason to believe that a space object or its component parts discovered in territory under its jurisdiction, or recovered by it elsewhere, is of a hazardous or deleterious nature may so notify the launching authority which shall immediately take effective steps, under the direction and control of the said Contracting Party to eliminate possible danger or harm.

5. Expenses incurred in fulfilling obligations to recover and return a space object or its component parts under paragraphs 2 and 3 of this article shall be borne by the launching authority.

\_\_\_\_\_ balance of Convention is  
omitted \_\_\_\_\_

### CONVENTION ON INTERNATIONAL LIABILITY FOR DAMAGE CAUSED BY SPACE OBJECTS. (1971)

#### THE STATES PARTIES TO THIS CONVENTION,

Recognizing the common interest of all mankind in furthering the exploration and use of outer space for peaceful purposes,

Recalling the Treaty on Principles Governing the Activities of States in the Exploration of Outer Space and the Moon and Other Celestial Bodies,

Taking into consideration that, notwithstanding the precautionary measures to be taken by States and international intergovernmental organizations involved in the launching of space objects, damage may on occasion be caused by such objects,

Recognizing the need to elaborate effective international rules and procedures concerning liability for damage caused by space objects and to ensure, in particular, the prompt payment under the terms of this Convention of a full and equitable measure of compensation to victims of such damage,

Believing that the establishment of such rules and procedures will contribute to the strengthening of international cooperation in the field of the exploration and use of outer space for peaceful purposes,

HAVE AGREED on the following:

#### ARTICLE I.

For the purposes of this Convention:

a. The term "damage" means loss of life, personal injury, or other impairment of health; or loss of or damage to property of the States or of persons, natural or juridical, or property of international intergovernmental organizations.

b. The term "launching" includes attempted launching

c. The term "launching state" means:

1) A State which launches or procures the launching;

2) A State from whose territory or facility a space object is launched;

d. The term "space object" includes component parts of a space object as well as its launch vehicle and parts thereof.

#### ARTICLE II.

A launching State shall be absolutely liable to pay compensation for damage caused by its space objects on the surface of the earth or to aircraft in flight.

#### ARTICLE III.

In the event of damage being caused elsewhere than on the surface of the earth to the space object of one launching State or to persons or property on board such a space object by a space object of another launching State, the latter shall be liable only if the damage is due to its fault or the fault of persons for whom it is responsible.

\*\*\*\*\*Article IV omitted\*\*\*\*\*

#### ARTICLE V.

1. Whenever two or more States jointly launch a space object they shall be jointly and severally liable for any damage caused.

2. A launching State which has paid compensation for damage shall have the right to present a claim for indemnification to the other participants in the joint launching. The participants in a joint launching may conclude agreements regarding the apportioning among themselves of the financial obligation in respect of which they are jointly and severally liable. Such agreements shall be without prejudice to the right of a State sustaining damage to seek the entire compensation due under this Convention from any or all of the launching States which are jointly and severally liable.

#### ARTICLE VI.

1. Subject to the provisions of paragraph 2. of this article, exoneration from absolute liability shall be granted to the extent that a launching State establishes that the damage has resulted either wholly or partially from gross negligence or from an act or omission done with intent to cause damage on the part of the claimant State or other natural or juridical persons it represents.

2. No exoneration whatever shall be granted in cases where the damage has resulted from activities conducted by a launching State which are not in conformity with international law including, in particular, the Charter of the United Nations and the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies.

----- Balance of this Convention has been omitted.-----

### REGISTRATION OF SPACECRAFT TREATY (1975)

The main provision of this treaty was the requirement that all non-military spacecraft (satellites) must be registered with the Secretary General of the United Nations. Today, almost a 1,000 operating or "dead" spacecraft are on file with the U.N.

### AGREEMENT GOVERNING THE ACTIVITIES OF STATES ON THE MOON AND OTHER CELESTIAL BODIES (1979)

The key provision calls for all nations to share equitably in the moon and its resources. It states that "neither the surface or subsurface of the moon, nor any part of the natural resources in place, shall become the property of any nation." The Moon Treaty (as it is referred to) was never ratified by any country that has space capability.

### EUROPEAN SPACE DEBRIS CONFERENCE

At the initiative of the European Space Agency (ESA), the First European Space Debris Conference was held in Darmstadt, Germany in 1993 gathering together 251 world experts from 17 countries including China, India, Japan, Russia and the USA.

The main conclusions of the conference were:

\_ Ground based observations with radar and optical facilities revealed the existence of about 7000 objects in space, which do not represent any immediate danger. However, adequate actions need to be taken in order to keep the debris hazard for manned and unmanned missions within safe limits. Of most concern are the long-term prospects of the debris hazard, particularly in those regions in space which are most heavily used, e.g. low Earth (900\_ 1500 km) and the geostationary orbits (about 36.000 km).

\_ Clean up of debris is neither technically practical nor economically feasible. The thrust of the action must be towards preventing the creation of debris. Several preventive measures have been identified and implemented in space activities, such as releasing residual propellant in rocket upper stages to preclude a subsequent explosion generating many fragments, and the reorbiting at higher altitudes of geostationary satellites at the end of their mission in order to avoid collision with operational satellites. Further possibilities include destructive re\_entry into the atmosphere to burn up the spacecraft or selection of orbital parameters to limit the lifetime.

\_ The space debris problem can only effectively be solved by international cooperation. Bilateral discussions between space agencies on the debris issue have taken place since

1987. In 1993, the First European Space Debris Conference became the first multilateral discussions among representatives of NASA, the Russian Space Agency, Japan and ESA to present results of their research activities, to identify possibilities for cooperation and to discuss methods for debris reduction.

In view of the high interest this ESA initiative has stimulated, a second conference on the debris issue is set to occur in 1996.

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Excerpts from a recent case discussing the French and NASA satellite programs:

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Arianespace promoted itself as having more reliable launch dates and better financial arrangements than NASA's space shuttle. Its manual stated the following advantages of the Ariane rocket over the space shuttle: (1) five\_ to six\_week payload integration time versus three to four months for the space shuttle; (2) higher accuracy of in\_orbit injection due to the use of an inertial guidance system as opposed to a "spinned, non\_guided motor as PAM stage;" (3) better payload environment which allowed the use of lighter satellite structures; and (4) was automatic and therefore did not require the safety checks of a manned vehicle.

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Re NASA contracts: Article 7, however, is not the only exculpatory clause in the contract. The contract also contains article 14 which provides, in pertinent part: "14.2 Purchaser and [McDonnell Douglas] (the Parties) will respectively utilize their property and employees in STS Operations in close proximity to one another and to others. Furthermore, the parties recognize that all participants in STS Operations are engaged in the common goal of meaningful exploration, exploitation and uses of outer space. In furtherance of this goal, the parties hereto agree to a no\_fault, no\_subrogation, inter\_party waiver of liability pursuant to which each party agrees not to bring a claim against or sue the other party, NASA, or other NASA customers and agrees to absorb the financial and any other consequences for Damage it incurs to its own property and employees as a result of participation in STS Operations during Protected STS Operations, irrespective of whether such Damage is caused by NASA, Purchaser, [McDonnell Douglas], or other NASA customers participating in the STS Operations, and regardless of whether such Damage arises through negligence or otherwise. Thus, the Parties, by absorbing the consequences of damage to their property and employees without recourse against each other, NASA, or other NASA Customers participating in STS Operations during Protected STS Operations, jointly contribute to the common goal of meaningful exploration of outer space.

"14.3 The parties agree that this common goal will also be advanced through extension of the inter\_party waiver of liability to other participants in STS Operations. Accordingly, the parties agree to extend the waiver as set forth in Paragraph 14.2 above to their respective contractors and subcontractors at every tier, as third party beneficiaries, whether or not such contractors or subcontractors causing damage bring property or employees to a United States Government Installation or retain title to or other interest in property provided by them to be used, or otherwise involved, in STS Operations. Specifically, the parties intend to protect these contractors and subcontractors from claims, including 'products liability' claims, which might otherwise [be] pursued by the Parties, or the respective contractors or subcontractors of the Parties, or other NASA customers or the contractors or subcontractors of other customers. Moreover, it is the intent of the parties that each will take all necessary and reasonable steps in accordance with Paragraph 14.5 below to foreclose claims for Damage by any participant in STS Operations during protected STS Operations, under the same conditions and to the same extent

as set forth in Paragraph 14.2 above, except for claims between Purchaser and its other contractors or subcontractors and claims between McDonnell Douglas and its contractors and subcontractors.

"14.4 The parties intend that the inter\_party waiver of liability set forth in Paragraph 14.2 and 14.3 above be broadly construed to achieve the intended objectives.

"14.5 Purchaser and [McDonnell Douglas] will each require the following to agree to the waiver of liability set forth in Paragraph 14.3 above: (i) all persons and entities to whom it assigns all or part of its right to Launch and Associated Services; (ii) any person or entity to whom it has sold or leased or otherwise agreed, prior to the completion of NASA's launch services for a particular Payload, to provide all or any portion of its Payload or Payload services; (iii) all its prime contractors; and (iv) all its subcontractors who will have persons or property involved in STS Operations during Protected STS Operations.

"14.6 Words or phrases capitalized but not defined in this Article 14, shall have the meaning attributed to such words or phrases in the NASA/Purchaser Launch Services Agreement for WESTAR VI.

"14.7 In the event NASA and Purchaser should modify any of the provisions entitled 'Damages to Persons or Property involved in STS Operation,' [the inter\_party waiver] [McDonnell Douglas] and Purchaser agree to modify this Article 14, to conform to such modification."

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