THE 1992 INTERNATIONAL INSTITUTE OF SPACE LAW of the INTERNATIONAL ASTRONAUTICAL FEDERATION MOOT COURT

In the Spring of 1991, the Association of the U.S. Members of the IISL formed a committee to prepare a host program for the IISL at the World Space Congress. Because this was an experimental, pilot program, the committee decided to begin on a small, manageable scale and it opened the competition only to law schools in the Washington, DC area. Three schools responded to the challenge: the Georgetown University Law Center; the George Washington University National Law Center; and the American University, Washington College of Law. Each school fielded two teams. The problem addressed by the teams involved the rescue and return of a non-functioning satellite, with intertwined issues of liability for damage and competing ownership claims.

The competition began with a preliminary round to select the top two teams to argue at the World Space Congress. Each team briefed and argued both sides of the problem. Briefs were graded by Professors Hamilton DeSaussure, Glenn Reynolds, Francis Lyall, and Ram Jakhu. Oral arguments were graded by two panels consisting of Neil Hosenball, George Robinson, John Gantt, Paul Uhler, Bruce Kraselsky, and Janice Bellucci. In an extremely close competition, the top two teams were both from the George Washington University National Law Center.

The final round was held on September 2, 1992, at the Georgetown University Law Center. The judges were The Honorable Manfred Lachs (President of the IISL), The Honorable Gilbert Guillaume, and The Honorable Stephen Schwebel, all of the International Court of Justice. After a well-attended and intellectually stimulating argument, the judges complemented both teams for a job well done. In a very close decision, the Applicant team of Stanimir Alexandrov and Tod Cohen prevailed over the respondent team of Steven Hawk and Peter Borys.

The problem, along with the briefs of the teams arguing in the final round, follow.

PEOPLE'S REPUBLIC OF BETA V. THE FEDERATED STATES OF ASTRA

The Government of the Republic of Beta (hereinafter "Beta") and the Federated States of Astra (hereinafter "Astra") have submitted the dispute set forth, below, by special agreement to the International Court of Justice pursuant to Article 36, paragraph 1, of the Statute of the Court. No question of the jurisdiction of the Court is at issue. Appendix A hereto contains a list of relevant treaties to which both Beta and Astra are Parties. The Applicant is Beta and the Respondent is Astra. Both Parties hereto have stipulated that the information set forth in THE PROBLEM, below, is true. On February 15, 1991, the International Court of Justice entered a preliminary order accepting jurisdiction.

THE PROBLEM

On February 3, 1987, two satellites named DELTA and THETA were launched from the territory of Astra by NEXUS, a reusable, manned launch vehicle. This launch vehicle was designed, manufactured, and launched by the Government of Astra. Satellite DELTA, owned by the socialist Government of Beta, is a multi-function satellite designed for commercial and military uses and is powered by a small nuclear power source. The military function is the provision of precise navigation for the ground-based, nuclear ballistic missile weapons system of Beta. The satellite is an innovative design that permits it to function in geostationary orbit for the purpose of remote sensing, as well as telecommunications. Satellite THETA is a commercial telecommunications platform powered by solar cell arrays and owned by a private corporation, ET&A, Inc., registered in the State of Cartel (hereinafter "Cartel"), Astra's immediate neighbor to the north. Both satellites were deployed in a parking orbit 160 miles above Earth on February 6, 1987. After deployment, the satellites were to use their perigee kick motors (PKMs) to reach the geostationary orbit. The PKMs were incorporated into payload assist modules (PAMs), all of which were manufactured by the same private corporation in Astra. At this time, the satellites and launch vehicles were not registered in Astra, or any other state, nor was there notification of the Secretary General of the United Nations.

Neither satellite achieved proper geostationary orbit. Subsequent investigations revealed that the PAMs failed because of PKM problems and, as a result, both satellites were stranded in useless low-Earth orbits, unable to function for purposes of telecommunications, remote sensing, or ballistic missile navigation.

In May 1990, the insurers for the satellites, Floyd's of Sundown, Inc., (hereinafter "Floyd's") incorporated in Astra, paid on a total loss basis (that is, the satellites had to be completely destroyed or useless for their intended purposes before insurance proceeds would be paid out). Satellite DELTA of the Republic of Beta was insured for 100% of its actual value plus launch costs to geostationary orbit; satellite THETA was insured only for 49% of a 10-year projected consumer-use gross profit. Floyd's insured both satellites and because the likelihood of recovering the satellites was extremely remote should they become the subject of a claim payment, neither insurance policy addressed transfer of title in the event of payment of a

claim. However, both satellite owners selected the NEXUS manned vehicle in part because of its potential recovery capability.

Premium costs for third party liability insurance coverage for the satellites were shared equally between the satellite owners and the PAM manufacturer. This coverage was required by the Government of Astra to be maintained indefinitely while the satellites were in outer space.

ET&A, Inc., which owned THETA, determined the satellite to be a total loss and undertook no efforts to control it or to recover it after payment of insurance proceeds. Although Beta had no ability to exercise useful control over DELTA, it determined that recovery and return of the satellite for refurbishing and relaunch was less costly than building a new satellite and, consequently, undertook negotiations with the State of Change (hereinafter "Change"), an immediate neighbor to the west, to recover DELTA with a reusable, manned vehicle intended to become operational in 1993. However, no guaranteed recovery date was given since funding for this manned vehicle was sporadic.

In June 1990, the main body of DELTA was struck and severely damaged by a small navigation satellite, OMICRON, not registered pursuant to the Registration Convention, and owned by the government of Astra. The navigation satellite had been non-functional for five years and had been undergoing orbital decay for three years without any ability of Astra to control it.

Floyd's approached Astra in July 1990 with a plan to retrieve DELTA and THETA for their salvage value. Astra had the capability of using the NEXUS manned spacecraft to attempt the recovery and, on the basis that Floyd's agreed to pay Astra for the costs of the recovery of the satellites, plus a profit equal to 20% of the insured value of each, Astra agreed to perform the mission. An additional motivation for Astra to enter into the "salvage" agreement was to clear the parking orbit of the disabled satellites, thereby reducing the risk of their collision with functioning satellites in the future. Astra also was concerned about the probability that the damaged DELTA satellite would disintegrate further and increase the collision potential in this important parking orbit used for similar orbit transfer maneuvers.

In February, 1991, Beta registered the DELTA satellite in its own registry and furnished to the Secretary General of the United Nations the information required by Article 4 of the Registration Convention. In March, 1991, Astra registered the DELTA satellite in its registry and furnished to the Secretary General of the United Nations the information required by Article 4 of the Registration Convention. The agreement between Beta and Astra for the launch of DELTA did not address the registration of DELTA.

The recovery mission undertaken by Astra in April 1991 was successful and DELTA and THETA were recovered. During the in-orbit recovery, however, the crew of NEXUS caused damage to DELTA. The damage occurred when the crew cut open the satellite to remove the nuclear power source, which it left in orbit. Floyd's had consented to this procedure in its salvage agreement with Astra.

Beta now claims DELTA and seeks its immediate return. The Government of Beta considers that it owns the satellite and, under its law, property of the state is never abandoned. Further, Beta has never made a declaration that it had abandoned its satellite and has offered to compensate the Government of Astra for one-half of the cost of the recovery mission, less the impact damage to DELTA caused by OMICRON, and less the damage caused to DELTA during its recovery.

Astra refuses to return DELTA and asserts its right to recover DELTA and THETA under the agreement with Floyd's. Astra also refused Beta's claim for damage to DELTA, which was made pursuant to the Liability Convention. Both Astra and Beta have agreed that the International Court of Justice may resolve issues relating to the Liability Convention in lieu of a Claims Commission.

REQUESTS FOR RELIEF

Both Parties have requested relief, and the Court has certified the relevant issues in the following manner:

I. Whether Astra violated international law in recovering DELTA and whether Astra should be ordered to return DELTA to Beta.

II. Whether Astra is liable to Beta for damage to DELTA caused by the collision with OMICRON and for damage caused to DELTA during the recovery operation.

APPENDIX "A"

The People's Republic of Beta and The Federated States of Astra, parties to the dispute over which the International Court of Justice has determined it may exercise jurisdiction, are also Parties to the Treaty on Principles Governing the Activities of States in the Exploration and Uses of Outer Space, Including the Moon and Other Celestial Bodies (1967 - also known as the Outer Space Treaty of 1967); the Agreement on the Rescue of Astronauts, the Return of Astronauts, and the Return of Objects Launched into Outer Space (1968 - also known as the Rescue and Return Treaty); the Convention on International Liability for Damage Caused by Space Objects (1972 - also known as the Liability Convention); and the Convention on Registration of Objects Launched into Outer Space (1975- also known as the Registration Convention). The People's Republic of Beta is a Party to the Agreement Governing the Activities of States on the Moon and Other Celestial Bodies (1979 - also known as the Moon Treaty).

IN THE
INTERNATIONAL COURT OF JUSTICE

Case Concerning the Recovery and Return of the Non-Functioning DELTA Satellite

Between:

THE PEOPLE'S REPUBLIC OF BETA,

Applicant

and

THE FEDERATED STATES OF ASTRA,

Respondent.

MEMORIAL FOR THE APPLICANT

Agents for the Applicant:

Stanimer Alexandrov — **Issue I**
Tod H. Cohen — **Issue II**

QUESTIONS PRESENTED

I. Whether Astra's unauthorized retrieval of Delta violated international law and whether Astra must return Delta to its proper owner, Beta.

II. Whether Astra, which could retrieve Omicron, is liable for damages to Delta for allowing Omicron to collide with Delta and for intentionally and deliberately harming Beta's satellite Delta during an illegal act of salvage.

ARGUMENT

I. ASTRA VIOLATED INTERNATIONAL LAW IN RECOVERING DELTA WITHOUT BETA'S PERMISSION AND ASTRA SHOULD BE ORDERED TO RETURN DELTA TO BETA IMMEDIATELY.

Under the Outer Space Treaty,[1] States bear international responsibility for wrongful acts which violate either general international law, outer space law as special law (lex specialis), or both. This is manifested by Article VI and Article III of the Outer Space Treaty.[2] This memorial demonstrates that Astra violated both general principles of international law and outer space law, and that it must return the satellite Delta to the People's Republic of Beta.

A. Payment of Insurance Proceeds to Beta Never Transferred Ownership to Floyd's or Astra.

It is stipulated that Beta owned Delta at launch.[3] Beta respectfully submits that this is the central issue of this case. We begin our analysis with the launch of Delta. None of the events that occurred after launch affected Beta's title to Delta. Moreover, since the stipulated facts recognize that Beta owned Delta at launch, the Respondent bears the burden of proof in establishing any change in ownership.

1. Payment for Total Loss Does Not Automatically Transfer Title Under Insurance Law.

Under Article 38 (1)(a) and (b) of its Statute, this Court applies general principles of international law, and international custom, as evidence of a general practice, accepted as law.[4] Therefore, transfer of title upon payment on a total loss basis in general insurance law, as well as practice (mostly developed in maritime insurance), should be considered in this case.

In insurance law in general, and in maritime law in particular, there is a very important distinction between "absolute (actual) total loss" and "constructive total loss."[5] An absolute total loss is a complete loss to the insured.[6] There is nothing left to be abandoned, salvaged, or transferred to the insurer. When the insured is paid for an absolute total loss, title passes to the insurer without any formal abandonment.[7] The doctrine of constructive total loss gives the insured the privilege of compelling the insurer to pay the full amount at once, but the insurer may demand transfer of title in exchange.[8] This applies when something physically remains of the property and it has sufficient residual value for the insurer to want to receive title upon payment to the insured on a total loss basis.[9]

In the case of Delta, there was a significant residual value, and therefore, a constructive total loss. As the facts show, the loss of Delta was a total loss for insurance purposes, since the stranded satellite was useless for the purposes it had been launched for: telecommunications, remote sensing, and ballistic missile navigation.[10] Still, Beta determined that recovery and return of the satellite for refurbishing and relaunch was less costly than building a new satellite and undertook negotiations with the State of Change to recover Delta.[11] Obviously, Floyd's had the same view since Floyd's approached Astra with a plan to retrieve Delta for its salvage value.[12] Beta asserts that this value was quite significant given the technology transfer implications of this "innovative design."[13] Therefore, there clearly was a residual value after Delta's loss, and the conditions necessary for a transfer of title over this value in the case of a constructive total loss need to be considered.

Transfer of title in the case of a constructive total loss requires an affirmative act of the insured. Normally, this requirement is fulfilled by notifying the insurer that owing to damage done to the subject of insurance the insured elects to take the amount of the insurance in the place of the subject thereof, the remnant of which he cedes to the insurer.[14] In maritime law this act is referred to as "abandonment." Otherwise stated:

> [A]n abandonment is the act by which, after constructive total loss of the subject matter of the insurance, the insured's interest therein is declared relinquished to the insurer, or as it has been said, a surrendering to the underwriter of whatever is left of the property and resorting to the policy of indemnity.[15]

Abandonment in maritime insurance law requires not only the intention to abandon, but "the actual relinquishment of the right of property, for both the intention and relinquishment must concur; the transfer is the essence of the abandonment, for by it the insurer is enabled to appropriate the property, and make it its own."[16]

Beta has never manifested an intention to abandon Delta. Not only has the requirement of specific action not been fulfilled, but a consistent pattern of behavior manifests Beta's intent not to abandon Delta. Beta initially selected the Nexus manned space vehicle in part because of its potential recovery capacity. Moreover, after receiving the insurance payment, Beta undertook negotiations with the State of Change to recover Delta. Finally, Beta registered the satellite. These actions represent a clear

indication that Beta never intended to abandon Delta. In no way can Beta's actions be considered to fall under the definition of abandonment as "the relinquishing of all title, possession, or claim, or a virtual, intentional throwing away of property."[17] Abandonment without intention is impossible,[18] and intention must be proved by visible acts.[19] Consequently, there was no abandonment of Delta, and, since abandonment is a condition precedent for the transfer of title in the case of constructive total loss, there was no transfer.

Additionally, under international law ownership rights to public vessels remain vested in the State until the State itself expressly relinquishes title.[20] The doctrine of sovereign immunity applies to abandonment; therefore, since Delta is property of the State of Beta, it is immune from abandonment. Sovereign immunity from abandonment is recognized in customary international law.[21] A recent decision of a U.S. Federal District Court stated that "warships and their remains which are clearly identifiable as to the flag State of origin are clothed with sovereign immunity and therefore entitled to a presumption against abandonment of title."[22] Since general international law applies in space this Court must apply sovereign immunity from abandonment to space law. Such a ruling would also promote mutual cooperation in space.

Under general insurance law and existing practice, Floyd's could have demanded that Beta formally transfer title as a condition for payment in full. Its failure to do so left title to Delta with Beta. Floyd's may have an action under private international law to claim the return of some of its proceeds from Beta. However, that action is irrelevant to this public international law dispute between the States of Beta and Astra.[23] Beta will consider any claim of Floyd's after Beta recovers Delta.

2. In Space Insurance Law There is No Automatic Transfer of Title With Insurance Payments.

Space insurance law follows the principles of general insurance law and title to Delta remains with Beta.[24] If insurance is placed on a total loss basis, as in this case, the insured is paid "the maximum limit for any loss regardless of whether or not the satellite could be used commercially. The insurers might then require rights of salvage on a commercially viable craft."[25] No automatic transfer of title is provided for in cases of payment for total loss.[26]

A lack of automatic transfer of title is supported by the only precedent of retrieving satellites for which insurance was paid on a total loss basis - the Western Union's Westar VI and Indonesia's Palapa B-2. This case illustrates the application of the constructive total loss concept in outer space.

3. International Space Law Practice Allows for Title Transfer Only with an Explicit Agreement.

In 1984, the space insurance market was hit by the $180 million double loss of Westar VI and Palapa B-2 on a single shuttle flight.[27] The insurance policies on the two satellites were silent on the question of the standard of loss governing a launch failure. Another major problem was the lack of standard salvage agreements which could be used as models for the contracts to be negotiated.[28] In this regard the case is very similar to the one before this Court.

In order to secure title and effectuate retrieval of the two satellites, the underwriters had to negotiate eight agreements with the owners of the satellites. Among them were an agreement settling the Indonesian government's insurance claim and a contract with Western Union authorizing the underwriters to recover Westar.[29] The underwriters' authority to pursue recovery of Palapa and Westar in connection with their payment of the original satellite owners' insurance claims emerged after months of negotiations.[30]

The ability of the spacecraft underwriters to take title to the satellites and pursue recovery on their own was by no means a foregone conclusion at the outset of negotiations with the insureds. The Indonesian government, in particular, sought full recovery of insurance proceeds while retaining title to Palapa.[31] As a result, transfer of title to the spacecraft became a central element of the insurance settlement discussions. The underwriters convinced the Indonesians that a formal transfer of title and control would not constitute an "abandonment" of the property, which the policy prohibited. Ratification of the contract on July 14, 1984, in Indonesia, signalled the first time that insurers had ever assumed ownership of a satellite.[32] Western Union also required an explicit agreement for transfer of title to Westar.[33]

As a result of the Palapa and Westar recoveries, space insurance practice changed. Insurers generally tightened salvage clauses to require owners to transfer satellite title prior to payment, when a launch fails, and a satellite can be retrieved.[34] Nevertheless, in this case it is stipulated that the insurance policy did not address "transfer of title in the event of payment of a claim."[35] Floyd's, an expert in satellite insurance, failed to insist on a transfer of title clause in its insurance policy on Delta. It can be concluded that Floyd's consciously decided against inclusion of such a provision in the policy. Indeed, the facts state that Floyd's considered the likelihood of recovery of the satellite extremely remote should it become the subject of a claim payment.[36] This failure should be held against Floyd's – not against Beta.

Several important conclusions can be drawn from this experience with Westar and Palapa: (a) transfer of title upon payment on a total loss basis is in no way automatic, since it requires the express consent of the satellite's owner evidenced by a written agreement; (b) an insurance policy, containing no specific provision regarding transfer of title, is not interpreted as including such a transfer; (c) the mere fact that a satellite is stranded in orbit does not constitute abandonment. When these conclusions are applied to the case of Delta, it is clear that no transfer of title from Beta to Astra has ever occurred. Moreover, these conclusions should play a greater role in the present case since Delta is not an ordinary commercial satellite, like Palapa and Westar. Delta is a multi-functional satellite with an innovative design permitting it to function for the purpose of remote sensing, as well as telecommunications. Most importantly, however, it also has a military function – to provide precise navigation for the ground-based, nuclear ballistic missile weapons system of Beta. If the concept of an automatic transfer of title does not apply to an ordinary commercial satellite, there are absolutely no grounds to apply it to a satellite with innovative design and technology, and a function that directly impacts the national security of the sovereign State owner.

The precedent of the Palapa and Westar recovery also proved that the underwriters did not rely solely on the provisions of the insurance policies. They took the initiative to secure transfer of title or authority to recover the satellites. Floyd's took no initiative consistent with the Palapa and Westar precedent. Furthermore, Beta was not even notified of the fact that a recovery mission was planned, negotiated and carried out. In the meantime Beta was negotiating with the State of Change for a recovery mission in 1993.[37]

B. Under the Registration Convention, Title to Delta Remains With Beta.

1. Initial Registration Bolsters Beta's Title.

It is well established in space law that States have title to, jurisdiction and control over all registered spacecraft. Articles VII and VIII of the Outer Space Treaty establish the link between registration, legal responsibility, and ownership rights.[38] One of the main purposes of the Registration Convention,[39] in letter and spirit, is to establish the link between State and spacecraft.[40] Registration manifests the public recognition of the rights and duties of a State with respect to its spacecraft. This concept is very similar to registration of ships and aircraft. The significance of the Registration Convention is demonstrated by the high degree of compliance with it.[41]

The fact that Beta owned Delta when the satellite was launched is stipulated. The continuing link between Beta and the satellite was formally manifested by Beta's registration of Delta. This link was not affected by Astra's subsequent registration of the satellite.

2. International Practice Makes Clear that the Owner of a Satellite Registers It.

Under the Registration Convention several States may register a satellite. Article 2 of the Registration Convention[42] requires a State launching an object into outer space to register the object in its own national registry and with the Secretary-General of the United Nations.[43]

Both Beta and Astra are launching States under the Registration Convention. In such cases, the convention requires them to "jointly determine which one of them shall register the object."[44] While there was no agreement between Astra and Beta on the registration of Delta, existing practice serves to clarify the situation by showing which State usually registers a satellite.

The normal State practice is that satellites are registered by the State that owns the satellite and procures the launch.[45] This is good public policy in view of the subsequent obligations of the State of registry (including liability for damage caused by the satellite). Only "in a few cases, [has] a space object . . . been registered by both the State which provided the launch and the State for which the space object was launched."[46] While the State which launches a satellite is not prohibited from registering it, there have been no cases of registration of a satellite by only the launching State when the satellite launched is owned by or for the use of another State.[47] Therefore, existing practice confirms the link between ownership and registration. Thus, the legal status of Delta is determined by examining the actual links that exist between the space object and the launching States (and the State or States of registry).[48]

Several conclusions can be drawn. First, in the absence of an agreement between Beta and Astra on which of the two should register Delta, Beta followed the normal practice of registering a satellite it owns. Second, Astra's registration of the satellite, while not unlawful, does not in any way affect Beta's ownership, since, as the UN practice proves, Astra could register Delta only in its capacity as the State providing the launch.[49] Third, Astra's recognition of Beta's title to the satellite at launch precludes it from any claims to ownership or title based on its own registration.

3. There is No Deadline For Registration, Delta Remained Beta's Property Whenever it was Registered.

Beta's delay in registering Delta has no legal consequences and does not in any way affect its title. The Registration Convention requires registration to be made "as soon as practicable."[50] This provision is interpreted to mean "as soon as it is feasible to do so."[51] The Convention has no specific requirement with respect to the time in which registration information is to be furnished; States are free to decide on their own.[52] A study of registration practice demonstrates that registration lags many months behind the actual launching.[53]

The UN record reveals that States usually register objects three to five months after launch.[54] For the great majority of launches, notifications were submitted to the United Nations two to six months after launch, and in a few cases, more than a year after launch.[55] In none of these cases has registration been qualified as "late" and in no case has the State of registry suffered any negative consequences. Accordingly, the period of time between the launch and the registration of the satellite by Beta (during which Beta was actively negotiating for a recovery of Delta), did not in any way affect Beta's rights to Delta.

C. Astra's Retrieval of Delta Without the Consent of Beta Violated International Law.

Satellite retrieval "is one particular area that seems to lend itself more to maritime precedent than to either aviation or land commerce practices. This is an area pertaining to the recovery of property which is lost, abandoned or in peril."[56] Salvage in admiralty law consists of three basic elements. First, property which is the subject of a salvage claim must have been in either actual danger or in imminent risk of danger.[57] Whether such was the case for Delta is arguable, at best. Second, even in a situation of imminent danger maritime law subjects salvage to the provisions of contracts manifesting the consent of the owner to the salvage.[58] Both maritime and space salvage require either salvage agreements or other appropriate arrangements.[59] Adequate arrangements are also needed in case rescue operations fail or are only partially successful.[60] None of these arrangements are present in this case. Third, although salvors in maritime law are entitled to an award, title is not transferred to the salvors.[61] There may be cases of lawful salvage without contractual arrangements when the property is abandoned.[62] Maritime law allows salvage of abandoned private vessels or property on navigable waters by anyone who, in good faith, takes possession of the property as a salvor.[63] For public vessels, however, whether abandoned[64] or in distress, there is no equivalent international recognition of contract or voluntary salvage.[65] Since Delta is owned by the government of Beta, it could not be the subject of lawful salvage without a contractual arrangement. Any attempt at unauthorized or voluntary salvage by a foreign State becomes trespass, theft or piracy, depending on the circumstances.

Astra also claims that a motive for retrieving Delta was to clear the parking orbit of disabled satellites, thereby reducing the risk of their collision with functioning satellites.[66] This is not unfamiliar to maritime law in the case of a ship, whether wrecked, sunk, or abandoned, that poses a hazard to navigation. In maritime law, however, the legal right to destroy or remove abandoned vessels of another nation on the high seas in peacetime is received only from the flag State, and is normally allowed, if it is a private vessel, only after permission is secured from the titled owner.[67] Outer space, like the high seas, is acknowledged to be free for the use of all.[68] By analogy, authority to deorbit and destroy or to permit others to deorbit and destroy identifiable space objects would be confined to the owner.

In summary, Astra's removal of Delta under these circumstances does not qualify as salvage and violates international law. The consequences of this violation must next be addressed.

D. Astra Should be Ordered to Return Delta to Beta.

Beta's title was not affected by Astra's retrieval of the satellite. Article VIII of the Outer Space Treaty provides that "Ownership of objects launched into outer space . . . is not affected by their presence in outer space . . . or by their return to the Earth. Such objects . . . found beyond the limits of the State . . . on whose registry they are carried shall be returned to that State . . . ."[69] The drafters recognized the possibility that the space object could be "lost," and thus, be able to be "found." The emphasis, however, is not on the finding (or, read broadly, "saving") of space objects, but on their return once found. Article VIII has more to do with preventing States from claiming ownership to other's space objects than with the issue of salvage.[70]

Article 5 of the Rescue Agreement upholds the clear and explicit obligation to return a space object.[71] Astra can not claim that Delta was "lost" and that it could not negotiate with Beta prior to retrieval. Space objects are not "lost" in the sense of a ship which has foundered or sunk at sea and with which there is no longer any visual, radio, or radar contact.[72] Delta's location was known to all parties and ownership of it was not lost. Further, as discussed, Beta is not only the owner of Delta, it also has a more legitimate claim as a State of registry than does Astra.[73] Finally, Beta submits it is a rather basic and fundamental principle of law, recognized by all civilized nations, that property should be returned to the rightful owner. Consequently, Delta must be returned immediately to Beta.

II. ASTRA IS LIABLE TO BETA FOR DAMAGE TO DELTA CAUSED BY THE COLLISION WITH OMICRON AND FOR DAMAGE CAUSED BY DELTA DURING THE RECOVERY OPERATION.

Beta raises its damage claims under two different general bases: space treaties allow a claim for damages for the harms caused by Astra; and customary international law allows for Beta's claim for damages against Astra.[74] For the determination of damages this Court must examine the legal rights and duties established for outer space activities.[75] Applying these standards it is clear that international law requires that Astra be held liable for the damages caused to Delta.

The first basis for Beta's claims are two space treaties.[76] The Outer Space Treaty provides Beta with recourse for the harms caused by Astra.[77] Article VII provides that:

> Each State Party to the Treaty that launches or procures the launching of an object into outer space . . . 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 . . . .[78]

The Liability Convention, enacted to supplement the Outer Space Treaty, provides the most important basis for Beta's claims against Astra.[79] Under Article VIII, section 1: "A State which suffers damage . . . may present to a launching State a claim for compensation for such damage."[80] The cause and fault requirements are listed in Article III:

> In the event of damage being caused elsewhere than on the surface of the earth to a 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.[81]

Two preliminary requirements have already been met by Beta: Omicron and Delta are "space objects,"[82]; and Astra is the "launching State" of Omicron.[83]

The second basis for Beta's claim – customary international law, State practice, and case law – also establishes Beta's rights against Astra for damages.[84] "[T]here is a customary rule of international law which provides that States, . . . are liable for damages caused to other States . . . particularly where those acts are committed with a high degree of State participation and supervision. . . ."[85] The Trail Shelter Arbitration,[86] which held Canada liable for pollution which harmed the United States, confirms that States are liable to other States when they damage them or their property even when the State causing harm does not enter the other's jurisdiction. Overall, it is evident that international law provides several bases for Beta to assert its damage claims against Astra.

Synthesizing these sources, space treaties and customary international law, three conditions are needed to hold Astra liable in damages: (1) damages must have been sustained by Beta; (2) these damages must have been caused by Astra; and (3) these harms must have been caused by a breach of a duty, i.e., they were Astra's "fault." These elements will be examined with respect to the two instances of damage to Delta caused by Astra.

A. Astra is Liable to the State of Beta for the Damage to Delta Caused by Astra's Satellite Omicron.

1. Damage was Sustained by the State of Beta as a Result of Omicron's Collision with Delta.

As has been explained in part I, title to Delta still resides with Beta.[87] Notwithstanding the payment of the insurance claim to Beta from Floyd's, Beta suffered damages when Omicron collided with Delta. Insurance compensation only means that damages are perhaps to be reduced; it does not mean that damages may not be recovered by Beta.[88]

The total loss payment by Floyd's does not begin to restore Beta to the position it was in prior to the damage by Omicron. Under maritime law, even after payment for total loss a ship still retains residual value.[89] Before the collision, Beta owned a functioning satellite which was temporarily stranded in the wrong orbit. Delta had considerable residual asset value. It was an innovative one-of-a-kind, multi-function satellite with commercial and military uses. The successful rescue of Intelsat 6 by the U.S. Space Shuttle demonstrates the potential to replace the PKM/PAM in orbit and send the satellite to its desired location. Furthermore, many of the problems encountered by the Intelsat 6 mission were obviously avoided in the recovery of Delta since the statement of facts show the success of the mission. Absent the damage by Astra, Beta could have pursued such an option for Delta and recouped some of its lost time, value, and expenses. Thus, Beta suffered actual loss as a result of the diminished residual value of Delta after the collision.

Beta suffered other damages as well. Beta expended additional funds due to the collision when it had to recalculate how to recover Delta with the State of Change's assistance. Furthermore, the damage will extend the time Beta requires to put Delta back into service and recoup lost profits. These types of damages are recoverable under the Liability Convention and international law.[90]

2. The Damage was Caused by Astra.

It is undisputed from the stipulated facts that "Delta was struck and severely damaged by . . . Omicron [which was] owned by the Government of Astra."[91] It is clear that if the accident had not occurred, damages would not have been sustained. Since Omicron was Astra's property, the damages sustained by Beta were caused by Astra.[92] Under Article VIII of the Outer Space Treaty, Omicron remained Astra's property even though it had never been registered, had been inactive, and was uncontrollable for five years.[93] Any finding by this Court holding that

Omicron was no longer the property of Astra would defeat the purpose of the Liability Convention.[94] Consequently, Astra caused the harm to Beta.

3. Astra was at Fault for the Collision.

Beta respectfully submits that the facts, law, and international public policy require finding that Astra breached a legal duty by not safely disposing or retrieving Omicron and was, therefore, at "fault" for the collision with Delta. This legal breach is apparent when applying generally recognized conditions for fault. A State whose space object causes damage to another State on the Earth's surface is absolutely liable.[95] Liability for damages caused in outer space by a space object, however, are determined by fault. The Liability Convention was not intended to unduly hamper activities in outer space, and States are considered equally at risk for their use of outer space.[96] A legal definition of "fault" is not provided in the Liability Convention. It instead invokes principles of justice and equity. Therefore, other sources may be examined to provide the appropriate definition of fault.

"Fault" generally means that liability will attach to an actor who causes harm intentionally or negligently.[97] Negligence is the breach of duty of reasonable care, i.e., failure to exercise the degree of prudence considered reasonable under the circumstances.[98] Thus, under international law a duty of care must be breached before liability attaches for unintentional conduct.[99]

International case law, publicists, and analogies to other law establish a duty of care in outer space that was breached by Astra.[100] The duty of care that Astra breached was the failure to destroy, clear, remove, retrieve or even to consult with other States about the danger posed by the unregistered satellite Omicron before it collided with Delta. International case law establishes a duty to prevent harm to other States caused by objects or actions under the first State's ownership, control, or jurisdiction. As this Court stated in the Corfu Channel Case, there is an obligation of every state "not to allow knowingly its territory to be used for acts contrary to the rights of other states."[101] This duty extends to instrumentalities of a State outside of the State's territory.[102] The inactive satellite Omicron remained under Astra's ownership and jurisdiction and was such an instrumentality.

Inactive satellites present a great harm to active satellites.[103] Leaving an inactive satellite in a frequently used transfer orbit makes it reasonably foreseeable that collisions will occur.[104] Imposing liability on Astra does not require this Court to impose absolute liability for failure to eliminate inactive satellites; Beta only asks this Court to hold Astra liable for foreseeable collisions. Present tracking technology often allows enough time for prevention of the harm and avoidance of collisions.[105] Astra completely ignored and never registered Omicron which "had been non-functional for five years and undergoing orbital decay for three years."[106] Astra knew of the potential harm which Omicron posed and as a sophisticated space power with a manned reusable shuttle it had the capability to remove the harm. Nonetheless, Astra failed to consult with other States to prevent the harm as Article IX of the Outer Space Treaty requires.[107] Internationalorganizationshave recommended that a duty of care be imposed for harms caused by failing to remove inactive satellites. "The Report of the Second United Nations Conference on the Exploration and Peaceful Uses of Outer Space (UNISPACE 82) recommended that satellite owners be responsible for removal."[108] It was recommended that the duty be mandatory once appropriate technology exists for removal.[109] Astra's retrieval of Delta is conclusive evidence that Astra possesses the appropriate retrieval technology.[110] Therefore, this Court should follow the recommendations of these international panels and hold Astra at fault for not removing Omicron.

Satellite insurers have noted the emerging duty of care requiring removal or destruction of inactive satellites.[111] Additionally, international publicists have recommended a finding of negligence once it is proven that one party caused the harm to the other party's satellite.[112] One has recommended that willful negligence be found when a State possesses the ability to retrieve an inactive satellite but does not do so.[113] This is the exact situation confronting this Court.

Maritime law furnishes additional support proving that Astra breached a duty of care in allowing the collision to occur.[114] Under maritime law, failure to clear diligently or mark the position of a wrecked or sunk vessel and any resulting damage to other parties subjects the first party to liability.[115] A similar standard makes sense for outer space law requiring the rescue or disposal of inactive satellites.[116]

Beta lacked the capability of preventing the harm, so the responsible party who failed to fulfill its duty was Astra.[117] A finding of no liability would be inequitable. "If a State causes damage through negligent conduct when carrying out its space activity and if negligence cannot be proved, that State carries out its activities at the expense of other States."[118] Finding liability against Astra promotes the goals of the space law treaties and conventions because if liability is not imposed, inactive satellites will continue to "interfere with the basic principle of the freedom of exploration and use of outer space and with free access to celestial bodies."[119] Allowing Astra to profit from and get away with its behavior "may also be contrary to the interests of all states and may not promote international cooperation and friendly relations."[120]

In summary, Beta petitions this Court to hold that where a State knows of the danger posed by its inactive satellite, has the capability of removing that danger, yet fails to remove the danger or even consult with other States endangered by the satellite, the State is negligent and has breached its duty of care to other States.

B. Astra is Liable to the State of Beta for the Damage to Delta Caused by Astra's Intentional Acts Conducted During Recovery.

Applying many of the same standards used above, it is clear that Astra is also liable to Beta for damages caused by Astra in the recovery operation of Delta.

1. Beta Suffered Damages by the Disposal of Delta's Nuclear Power Source.

The remaining residual value of Delta was decreased by Astra when it purposely disposed of Delta's nuclear power source (NPS). Astra itself admitted the value of Delta when it chose to engage in the rescue mission, i.e., if it had been valueless Astra would not have attempted a recovery mission. The Liability Convention has a broad definition of damages.[121] Accordingly, Beta has several bases for establishing damages from the recovery mission. The physical harm caused by opening Delta and removing its NPS is clearly damage. Further, the release of the NPS into outer space could make Beta liable for interference with other satellites or absolutely liable if the debris fell to earth.[122] Consequently, it is clear that Beta suffered actual and potential damages.[123]

Any attempt by Astra to lessen its liability because it disposed of the NPS for purported "safety" reasons should be ignored by this Court. Since the entire retrieval mission breached international law, it is irrelevant how Astra conducted the mission. Astra should not owe less in damages to Beta because it attempted, in its illegal recovery of Delta, to prevent harm to its own astronauts by removing the NPS. The only relevant

inquiry is whether Beta suffered damages when Astra illegally retrieved Delta, and the obvious answer is yes.

2. The Disposal of the Nuclear Power Source was Caused by Astra. Astra's Intentional Conduct During the Recovery Operation Establishes both Fault and Liability.

The stipulated facts prove that the damage Delta suffered was caused by Astra. Moreover, the harm was deliberate and intentional. Astra admitted that it opened Delta and disposed of its NPS. Because this conduct was intentional, Beta does not have to prove negligence. Intentional acts which cause harm are considered "fault" and make Astra liable to Beta.

The Liability Convention is easily interpreted to prohibit deliberate harm by States upon another State's satellites. If damage is recoverable for negligent acts, it only follows that deliberate harms are prohibited and therefore damages recoverable for them.[124] Likewise, it is untenable to argue that Astra's astronauts are not "space objects" and therefore that Astra is not liable for the deliberate damages inflicted upon Delta. Article III of the Liability Convention holds States liable for damage due to the "fault of persons for whom it is responsible."[125] Further, the Outer Space Treaty makes clear that States are responsible and liable for the activities of their citizens in space. It would be an absurd result to allow Astra to escape responsibility by holding that somehow its astronauts were not "space objects" and therefore outside the scope of liability.[126]

Maritime law, and by analogy space law, prohibit deliberate interference or destruction of another State's vessels even if the vessel poses a danger.[127] Intentional harms caused during a salvage operation expose the offending party to liability for damages and forfeiture of any salvage award.[128] Additionally, negligent maritime salvage acts also make a State liable for damages.[129] Astra's actions should similarly be condemned.

Present international space law and practice hold that only the registered owner of a satellite can approve a salvage attempt.[130] If any State can, on its own whim, retrieve other States' satellites, the other State may consider this to be an act of aggression.[131] Delta was, after all, a highly innovative one-of-a-kind satellite with a sensitive military function. "[A]ny unauthorized attempt on the part of one state covertly or overtly to salvage or remove inactive 'abandoned' spacecraft of another state from orbit will trigger international incidents and, possibly, military conflict."[132] An unauthorized retrieval can also be considered trespass which is prohibited under international law.[133] It may even be an act of "international theft or piracy . . . ."[134] Hence, it is critical for this Court to find that Astra's actions constitute fault and Astra is liable for damages.

C. International Law and the Outer Space Treaties Require that Damages Include the Return of Delta and a Substantial Payment to Beta.

Under the Liability Convention, "[t]he term "damage" means . . . loss of or damage to property of States . . . ."[135] The amount of damages are governed by Article XII of the Liability Convention:

> The compensation which the launching State shall be liable to pay for damage . . . shall be determined in accordance with international law and the principles of justice and equity, in order to provide such reparation in respect of the damage as will restore the . . . State . . . to the condition which would have existed if the damage had not occurred.[136]

Damages, therefore, are broadly defined under the Liability Convention to assure that victims will be fully compensated.[137] Applying this standard to Astra's conduct provides this Court with the necessary support to hold Astra liable and award damages to Beta.

Applying Article XII and international practice, a tribunal should restore the damaged party to the position that existed prior to the accident.[138] The general international rule for restoration was enunciated in the Chorzow Factory Case,[139] where the Permanent Court of International Justice stated that damages to be awarded "must, as far as possible, wipe out all the consequences of the illegal act and reestablish the situation which would, in all probability, have existed if that act had not been committed."[140] Therefore, all damages, both direct and indirect, are recoverable.[141] As one noted publicist has stated, "all damages must be indemnified pursuant to the [Liability] convention."[142]

Beta suffered moral and nominal damages for the negligent and deliberate harm caused by Astra. Moral injuries, as opposed to material injuries, are those harms which impair the dignity or sovereignty of a State.[143] In international law a moral injury is suffered when one party breaches a treaty obligation.[144] A "moral injury would oblige the violating State to make suitable monetary amends to the injured state."[145] Nominal damages are used to prove legal recognition of a breach.[146] Moral and nominal damages are recoverable under the Liability Convention.[147] Therefore, Beta has a valid claim for moral and nominal damages against Astra for the treaty breach in harming Delta through an unauthorized and prohibited retrieval, and then not returning Delta as required under the Rescue Agreement.[148]

Any of this Court's unresolved doubts regarding damages suffered by Beta should be construed in Beta's favor, since justice and equity would be served. Beta has generously offered to pay Astra one half of its retrieval costs, minus the damages suffered by Delta.

Holding Astra liable serves the goals of the Liability Convention.[149] These goals include full restoration of victims and the desire to decrease hazardous activities by imputing a higher standard of care.[150] Damages must be awarded to Beta for the harms inflicted upon it by Astra.

CONCLUSION

The People's Republic of Beta respectfully requests that this Court find that Astra violated international law in recovering Delta and is obligated to return the satellite to Beta. Beta also respectfully prays that this Court find Astra at fault and award monetary damages to Beta, for allowing the preventable collision between Omicron and Delta.

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1. 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 (hereinafter Outer Space Treaty).

2. According to Article VI of the Outer Space Treaty: "States parties to the Treaty shall bear international responsibility for national activities in outer space . . . whether such activities are carried on by government agencies or by non-governmental entities, and for assuring that national activities are carried on in conformity with the provisions set forth in the present Treaty."

Article III of the Outer Space Treaty requires that States "carry on activities in the exploration and use of outer space . . . in accordance with international law." See also Krystyna Wiewiorowska, Some Problems of Space Responsibility in Outer Space Law, 7 J. Sp. L. 23, 30-32 (1979).

3. App. at 1.

4. Statute of the International Court of Justice, art. 38. The sources of international law that can be used include: international agreements; international custom as evidence of

practice accepted as law; general principles of law recognized by civilized nations; judicial decisions; teachings of the most highly qualified publicists. Learned treatises generally recognize the applicability of principles of maritime, aviation, tort and insurance law as analogies for determining principles in similar situations in outer space law. The use of analogy is justified, particularly where there is no applicable law or practice within the emerging outer space law to apply. See Nicholas M. Matte, ed., Space Activities and Emerging International Law 175 (1984).

5. See, e.g., Standard Marine Ins. Co. v. Nome Beach Lighterage & Transp. Co., 133 F. 636 (9th Cir.), cert. denied, 200 U.S. 616 (1904) (a constructive total loss is one which does not occasion an absolute extinction of the subject of the insurance, but which is of such a character as to authorize the insured to make an abandonment and recover as for a total loss); Hampton Roads Carriers, Inc. v. Boston Ins. Co., 150 F. Supp. 338 (D. Md. 1957) (absolute total loss means a vessel is completely destroyed, while constructive total loss occurs where the vessel has lost its identity and or utility, or where the cost of repairs exceeds the repaired value); Globe Ins. Co. v. Sherlock, 25 Ohio St. 50, 64 (1874) (when vessel ceases to exist in specie an absolute total loss occurs); John A. Appleman & Jean Appleman, 6 Insurance Law and Practice with Forms 2-86 (rev. 1970) (same); Stephen L. Liebo, 6 Appleman's Insurance Law and Practice with Forms 1-13 (Supp. 1991) (same); 15 Couch Cyclopedia of Insurance Law 663-669 (rev. 2d ed. 1983) (same) (hereinafter Couch).

6. Couch, supra, at 664.

7. Appleman, supra, at 110.

8. Couch, supra, at 669.

9. There also exists the concept of "partial loss," which is any loss other than a total loss. Thomas J. Schoenbaum, Admiralty and Maritime Law 585 (1987); e.g., Phoenix Ins. Co. v. McGhee, 18 S.C.R. 61 (Can.). Partial loss may be applicable to the circumstances surrounding the loss of Delta, even though the term "total loss" is used in the facts, since Delta remained intact and retained substantial value. It has been argued that in space there is only a partial loss and not a constructive total loss, at least where an actual destruction of the satellite has not taken place. Delbert D. Smith & Stefan M. Lopatkiewicz, Satellite Recovery: A Lawyer's Perspective, 2 Air & Sp. Law. 1, 16 (1985) (stating the position of Lloyd's of London that the Palapa failure did not constitute total but partial loss).

10. App. at 2 (Delta was "useless for [its] intended purposes.").

11. Id.

12. Id.

13. Id. at 1.

14. Couch, supra note 5, at 747.

15. Id. at 747-48 (emphasis added).

16. Id., at 760; e.g., Appleman, supra note 5, at 87-115.

17. Black's Law Dictionary 2 (5th ed. 1979); e.g., Couch, supra note 5, at 747-853.

18. Roebuck v. Mecosta County Rd. Comm'n, 229 N.W.2d 343, 345 (Mich. Ct. App. 1975); see The St. Johns, 101 F. 469 (D.N.Y. 1900) (abandonment must be a voluntary act of the insured and the insured may properly refuse to abandon after receiving the full amount of the insurance policy).

19. Dober v. Ukase Inv. Co., 10 P.2d 356, 357 (Or. 1932).

20. A. Rubin, Notes and Comments: Sunken Soviet Submarines and Central Intelligence; Law of Property and the Agency, 69 Am. J. Int'l L. 855 (1975).

21. Digest of U.S. Practice in International Law 999-1006 (Dept. of State 1980).

22. U.S. v. Steinmetz, 763 F. Supp. 1293, 1299 (D.N.J. 1991).

23. There is a great distinction between the international law governing interactions between States in space and the law governing interactions involving private corporations and their space activities. See generally Glenn Reynolds & Robert Merges, Outer Space Problems of Law & Policy ch. 8 (1989).

24. There are several types of insurance in space law. Delta was insured for "launch failure coverage." This coverage includes cases in which the satellite fails to reach the desired orbit and/or suffers loss or damage that renders it commercially inviable. Rod Margo, Some Aspects of Insuring Satellites, 681 Ins. L.J. 555, 559 (1979); Edward Ridley Finch, Jr. & Amanda Lee Moore, Astrobusiness: A Guide to the Commerce and Law of Outer Space 43 (1985). Launch coverage extends from liftoff to orbit insertion, station keeping, and testing until commissioning, usually 180 days after launch. Policies cover performance of the launch vehicle, the kick motors, the upper stage vehicle, and the deployment and initial operation of the satellite. Launch coverage protects for total losses in case of catastrophe, launch incident, or failure to reach a workable orbit. William E. Thiele, Assessing the Role of Insurance in the Commercialization of Space, in 3 American Enterprise, The Law and The Commercial Use of Space 137, 146 (1987).

25. Margo, supra, at 560 (emphasis added).

26. Id.

27. The $180 million loss was shared in amounts up to five percent of the total by 200 companies that held parts of the satellite coverage. Problems in the payload assist module placed both satellites in improper orbits. For details on Westar VI and Palapa B-2 losses, see: Aviat. Wk. & Sp. Tech., Apr. 30, 1984, at 17-18; id., May 4, 1984, at 17; id., May 7, 1984, at 13; id., Sept. 3, 1984, at 53; id., Oct. 1, 1984, at 28; id., Sept. 1, 1986, at 33; Insurer Delighted by Space Rescue and Implications, N.Y. Times, Nov.13, 1984, at C3; Robert M. Jarvis, The Space Shuttle Challenger and the Future Law of Outer Space Rescues, 20 Int'l Law. 591, 608-12 (1986); Smith & Lopatkiewicz, supra note 9, at 1; Finch & Moore, supra note 24, at 41.

28. Jarvis, supra, at 608-12.

29. Smith & Lopatkiewicz, supra note 9, at 1.

30. Id. at 16.

31. Id.

32. Id. at 17.

33. The Westar recovery agreement was also very complicated. It had to distinguish between primary and excess insurers and to deal with the time of the transfer of title. In the end, title to the spacecraft transferred to the excess insurers on November 7, 1984, one day before the shuttle recovery mission started. Id.; e.g., Aviat. Wk. & Sp. Tech., Sept. 3, 1984, at 53.

The rescue mission was successful, and the satellites were retrieved. Eventually they were sold by the insurers to recover part of their losses. Aviat. Wk. & Sp. Tech., Sept. 1, 1986, at 33.

34. Economist, Apr. 27, 1985, at 97.

35. App. at 2.

36. Id.

37. Id.

38. According to 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 . . . while in outer space or on a celestial body." Article VII holds that the State that launches or procures the launch of a space object into outer space is "internationally liable for damage" caused by that object.

39. Convention on Registration of Objects Launched into Outer Space, Jan. 14, 1975, 28 U.S.T. 695, T.I.A.S. No. 8467, 1023 U.N.T.S. 15 (hereinafter the Registration Convention).

40. I. H. Ph. Diederiks-Verschoor, Registration of Spacecraft, in New Frontiers in Space Law 125 (Edward McWhinney & Martin A. Bradley eds. 1969).

41. See Application of the Convention on Registration of Objects Launched into Outer Space, UN Doc. A/AC.105/382, at 3 (1987) (Of 1,474 functional space objects launched in 1,200 launchings between September 15, 1976 and October 31, 1986, 1,438, or 97.6%, were registered with the United Nations.) (hereinafter Application).
42. Registration Convention, supra, art. 2.
43. "A launching State means a State which launches or procures the launching of a space object or a State from whose territory or facility a space object is launched." Registration Convention, supra note 39, art. 1.
44. Id. art. 2, ¶ 2.
45. Application, supra note 41, ann. III.
46. Id. at 4.
47. Id.
48. See J. Sztucki, Legal Status of Space Objects, 9 Colloq. L. Outer Sp. 108 (1967) (noting that actual links are the proper factors for evaluating legal status).
49. Theoretically, Astra could also register Delta because it was launched from the territory of Astra. This is not done in practice. It serves to show, however, that while there are different grounds for registering a satellite (since there are several definitions of a launching State), registration in itself does not affect ownership.
50. Registration Convention, supra note 39, art. 4, ¶ 3.
51. See Eilene Galloway, Convention on Registration of Objects Launched into Outer Space 13 (1975) (commenting on Article 4).
52. For the drafting history of the Registration Convention, particularly in view of the time frame for registration, see: Galloway, supra note 51, at 13; COSPAR Information Bulletin #9, July 1962, Special Issue, pt. I, at 6-7.
53. See Aldo Armando Cocca, Convention on Registration of Objects Launched into Outer Space, in Manual of Space Law 182 (Nandasiri Jasentuliyana & Roy S.K. Lee eds. 1979).
54. UN Doc. ST/SG/SER.E/1-126.
55. Application, supra note 41, at 3.
56. Hamilton DeSaussure, The Application of Maritime Salvage to the Law of Outer Space, 28 Colloq. L. Outer Sp. 127, 127 (1979).
57. See generally G. Gilmore & C. Black, The Law of Admiralty, ¶ 8-10, at 563 (2d ed. 1975). For additional information of maritime salvage law and contracts see: G. Bruce, Maritime Law of Salvage (1983); Convention for the Unification of Certain Rules of Law Relating to Assistance and Salvage at Sea, Sept. 23, 1910, 37 Stat. 1658 (1913), U.S.T.S. 576; Craig Fishman, Space Salvage: A Proposed Treaty Amendment to the Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Space, 26:4 Va. J. Int'l L. 965, 978-88 (1986).
58. Because salvage operations often must begin as soon as possible if they are to have any chance of being successful, the development of standard salvage contracts - which leave little, if anything, to negotiate - has occurred. The most popular is the so-called Lloyd's Open Form. Jarvis, supra note 27, at 612.
59. Id. at 609.

One of the major problems prior to the rescue of the Palapa B-2 and the Westar VI satellites was the time-consuming negotiations which had to be conducted in order to conclude suitable contract arrangements. See supra text & accompanying notes 27-33.

60. Jarvis, supra note 27, at 613.
61. Gilmore & Black, supra note 57, at ¶ 8-10, 563; M. Norris, The Law of Salvage 246 (1958, Supp. 1974).

The award usually does not exceed one half to one third of the value of the salvaged property. Gilmore and Black, supra. Beta has offered to pay fifty percent of recovery costs, App. at 3; this is more than customary salvage fees and is more than generous. Salvage awards greater than half of the value of the object salved are extremely rare. DeSaussure, supra note 56, at 128.

62. In classical maritime law any piece of property on navigable waters is considered derelict when "abandoned and deserted by those who are in charge of it, without hope on their part of recovering it (sine spe recuperandi), and without intention of returning to it (sine animo revertendi)." R. Cargill Hall, Comments on Salvage & Removal of Man-Made Objects from Outer Space, 33 J. Air L. & Comm. 288, 291 (1967).
63. The salvor is not considered an interloper or trespasser, and he may claim a salvage reward if the craft is conveyed to shore. Title, again, does not transfer from the legal owner. Id.
64. Delta was never abandoned. See supra text and accompanying notes 14-19.
65. Article 14 of the Brussels Salvage Convention of 1910 specifically excludes "ships of war or . . . other government ships appropriated exclusively to a public service" from the provisions of the Convention. International Convention for the Unification of Certain Rules of Law Relating to Assistance and Salvage at Sea, Sept. 23, 1910, 37 Stat. 1658 (1913), U.S.T.S. 576. No international suit to recover a reward, either in rem or in personam, presently is granted for salvage services rendered to public craft.
66. App. at 2. The veracity of this claim must be questioned since Astra has allowed Omicron to linger in orbit for five years.
67. Hall, supra note 62, at 292-93.
68. See Outer Space Treaty, supra note 1, art. I.
69. Outer Space Treaty, supra note 1, art. VIII (emphasis added).
70. Fishman, supra note 57, at 969-70.
71. Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space, art. 5, ¶ 3, Apr. 22, 1968, 19 U.S.T. 7570, T.I.A.S. No. 6599, 672 U.N.T.S. 119 (hereinafter the Rescue Agreement).
72. See Gorove, supra note 71, at 93; DeSaussure, supra note 56, at 129. Moreover, a vessel is considered to be derelict and therefore subject to the law of finds only when it has been abandoned by its owner without hope of recovery and with no intention of returning. Note, Recovery Operations in Offshore Waters, 5 B.U. Int'l L. 153, 161 (1986). As shown in Section I.A.1. this clearly is not the case of Delta.
73. See supra text and accompanying notes 42-49.
74. Both of these sources of international law are recognized by this Court. I.C.J. Statute, art. 38.
75. Carl Q. Christol, The Modern International Law of Outer Space 70 (1982).
76. The Rescue and Return Agreement by implication provides another footing for Beta's claim against Astra. By requiring the return of a space object found on one's territory, Rescue Agreement, supra note 71, art. 5 § 4; the Agreement implies that failure to return the object will result in a breach of international law and that damages can be claimed. See Christol, supra note 75, at 204 (highlighting requirement of return).
77. Outer Space Treaty, supra note 1.
78. Id. art. VII.
79. Convention on International Liability for Damage Caused by Space Objects, Mar. 29, 1972, 24 U.S.T. 2389, T.I.A.S. No. 7762 (hereinafter Liability Convention).
80. Id. art. VIII, § 1.
81. Id. art. III.
82. See Howard Baker, Space Debris: Legal & Policy Implications 63 (1989) (artificial earth satellites are space objects).

83. See supra text and accompanying notes 43.
84. See Staff of Senate Comm. Aero. & Sp. Sciences, 92d Cong., 2d Sess., Convention on Int'l Liability for Damage Caused by Space Objects: Analysis & Background Data 44 (Comm. Print 1972) (maintaining that customary international law furnishes a basis for a damage claim if the space treaties are found to be insufficient) (hereinafter Senate Report); Christol, supra note 75, at 88 (describing international law obligations outside of space treaties). See, e.g., Nicholas M. Matte, Space Activities & Emerging International Law 5 (1984) (explaining that General Assembly Resolution 1721(XVI) (1962) applied international law to outer space).
85. Senate Report, supra, at 44.
86. (U.S. v. Can.), 3 R. Int'l Arb. Awards 1965-66 (1929).
87. See supra text and accompanying notes, pt. I.
88. See Marjorie M. Whiteman, 2 Damages in International Law 1303 (1937) (under section 12 of the Act of June 23, 1874, dealing with international claims, damages can still be awarded even with the payment of insurance) (citing 18 Stat. 247 (U.S); John Davis, Report 11 (1877).

If Beta succeeds, in this action, Floyd's might have a private law action available to recover some of its payment, but that is irrelevant to this Court's inquiry. See supra note 19 and accompanying text.

89. Hall, supra note 62, at 294.
90. See Christol, supra note 75, at 94 (damages under the Liability Convention include: "lost time and earnings; . . . destruction or deprivation of use of property; . . . loss of profits resulting from an interruption of business activities; . . . reasonable costs for the repair of property that has been wrongfully harmed; costs incurred in mitigating existing wrongful harms . . . .").

Beta also has a claim for the insurance premiums it paid to Floyd's. International claims practice has allowed for insurance premium claims. See Whiteman, supra note 88, at 1305, 1318-20 (describing Great Britain, United States and French claim commission agreements and statutes allowing for insurance premium claims suffered as a result of the destruction of ships and cargo). Equity also allows for these claims. Id. at 1322 (citing H. Ex. Doc. 29, 40th Cong., 3d sess., p. 178).

91. App. at 2.
92. See Hall, supra note 62, at 295 (inactive satellites are still the property of the launching or procuring state).
93. Id.; Outer Space Treaty, supra note 1, art. VIII.
94. See Steven Gorove, Developments in Space Law: Issues & Policies 133 (1991) (inactive satellites are still the responsibility of the owner).
95. Liability Convention, supra note 79, art. II.
96. Matte, supra note 84, at 99, 307.
97. Senate Report, supra note 84, at 25.
98. Id.
99. See Marc S. Firestone, Comment, Problems in the Resolution of Disputes Concerning Damage Caused in Outer Space 59 Tul. L.R. 747, 767 (1985) (describing common law, civil law, Soviet law and admiralty law's standard for fault for unintentional conduct). The common law defines negligence as a form of legal carelessness, its goal to delineate the parameters of permissible conduct. O. W. Holmes, The Common Law 1 (1949), cited in Firestone, supra, at 766. Civil law looks to the obligation owed to society for a determination of fault or negligence. M. Plainol, 2 Traite Elementaire de Droit Civil, No. 863, at 464 (11th ed. 1971), cited in Firestone, supra, at 766. Admiralty law and formerly Soviet law also looked for the obligation to act within permissible constraints. See Osakwe, An Examination of the Modern Soviet Law of Torts, 54 Tul. L. Rev. 1, 12 (1979) (describing Soviet law), cited in Firestone, supra, at 766; Gilmore & Black, supra note 57, § 7-3, at 488, cited in Firestone, supra, at 766.
100. It is true that the mere fact of collision does not automatically impute fault. See Firestone, supra, at 769 (quoting admiralty law, where "the mere fact of impact has no legal consequence." The Java, 81 U.S. (14 Wall.) 189 (1872)). Here, however, a breach of duty existed. But see Firestone, supra, at 767 (As a student at Tulane University he has argued that, "In the context of space law, however, there is no standard of conduct and the concept of fault is meaningless.").
101. (U.K. v. Alb.) 1949 I.C.J. 4, 22 (Judgment of Apr. 9). The right of innocent passage through an international straight can and should be extended to outer space.
102. See The Trail Shelter Arbitration (U.S. v. Can.), 3 R. Int'l Arb. Awards 1905, 1965-66 (1929) (holding Canada liable for pollution damage in the United States).
103. Hall, supra note 62, at 291; Baker, supra note 82, at 9 ("Collision and interference are the major risks space debris pose to . . . active payloads.").
104. Baker, supra note 82, at 81.
105. See Margo, supra note 24, at 557 ("The constant monitoring of space objects by NORAD and other bodies ensures that in most cases undesired alterations in a space object's flight path may be detected and corrected before any harm is caused."); Hall, supra note 62, at 292 ("[I]nactive unmanned spacecraft in earth orbit are not necessarily lost – most can be tracked and their positions computed and projected into the future for many days.").
106. App. at 2.
107. Outer Space Treaty, supra note 1, art. IX. See also International Convention on Salvage, 1989, art. 11, reprinted in 20 J. Mar. L. & Com. 589 (1989) (declaring a need for cooperation among salvors and other interested parties); Rescue Agreement, supra note 71, art. 5(4) (implying the need for cooperation between the recovering State and the launching State, in this case Beta).
108. Baker, supra note 82, at 106; cf. id. ("It was proposed in 1981 that efforts should be made to provide all geostationary satellites with the means to remove themselves from GEO at the end of their active lifetimes.").
109. Id.
110. See generally American Inst. of Aeronautics & Astronautics, Orbital Debris Mitigation Techniques: Technical, Economic, and Legal Aspects 5 (Special Project Report, 1992) (discussing duty to impose upon States to mitigate debris and stating that "there are some technologically mature and economically feasible measures that can be readily applied in minimizing debris.").
111. David Finch, Insurance Rates on Space Ventures Affected by Shuttle, Reuters N. Eur. Ser., Nov. 15, 1984, in LEXIS, Nexus lib., Omni file (James Barrett, President of International Technology Underwriters, which provided financing for recovery of Palapa B, stated, "it might be required that a spacecraft in an orbit that might cause a collision be removed.").
112. See Hall, supra note 62, at 297 (recommending automatic negligence for failure to remove an inactive satellite); Baker, supra note 82, at 71.
113. Baker, supra, at 71.
114. See Jarvis, supra note 27, at 595 (arguing that maritime standards should apply to satellite dangers); Hamilton DeSaussure, Do We Need a Strict, Limited Liability Regime in Outer Space, 22 Colloq. L. Outer Sp. 117, 119 (1979) (explaining the close relationship between maritime and space law).
115. Hall, supra note 62, at 293-94.

116. Jarvis, supra note 27, at 595. See also Finch, supra note 111 ("[The] increasing congestion in space requires some action to remove disabled satellites along the lines of the 'removal of wreck' required in the maritime world.")
117. See Baker, supra note 82, at 85 (arguing that liability should attach to the party which could have prevented the harm).
118. Id.
119. Gorove, supra note 94, at 167.
120. Id.
121. See infra text and accompanying notes 135-138.
122. See Gorove, supra note 94, at 159, 164 (describing the higher degree of radiation damages and possible catastrophic effects).

Even if title has been completely divested from Beta to Astra this does not mean that other states which suffer harm would consider Beta blameless. See Liability Convention, supra note 79, art. 4 (joint and several liability).
123. Astra did not prevent any additional harm by removing Delta's nuclear power source. Instead, it created the potential for greater harm. Under international law, there is a duty not to contaminate outer space. Gorove, supra, at 167. Release of radioactive materials is pollution that threatens other satellites. See Radioactive Space Debris Study Cites Hazards to Satellites, Aviat. Wk. & Sp. Tech. 19, 20 (Sept. 22, 1986). Not only did Astra harm Delta but it put other satellites at risk, by releasing the nuclear material from Delta's protective shell. The facts here fail to demonstrate that Astra took any precautions when it disposed of Delta's nuclear power source.
124. Gorove, supra note 94, at 148; Christol, supra note 75, at 115 (intentional conduct is fault).
125. Liability Convention, supra note 79, art. III. See also Baker, supra note 82, at 84 (arguing that space objects are all objects that are launched).
126. See Outer Space Treaty, supra note 1, arts. VI, VII (States are responsible and liable for all national activities and harms to other States occurring in outer space).
127. Hall, supra note 62, at 294. The general practice and rules dictate that:
Neither the multilateral [Geneva] Convention on the High Seas [1958, 12 U.S.T. 2312, 450 U.N.T.S. 82.] nor the Convention for the Safety of Life at Sea (1960) accord a legal right to any nation other than the nation of the derelict vessel's nationality to sink or otherwise destroy these vessels irrespective of the hazards they represent for maritime navigation.... In maritime law, the legal right to destroy abandoned vessels of another nation on the high seas in peacetime is only received from that flag state, and is normally accorded, if it is a private vessel, after permission is secured from the title owner and insurance company.
Id. See supra text and accompanying notes 66-67.
128. The Royal Oak, 99 F. Supp. 880, 884-85 (S.D.N.Y. 1951).
129. Jarvis, supra note 27, at 610 n.82 ("[A] salvor who performs in a negligent manner can be the subject of a lawsuit."). See also Petition of Alva S.S. Co., Ltd., 616 F.2d 605, 609-10 (2d Cir. 1980) (salvage award decreased due to damage caused by salvor); Rudolph, Negligent Salvage: Reduction of Award, Forfeiture of Award or Damages?, 7 J. Mar. L. & Com. 419 (1976) (discussing general practice to reduce salvage award).

If this Court determines that maritime law is not applicable to outer space, Astra could be liable for being an officious intermeddler when it caused damage to Delta, even if Astra maintains that it disposed of the nuclear power source merely to eliminate harms. See Jarvis, supra, at 610 ("[S]ea law is very different from shore law, where the well-meaning interloper has not only not been rewarded for its efforts, but has often found itself the subject of lawsuits for negligence in the performance of the rescue.").
130. Hall, supra note 62, at 295-96 (citing customary international law and Article VIII of the Outer Space Treaty). See also Christol, supra note 75, at 204 (stating that under present international law there are no provisions for unauthorized salvage); Baker, supra note 82, at 71 (maintaining that only the registered state has the right to authorize salvage); Craig Covault, Talks Continuing on Retrieval of Palapa, Aviat. W. & Sp. Tech., Apr. 30, 1984, at 17 (noting that the United States would not agree to retrieve Palapa until explicit approval had been granted by Indonesia).
131. Hall, supra note 62, at 290.
132. Id.
133. See Haley, Space Law & Government 151 (1963) (discussing trespass).
134. Hall, supra, at 293.
135. Liability Convention, supra note 79, art. I(a).
136. Id. at art. XII.
137. Christol, supra note 75, at 104.
138. Id. at 92.
139. (Germ. v. Pol.), 1928 P.C.I.J. (ser A) No 17, at 47 (Judgment No. 13 (Merits)).
140. Id. (emphasis added).
141. Christol, supra note 75, at 104.
142. Aldo Armando Cocca, The Principle of "Full Compensation" in the Convention on Liability for Damage Caused by Space Objects Launched into Outer Space, 15 Colloq. L. Outer Sp. 92 (1972) (emphasis in original).
143. Christol, supra note 75, at 97-98 (citing Cases & Materials on International Law 843 (Friedman, Lissitzan & Pugh eds. 1969).
144. Christol, supra, at 98.
145. Id. (quoting L. Oppenheim, 1 International Law 352 (8th ed. Lauterpact 1955)).
146. Ronald E. Alexander, Measuring Damages Under the Convention on International Liability for Damage Caused by Space Objects, 6 J. Sp. L. 151, 155 (1978).
147. Christol, supra, at 109; Alexander, supra, at 154-55 ("[T]he goals of equity and justice could permit an award-making tribunal to determine that the rights of an injured party had been wrongfully infringed by the space object's launching State.").
148. Punitive damages may also be imposed on Astra for the deliberate destruction of Delta. See Alexander, supra, at 156 (arguing that the Liability Convention allows for punitive claims). But see Christol, supra, at 103-04 (arguing that punitive damages are not allowed under the Liability Convention; at most they would be characterized under a different name).
149. The Liability Convention's goal was to provide redress for victims. See Alexander, supra note 146, at 152 (restoration of victim is paramount goal) (citing G.A. Res. 2733B (XXV) of Dec. 16, 1970; G.A. Res. 2777 (XXVI) of Nov. 29, 1971.); Christol, supra note 75, at 118 (noting that the travaux prepatories of the convention made clear that the Convention was to have a pro-victim bias); Jarvis, supra note 27, at 601 n.47 (stating that the damage-causing State "will almost certainly be found liable if the Convention can be invoked.").
150. Carl Q. Christol, International Liability for Damage Caused by Space Objects, 74 Am. J. Int'l L. 346, 371 (1980).

IN THE
INTERNATIONAL COURT OF JUSTICE

Case Concerning the Recovery and Return of the Non-Functioning DELTA Satellite

Between:

THE PEOPLE'S REPUBLIC OF BETA,
Applicant

and

THE FEDERATED STATES OF ASTRA,
Respondent.

MEMORIAL FOR THE RESPONDENT

Agents for the Respondent:

Steven R. Hawk — Issue I

Peter Borys — Issue II

QUESTIONS PRESENTED

I. A. Did Astra violate international law by salvaging the damaged DELTA satellite from an important parking orbit?

B. Should Astra now return DELTA to Beta even though Beta accepted full payment for the satellite from the insurer?

II. A. Is Astra liable to Beta for the damage to DELTA caused by the out-of-control and decaying OMICRON satellite?

B. Is Astra liable for the damage caused by removal of the radioactive power source from DELTA?

ARGUMENT

I. ASTRA DID NOT VIOLATE INTERNATIONAL LAW WHEN IT RECOVERED DELTA AND SHOULD NOT BE REQUIRED TO RETURN DELTA TO BETA.

The basic framework of the international law of outer space is set forth in four major United Nations treaties. The Outer Space Treaty of 1967 set forth the general principles agreed to by the community of nations for the governance of space activities.[1] Three subsequent international agreements on space activities followed and expanded upon the Outer Space Treaty.[2] This action comes to this Court to resolve the competing claims of the sovereign States of the Federated States of Astra, as respondent, and the People's Republic of Beta, as applicant. Both States are Parties to the relevant agreements mentioned above. (R.4).[3]

A. ASTRA DID NOT VIOLATE INTERNATIONAL LAW WHEN IT RECOVERED DELTA PURSUANT TO A CONTRACT WITH FLOYD'S.

1. Floyd's owns DELTA by virtue of Beta's acceptance of a payment on an insurance claim for total loss from Floyd's. Beta relinquished title to DELTA to Floyd's, an Astran corporation.

a. Insurance law provides for transfer of title in the case of a total loss payment.

Astra respectfully submits that it violated no international law in its actions to rescue and retrieve the failed DELTA satellite. Astra asserts that DELTA was no longer the property of Beta by virtue of Beta's acceptance of an insurance claim payment for the total loss of DELTA. Beta accepted a payment by Floyd's of Sundown (Floyd's) for the full value of DELTA as a payment for "total loss" of the satellite. (R.2). Floyd's now owns DELTA. It is customary in insurance law for a payment of the full value of property to be termed payment on a "total loss" basis.[4] Such a payment carries with it the transfer of title to the property from the insured to the insurer.[5]

i. Under the general principles of maritime insurance, applied by analogy, all proprietary rights in an insured object are vested in the insurer upon payment of insurance moneys on a total loss basis.

The facts stipulate that "total loss" in the contract between Beta and Floyd's was defined as where the satellite was "completely destroyed or useless for [its] intended purposes . . . ." (R.2). At the time Beta accepted payment for the full value of DELTA plus the launch costs, DELTA was "useless for [its] intended purposes." (R.2). Prior to examining the practice of spacecraft insurance and the legal consequences of a payment for a "total loss," Astra draws the Court's attention to the practice of marine insurance.

Marine insurance provides the best analogy applicable to spacecraft insurance.[6] In marine insurance there are two kinds of total losses: actual total loss and constructive total loss.[7] An actual total loss occurs where the vessel is destroyed or where the damage is so extensive that no value remains.[8] In the case of an actual total loss there is nothing remaining for title to attach to. Constructive total loss occurs when the subject matter insured is abandoned because its total loss appears unavoidable or when it could not be preserved from total loss without expenditures beyond its value.[9] A leading treatise on maritime law states that "the tenderment of abandonment, either accepted by the underwriter or binding upon him because of the existent facts, is a prerequisite to a claim under a constructive total loss."[10] Thus, the insured may not lodge a claim for total loss unless it abandons the property insured.[11] In a constructive total loss, upon abandonment and acceptance of that abandonment by the insurer, all title to the property is transferred to the insurer.[12]

Since the satellite here remained intact, there was indeed residual value and there was also an abandonment of DELTA by Beta as a result of claiming and accepting an insurance payment on a total loss basis.[13] Under a maritime analogy, the payment must be viewed as payment on a constructive total loss basis under which Beta thus abandoned DELTA and title therefore vests in Floyd's. A similar result should be found in the practice of spacecraft insurance.

ii. The general practice in spacecraft insurance supports Astra's position that title to DELTA transferred from Beta to Floyd's upon payment of insurance moneys for a total loss.

The Applicant would have this Court believe that the customary practice in space insurance practice supports the Applicant's position that payment by the insurer on a total loss basis does not divest the insured of proprietary interest in the insured property.[14] The instances of loss and subsequent retrieval in space satellite insurance are too few to establish such a precedent.

Insuring spacecraft has always been done on a case-by-case basis. Each insurance arrangement is handled by unique contract negotiations and agreements. Satellite insurance has developed into three basic forms of insurance corresponding to the phases of a satellite's life: pre-launch insurance, launch insurance, and satellite life insurance.[15] Launch insurance covers the vehicle and its payload from the time of ignition of the booster to the time the satellite achieves station acquisition or its proper orbit. The payment to Beta by the insurer, Floyd's, was made pursuant to a launch insurance policy, and so we will not be concerned with the other forms of satellite insurance here.

The only instance of launch insurance payment for the loss of satellites subsequently salvaged occurred with the WESTAR-6 and PALAPA-B2 failures and recoveries in 1984. In February of 1984, the Indonesian PALAPA-B2 and Western Union WESTAR-6 communications satellites were deployed from a U.S. Space Shuttle. However, their Perigee Kick Motors (PKM's) failed to ignite properly, leaving them stranded in useless low-Earth orbits, much like DELTA was in this case. In November of that same year, another Space Shuttle mission retrieved both satellites and returned them to Earth for refurbishing and relaunch.[16]

In eight separate agreements worked out between the various insurance underwriters and the original satellite owners, as well as other involved parties, payment of the full insured value was conditioned on the transfer of title and granting of authority to recover

the satellites from the satellite owners to the insurance underwriters.[17] This instance clearly established a principle in spacecraft insurance that payment of a claim for the full value of a satellite on a total loss basis carries with it a transfer to the insurer of title to the satellites. At the very least, Astra would have authority to recover the satellite for salvage. This principle is consistent with the maritime insurance principle of constructive total loss.

In its argument that the practice in spacecraft insurance has shifted to support their position, Applicant has attempted to portray the insurer here, Floyd's, as "an expert on satellite insurance" and thereby somehow more knowledgeable about spacecraft insurance.[18] This assertion is not supported in the record of facts. Indeed, in the absence of facts to the contrary, Beta and Floyd's must be considered to be on an equal footing regarding knowledge of space insurance.

In accordance with the PALAPA and WESTAR precedent, even though the record here does not indicate what negotiations were involved in the insurance contract or in payment of the claim, this Court should rule that title to DELTA passed to Floyd's upon Beta's acceptance of a payment for the full value of DELTA.

b. Beta may not use the dual nature of DELTA, both military and commercial, to circumvent the dictates of insurance law.

The record states that DELTA may perform both military and commercial functions. (R.1). It must be determined whether DELTA should be considered either commercial property or military property. In maritime practice, title to military vessels does not generally transfer to the insurer or salvor as a result of insurance payment, abandonment, or salvage. Indeed, salvage law has generally not been applied to warships.[19] Applicant would have this Court bar any salvage of DELTA on this basis.[20] However, Respondent submits that the military nature of DELTA does not bar the transfer of title to the insurer and does not prohibit any salvage of DELTA by Astra and Floyd's in this case.

Beta obtained insurance on its satellite with a commercial insurer. Beta obtained a policy for the full value of DELTA, not just for the commercial portion of the satellite. (R.2). Such an act must subject Beta to customary commercial insurance law. Beta may not choose to disregard commercial law merely because it asserts that one of the several functions of DELTA happened to be a military function. No military satellite has ever been insured by a commercial underwriter. Beta chose to treat DELTA as a commercial satellite thereby subjecting itself not only to the satellite insurance marketplace, but also to the legal consequences of insurance.

It is necessary to look to the courts of leading civilized nations for guidance in examining whether Beta acted as a sovereign or as a commercial entity when it obtained insurance for DELTA and made a claim for payment under that insurance. In the foreign sovereign immunity context, courts have frequently examined individual affairs of a State to determine whether or not they are sovereign acts or commercial acts. A leading case in the United Kingdom is Trendtex Trading Corp. v. Central Bank of Nigeria, 1 Q.B. 529, 1977 W.L.R. 356, 1977 All E.R. 881 (C.A.) (adopting the restrictive theory of sovereign immunity and finding that sovereign immunity does not apply to certain Central Bank of Nigeria transactions as they were commercial in character). The Judges there looked to the nature of the act to see if it was an act commercial in nature. Id. at 574. The test in the United States is whether the commercial transaction is one only sovereigns engage in. MOL Inc. v. People's Republic of Bangladesh, 736 F.2d 1326, 1329 (9th Cir. 1984) (finding that sovereign immunity does apply to Bangladesh as the nature of the transaction was one that only a sovereign State can enter into). States are not the only parties to place insured satellites into orbit. Private parties, consortiums, and syndicates frequently engage in this activity. Therefore, Beta acted as a private entity and should be amenable to the general rules of insurance.

Additionally, Beta waived its sovereign immunity, for the purposes of salvage, by entering into a commercial insurance contract with Floyd's and into a commercial launch contract with Astra. A waiver of such sovereign immunity has been held, in at least one major maritime nation, to eliminate the bar against salvage of public vessels.[21]

2. The recovery of DELTA by Astra was justified as salvage.

Alternatively, if title did not pass from Beta due to Beta's acceptance of the insurance payment, Astra was still justified in retrieving DELTA under the maritime rules of salvage, used by analogy.

a. The analogy to maritime salvage principles may be used to describe the law concerning Astra's rescue of DELTA.

Although there is no law of space salvage currently recognized in international law, salvage is a field of endeavor that will play as important a role in commercial space activities as it has in maritime law. This is especially likely because of the growing expense of satellites and their insurance. An analogy to maritime salvage is proper for forming law to govern space salvage.[22] The law of maritime salvage has been repeatedly mentioned as a possible model upon which a system of space salvage law may be based.[23] Salvage, in the maritime context, has been defined as the "compensation allowed to persons by whose assistance a ship or her cargo has been saved, in whole or in part, from impending peril on the sea or in recovering property from actual loss in cases of shipwreck, derelicts, or recapture."[24] Astra's recovery of DELTA did save DELTA from the "impending peril" of orbital decay and from actual loss.

The primary source of international maritime salvage law is the 1910 Convention for the Unification of Certain Rules of Law with Respect to Assistance and Salvage at Sea.[25] The 1910 Salvage Convention States that "every act of assistance or salvage (to property) which has had a useful result gives a right to equitable remuneration."[26] This is the principle upon which the 1910 Salvage Convention, and thus our modern law of maritime salvage, is based. Astra's act of salvage, in removing a non-functioning satellite, was useful to space navigation. (R.2). Whenever space debris, such as DELTA, affects the activities of other space users by cluttering up parking orbits, a State may take reasonable steps to protect space users from harm.[27]

In the maritime context, salvage consists of three basic elements: 1) the property subject to a salvage claim must be or have been in actual danger or imminent risk of harm; 2) the salvor must be acting voluntarily in performing the salvage; and 3) the salvage must be successful, even if only partially so. If a salvor can show that it has met all three requirements, it will become entitled to remuneration by the owner of the property, or by the courts, in the form of a salvage award.[28] These requirements are met by Astra's successful salvage of DELTA. The collision with OMICRON clearly shows that DELTA was indeed at substantial, actual risk of imminent harm. Astra acted voluntarily in contracting for and engaging in salvage of DELTA, under no duty to so act.[29] Furthermore, the retrieval was certainly at least partially successful. (R.3).

Maritime law does limit the amount of a salvage award to the value of the property saved. Generally, awards are no larger than half the value of the salvaged property.[30] However, in this case, Astra risked its personnel and its recovery vehicle on a dangerous mission. Astra is owed a higher award than half the mission costs or half the value of the salved vessel. This criteria for assessing awards was set forth by Justice Clifford in an early U.S. Supreme Court case[31] and was followed by the 1910 Salvage Convention.[32]

Astra's position is further supported by the fact that DELTA was in a useless low-Earth transfer orbit for three years at the time of its recovery by Astra. (R.1,3). DELTA was a "derelict" spacecraft

subject to "treasure" salvage.[33] Finally, the low-Earth transfer orbit that DELTA was in may be likened to coastal waters. Astra was justified in its salvage attempt by analogy to the right of salvage by nations in navigable coastal waterways.[34]

b. Astra's rescue of DELTA was justified as a salvage operation pursuant to a contract with the title owner, Floyd's.

In addition to the traditional voluntary salvage described above, salvage may take the form of what is called "contract salvage," in which professional salvors engage in salvage of a vessel or property for the owner pursuant to a contract which specifies the rights and responsibilities of the parties.[35] Astra's efforts to rescue DELTA may also be characterized as a form of contract salvage, rather than voluntary salvage. Astra undertook recovery of DELTA pursuant to an agreement with Floyd's. (R.2). As previously discussed, Floyd's became the title holder to DELTA subsequent to the acceptance by Beta of a payment for total loss.[36] This contract provided for the Government of Astra to rescue DELTA and return it to Earth in return for the costs of the salvage mission plus a profit of 20% of the insured value of the satellite. (R.2). Astra's actions in recovering DELTA fall within the justification of a contract salvage operation pursuant to a contract with the rightful owner of the property, Floyd's.

c. Beta's failure to register DELTA within a reasonable time after launch and its acceptance of payment of insurance on a total loss constituted abandonment of the satellite.

Abandonment is defined by Black's Law Dictionary as "[t]he surrender, relinquishment, disclaimer, or cessation of property or of rights. Voluntary relinquishment of all right, title, claim and possession, with the intention of not reclaiming it . . . . The relinquishing of all title, possession, or claim, or a virtual, intentional throwing away of property."[37] Abandonment includes both the intention to abandon and the external act carrying out that intention, but there can be no abandonment without intention. It has been held that an intention to forsake or relinquish a vessel is an essential element of abandonment. Roebuck v. Mecosta County Road Commission, 59 Mich. App. 128, 229 N.W.2d 343, 345 (1975). Abandonment can arise from a single act or a series of acts. Holly Hill Lumber Co. v. Grooms, 198 S.C. 118, 16 S.E.2d 816, 821 (1941). Abandonment may also be found where there has been a lapse of time, where such lapse of time may be considered evidence of an intention to abandon, and where this is accompanied by acts manifesting such an intention. Ullman ex rel. Eramo v. Payne, 127 Conn. 239, 16 A.2d 286, 287 (1940).

Applicant argues to this Court that Beta did not abandon DELTA, asserting that Beta never manifested the intention to abandon DELTA nor, under maritime insurance law, "the actual relinquishment of the right to the property, for both the right and the intention must concur. . . ."[38] In evidence of Beta's lack of intention to abandon, Applicant notes the rationale for Beta's selection of the NEXUS vehicle for its recovery capabilities and its negotiations with the State of Change for recovery of DELTA.[39] However, the record does not indicate that NEXUS' recovery capabilities were intended to be used by Beta following payment of the insurance claim for total loss. Indeed, the record indicates that Beta chose not to utilize NEXUS' recovery feature, but instead simply instituted negotiations with another State for recovery. (R.3) Furthermore, Applicant's argument rests on an interpretation of intent that is subjective in nature, whereas Respondent herein asks the Court to apply an objective intent. The relinquishment of right to the property and the manifestation of an objective intent to abandon DELTA was satisfied, under a maritime insurance law analogy, by the act of accepting payment on a total loss basis.[40] Beta cannot continue to enjoy the benefits of accepting insurance payment and now assert that it did not abandon DELTA.[41]

There is no known recorded official abandonment of a commercial satellite. And what would constitute an abandonment of a satellite is unclear. By analogy to existing law on maritime abandonment, a renunciation of ownership or failure to use over a given time, in addition to a failure by the owner to initiate salvage might all be factors.[42] Here, Beta's failure to register DELTA for over three years far exceeded the usual time period States have taken to register their space objects.[43] This inaction and substantial delay, when coupled with Beta's acceptance of insurance proceeds on a "total loss" basis, constituted abandonment by Beta.

That the laws of the People's Republic of Beta prohibit the abandonment of State property is irrelevant to this proceeding. It is a recognized principle in international law that "[t]he rights and obligations which a state has under international law are, on the international plane, superior to any rights or duties it may have under its domestic law."[44] The customary international law with regard to insurance and salvage[45] takes precedence over the laws of Beta on this matter.[46] Alternatively, as DELTA possessed substantial commercial functions and Beta's actions in obtaining launch services and commercial insurance for DELTA was commercial rather than public in nature, Beta's prohibition does not apply.[47]

d. The satellite insurer must be allowed the means to offset its payment on a total loss basis by salvaging the satellite.

The spacecraft insurance industry has been severely taxed by the onset of large payments over the last decade and a half.[48] At one point, the payments on losses exceeded the base of premiums and the market capacity.[49] Respondent urges this Court not to adopt a position that would cripple the commercial spacecraft insurance industry. The insurer should be granted title and authority to recover or, in the alternative, salvage a satellite for which it has made payment on a total loss basis.[50] Any other decision would be inequitable, would put the insured in a superior position whereby he may obtain double recovery, and would severely restrain investment in commercial space activities and the insurance necessary to protect them.

e. Astra may engage in space salvage activities unless prohibited by international law.

International law generally allows activities by sovereign States unless the activity is specifically prohibited by international law. See generally The S.S. "Lotus" (Fr. v. Turk.), 1927 P.C.I.J. (ser. A.) No. 10 (Judgment of Sept. 7) (holding that Turkey had jurisdiction to prosecute a French national responsible for an accident on the high seas where Turkish interests were affected). The Lotus doctrine applies in space law. A leading space law scholar has stated "[s]pace law, like all international law, has gone forward on the premise that conduct is presumed to be lawful in the absence of prohibitions."[51] Thus, absent an international norm to the contrary, Astra's space salvage activities are proper and legal.

B. ASTRA IS NOT REQUIRED TO RETURN DELTA TO BETA.

1. Floyd's owns DELTA and cannot be compelled to surrender property that it holds proper title to.

Floyd's obtained title to DELTA upon acceptance of payment on a total loss basis for the full value of DELTA by Beta.[52] As a result, Floyd's held title to DELTA from that point forward. It is a general principle of law and policy that the rightful owner of property may not be summarily relieved of that property without good cause. Beta has been compensated for its loss in full and relinquished its claim to title to DELTA upon acceptance of that compensation. To order Astra to return DELTA to Beta would unjustly deprive Floyd's of its rights as titleholder of DELTA.

2. Space law does not compel Astra to return DELTA to Beta.

The international law of outer space is not silent on the return of recovered space objects. The Outer Space Treaty, the Rescue and Return Agreement, and the Registration Convention are all applicable

to recovery of space objects. However, the provisions of these conventions do not clearly address the situation, as here, where two nations lay claim to a satellite as "States of registry." It is therefore necessary to examine the conventions, their provisions on return of space objects and their definitions of the terms "launching State," "launching authority," and "State of registry" and apply these to the facts here.[53]

a. **Astra is the proper "State of registry" under the Outer Space Treaty and the Registration Convention.**

The Outer Space Treaty provides in Article VIII that "objects 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 Party . . . ."[54] No further elaboration of that provision is made within the Outer Space Treaty. The Registration Convention did expand on this and likewise referred to the State responsible for the space object as the "State of registry." The Registration Convention defines this term as "a launching State on whose registry a space object is carried in accordance with article II."[55]

Learned scholars have long discussed the prerequisite of genuine links to ownership, jurisdiction and control of space objects by States.[56] The Registration Convention establishes the necessary links to the right and responsibility of registration when it defines "launching State" as: (1) a State which launches; (2) procures the launch of a space object; or (3) a State from whose territory or facility a space object is launched.[57] In the case of DELTA, under this definition, Astra qualifies as a "launching State" since it (1) launched DELTA, and (2) DELTA was launched from its territory or facility. (R.1). Beta appears to qualify as a "launching State" since it procured the launch of DELTA as the builder and prospective user of DELTA.

The Registration Convention does recognize the possibility that more than one State may qualify as "launching State." Article II(2) states that

> [w]here there are two or more launching States in respect of any such space object, they shall jointly determine which one of them shall register the object . . . without prejudice to appropriate agreements concluded or to be concluded among the launching States on jurisdiction and control over the space object and over any personnel thereof.[58]

In the facts at issue, no agreement was ever concluded on which of Astra or Beta would register DELTA. (R.3). However, Beta registered DELTA after it had accepted the insurance payment on a total loss basis from Floyd's which transferred title to Floyd's. Therefore, the genuine link to registration - that Beta procured the launch of (i.e. "owned") DELTA - was severed. Beta surrendered jurisdiction and control of DELTA to Floyd's and its agent Astra through acceptance of Floyd's payment. The Convention infers that registration is not to be construed as evidence of jurisdiction and control. However, in its definition of "launching State" the Convention indicates that jurisdiction and control are the primary links to determining the proper "State of registry."[59] Astra respectfully asserts that Beta surrendered jurisdiction and control of DELTA, two proper indicators of ownership, when it surrendered title. Astra remains as the one State standing in real relation to DELTA.

In this case, Astra, the State responsible for the launch, from whose territory the launch took place, and the State whose claim to jurisdiction, control, and ownership was strongest and most legitimate at the time of registry, clearly was the "State of registry." Furthermore, Beta's registration of DELTA may have been void ab initio because it did not register DELTA until after title had transferred to Floyd's by virtue of Beta's acceptance of payment for the full value of DELTA.

b. **Astra is the proper "launching authority" under the Rescue and Return Agreement.**

The Rescue and Return Agreement does not impose an affirmative duty to recover objects outside State territory. In Article 5(2), the Agreement does provide that space objects found outside the territory of the "launching authority" are to be returned to the "launching authority" or held at the disposal of the "launching authority" upon the request of the launching authority.[60] Article 6 of the Rescue and Return Agreement states that "[f]or the purposes of this Agreement, the term 'launching authority' shall refer to the State responsible for launching . . . ."[61] The Agreement does not make any provision for the possibility that there may be more than one "launching authority."[62]

The travaux preparatoires of the Rescue and Return Agreement does refer to the "launching authorities" as those "States . . . able to carry out launchings themselves."[63] Astra is clearly the one State of the two involved here that possesses such ability under the stipulated facts. This view lends credence to Astra's claim as the "launching Authority".

Astra was the State that undertook the launching of DELTA with its NEXUS vehicle and is therefore the "State responsible for launching." By its terms, the Agreement states that the space object "shall be returned to the launching authority."[64] Astra was the "launching authority." Astra is not now obligated under the Agreement to return DELTA to Beta.

The Agreement further provides that the "launching authority" is to bear the expenses of recovery.[65] Astra undertook recovery of DELTA pursuant to a contract with Floyd's, a corporation within Astra, and in so doing Astra and Floyd's bore all the risks and expenses of recovery. At no time has Astra requested reimbursement for recovery expenses from Beta as it is Astra's position that Beta is no longer responsible for DELTA.

3. **Return of DELTA to Beta, in light of its previous receipt of full payment on its insurance claim, would constitute an impermissible double recovery.**

Beta has been fully compensated for its loss of DELTA by payment of an insurance claim for "100% of its actual value plus launch costs." (R.2). To force Astra to surrender DELTA to Beta would have the inequitable effect of placing Beta in a position far better than it was prior to launch of DELTA. In essence this grants Beta a double recovery on its loss, an inequitable result.[66] Furthermore it leaves Floyd's in the inequitable position of being unable to recoup any of its losses from providing insurance to Beta for DELTA.

II. ASTRA IS NOT LIABLE TO BETA FOR DAMAGES CAUSED BY THE DELTA - OMICRON COLLISION AND THE REMOVAL OF THE NUCLEAR POWER SOURCE.

A. ASTRA IS NOT LIABLE TO BETA FOR DAMAGE CAUSED BY THE DELTA - OMICRON COLLISION.

For liability to lie with Astra under treaty or customary international law, there must first exist a standard of care. Further, this standard must be breached. Finally, there must also be resultant and foreseeable harm. If any of these requirements are not satisfied, Astra cannot be held liable for the DELTA - OMICRON collision under any treaty or rule of customary international law.

1. **Astra was not under a duty to remove OMICRON.**

There is no duty in international law imposed upon a State to retrieve an out-of-control satellite. There is no treaty, convention, State practice or case, even implying that Astra was under a duty to remove OMICRON. Astra submits that to impose a blanket duty to remove a satellite without regard for the circumstances in an individual case is unjust and inequitable.

Astra asserts that a space object which ceases to be functional or operational, such as OMICRON, is no longer a space object as used in the Liability Convention but becomes space debris. Astra acknowledges that space debris is a serious problem that requires attention. Yet, to impose a duty upon a State to remove derelict satellites would bring space activities to a stand-still.[67] The cost of

retrieval would be prohibitive. There are hundreds of inactive satellites in Earth orbit. It is simply not feasible to recover them. States should take efforts to minimize the creation of space debris, but retrieval is not currently in the realm of possibilities.[68] Astra respectfully asserts that there is no objective pre-existing duty to remove OMICRON. Applicant admits that "under international law a duty of care must be breached before liability attaches for unintentional conduct."[69] Without an objective pre-existing duty, breach is not possible.[70]

2. Astra was not at fault for the DELTA - OMICRON collision.

A demonstration of fault is required under both international law[71] and the Liability Convention.[72] Negligence requires the breach of a duty.[73] There cannot be a finding of fault under international law or under the Liability Convention where there is no duty or standard of care upon which to evaluate fault.[74] Unlike maritime law, there are no rules of the road that States can look to in space law.[75] It is within the normal course of affairs to allow satellites to drift out-of-control when they exceed their useful life. Astra has done only what all other space powers have done. If there are any standard rules of space operation, Astra has followed them.[76]

Astra submits that fault, as used in the Liability Convention, is objective in nature. A breach is required to find fault. As there is no known objective duty, there can be no breach, and therefore Astra is not at fault.[77] No law should impose sanctions or penalties upon a party unless there is a standard of conduct to be followed. Astra believes that fault, as used in the Convention, is analogous to the concept as it is espoused in insurance law. Insurance law finds fault only where there is negligence.[78]

Beta must share in any evaluation of fault. In space, it is very difficult to say which object impacted upon another object since both are in motion. Here, under the most basic laws of motion, DELTA and OMICRON hit each other. If DELTA were not in an unplanned low-Earth orbit, this collision would never have taken place. (R.2). Ironically, if there was a duty upon Astra, then there must surely have been a duty upon Beta to remove its own non-functioning satellite from an unplanned orbit. Beta had, through access to NEXUS, the ability to remove DELTA expeditiously, but failed even to initiate consultations with Astra.

A finding of fault also requires foreseeability. To foresee a collision beforehand is to vastly overstate the possibility of a space collision. A space collision is expected as only an "extreme rarity."[79] Astra did not and could not have foreseen a collision between OMICRON and DELTA before OMICRON re-entered into the Earth's atmosphere and before DELTA was retrieved.

In summary, negligence cannot be presumed. Beta carries the burden of proof to show that Astra was under an objective duty, that this duty was breached, that the specific kind of harm was foreseeable, and that fault lies with Astra. Astra submits that allowing OMICRON to decay and eventually to dispose of itself by disintegration in the atmosphere was a more prudent and reasonable course of action than risking the lives of Astran astronauts in an expensive and dangerous recovery mission. Indeed, this is the normal course of action in space operations. Of the thousands of objects sent into space, only a few have been retrieved.[80] Astra submits that since the decaying OMICRON was not practically recoverable by Astra, was not under Astra's control, and was treated in accordance with the standard practice of space powers, fault should not lie with Astra.[81]

B. ASTRA IS NOT LIABLE TO BETA FOR ANY UNAVOIDABLE DAMAGE CAUSED BY THE NECESSARY REMOVAL OF DELTA'S RADIOACTIVE POWER SOURCE FOR SAFETY REASONS.

Astra's removal of a radioactive power source was allowed for under international law and the Liability Convention. The removal was necessary for safety reasons. Neither international law nor any Convention requires Astra to unnecessarily risk its personnel or recovery vehicle. Further, the very terms of the Liability Convention indicate that this kind of harm was not meant to be addressed by the Convention.

1. Astra's necessary removal of DELTA's Nuclear Power Source was allowed under international law.

Astra removed the Nuclear Power Source (NPS) with permission of the satellite owner, Floyd's. (R.3). The removal was a reasonable safety precaution. Astra did this to minimize potential harm to its astronauts, recovery vehicle, and ground crew. Astra minimized the danger of concentrated contamination on the surface of the Earth and the adjacent environment.[82] Astra's necessity to remove the radioactive power source does not rise to fault under the Liability Convention. The term "fault," as used in the Convention, cannot be understood as finding liability on a State which acted prudently and judiciously to preserve property and human life. A strict interpretation of "fault" would be unjust.[83]

2. Astra was under no duty to return the radioactive power source.

Astra's decision not to take the NPS into the recovery vehicle is protected by treaty. Astra had the right not to return dangerous and deleterious material under the Rescue and Return Agreement.[84] Any argument that radioactive materials, such as uranium and plutonium, are not hazardous or deleterious must fail. Indeed, one is hard put to name any substance that is more hazardous and deleterious than NPS fuel. Astra had an unfettered right, under the Rescue and Return obligation, not to subject its personnel and equipment to these unwarranted and unreasonable risks. Astra respectfully asserts that protection of human life is the very reason for Article 5(4).[85] Beta has the burden of proof to show that the taking and keeping of radioactive material inside a recovery vessel in close proximity to astronauts was not hazardous.

3. There is no standard of care for retrieval of a satellite with a radioactive power source.

The DELTA affair was the first time a nuclear powered satellite was recovered from Earth orbit. There is no standard or regulation to be followed in these circumstances. While the record is silent on this matter, it is common knowledge that a certain amount of danger is inherent in transporting a NPS. These potential dangers are greater when the NPS has suffered a collision. A leak of radioactivity could contaminate NEXUS and the crew. When the NPS was initially transported into orbit many safety measures were taken. Such measures cannot be taken with a satellite that has been severely damaged by a collision. It is impossible to know the exact condition of a satellite even after an astronaut arrives. A prudent course of action was to remove the NPS, the one major source of potential catastrophic harm. This is what Astra has done. Astra respectfully submits that any duty on its part should first be extended to protect human life.

4. Astra is not liable under the Convention as the damage to DELTA was not caused by a "space object" as used in the Liability Convention.

The only damage in outer space covered by the Liability Convention must be caused by a "space object."[86] The Liability Convention's use of the term "space object" is ambiguous.[87] The travaux preparatoires of the Convention sheds light on this ambiguity.[88] Draft Convention proposals have indicated that the term "space object" was to be limited to equipment and devices.[89] Since the NPS removal damage was not caused by a space object, the Liability Convention cannot apply. Astra respectfully submits that people are not space objects.

C. ASTRA IS NOT LIABLE TO BETA FOR EITHER THE COLLISION DAMAGE OR THE NPS REMOVAL DAMAGE BECAUSE BETA HAS SUFFERED NO HARM.

The presence of harm is a requirement for compensation. In the instant case, Beta was compensated in whole for DELTA. Beta's

demand would result in a double recovery and thus cannot be allowed to stand.

1. **Beta did not own DELTA at the time of the collision or retrieval.**

Title passed from Beta to Floyd's upon acceptance of the insurance payment for total loss.[90] The collision with OMICRON occurred subsequent to this transfer of title. (R.2). Beta cannot now demand compensation for a harm that did not befall it. To do so would be tantamount to a double recovery.

2. **Beta cannot demand double recovery even if title to DELTA resides in Beta.**

Assuming arguendo that Beta retained title to DELTA, Beta still has suffered no compensable damages. Beta received payment in full from its insurer, Floyd's.[91] (R.2). To be fully compensated for a total loss, then to be compensated for a loss resulting from the collision and the removal, would be tantamount to losing the same satellite twice. This would be unjust and inequitable under the Liability Convention.[92] Double recovery is also prohibited under international law. See generally Case Concerning the Factory at Chorzow (Ger. v. Pol.), 1928 P.C.I.J. (ser. A) No. 17, at 47-48 (Judgment of Sept. 13) (stating the principle that reparation must restore the situation to that which would have existed had the wrongful act not been committed). Astra understands this principle to deny double recovery. The insurance payment from Floyd's satisfies the doctrine of restitutio in integrum in the light of Chorzow and echoed in the Liability Convention.[93]

D. BETA'S DEMANDS FOR THE IMMEDIATE RETURN OF THE SALVAGED DELTA WHILE ONLY OFFERING TO PAY ONE-HALF THE RECOVERY COSTS LESS DAMAGES IS UNJUST AND INEQUITABLE.

DELTA belongs to Floyd's. As Floyd's agent, Astra has a greater right of possession as to BETA. Alternatively, Astra can hold DELTA until Beta pays complete compensation for the salvage effort.

1. **Astra is allowed to keep the satellite since title passed from Beta upon acceptance of the insurance payment.**

Astra, as an agent of Floyd's, is entitled to possession of DELTA.[94] To allow Beta to demand possession of property whose title rests in other hands is improper and contrary to general notions of law as practiced by nations.

2. **Astra is allowed to demand full and equitable payment before turning over DELTA to Beta.**

Assuming arguendo that title did not pass from Beta, Astra may still keep DELTA. Astra is allowed to keep DELTA under the rules of maritime salvage, applied by analogy. Astra has the right to hold DELTA until Beta pays Astra for its salvage services.[95] In fact, Astra is within its rights under the Rescue and Return Agreement to demand all expenses incurred in the salvage operation before turning DELTA over to Beta.[96]

No deduction should be made from the full amount due Astra as a result of the OMICRON collision or the removal of the NPS. First, Astra is not at fault for the OMICRON collision. Second, the OMICRON collision is unrelated to the salvage effort. Further, deducting for the NPS removal would not represent sound public policy. Indeed, adopting a policy of deducting from salvage awards acts which are necessary to preserve human life can only increase the potential danger and harm in future space salvage operations. Article XII is clear in that compensation of disputes must be just and equitable.[97] These words cannot be redundant. To deduct necessary salvage costs from the salvage award, or to deduct for the OMICRON collision, would place Beta in a condition better than it enjoyed before these events. This is not allowed under international law. Astra's actions were an attempt to preserve human life and the subject matter itself. They were necessary safety precautions.[98]

The DELTA recovery required the difficult and complex procedure of removing a dangerous component.[99] Under maritime salvage law, the salvage award is limited only by the value of the salved vessel. If the salved value of DELTA is in excess of Beta's offer, Beta should pay more. This is proper, just, and equitable given the risks taken by Astra in recovering DELTA. Astra's salvage mission was a dangerous, difficult, and complex recovery effort. Equity demands payment to Astra of the maximum amount allowed under international law. Astra achieved the first ever safe and successful return of a nuclear powered satellite. If DELTA is as complex, innovative, and necessary to Beta's interests as Beta purports, it should compensate Astra accordingly.[100]

CONCLUSION

Beta behaved like a commercial entity in procuring and insuring its satellite, DELTA. Beta accepted full payment for DELTA from the insurer, Floyd's. Under customary international rules of insurance law, title to DELTA passed from Beta to Floyd's at the moment of acceptance. Astra, as Floyd's agent, was within its rights under international law in retrieving DELTA.

Astra's conduct was also sanctioned under maritime salvage law. DELTA was in a frequently used, low-Earth orbit and was in danger of breakup. DELTA was exposed to peril, as demonstrated by the OMICRON collision. DELTA was taking up valuable parking orbit space. Astra salvaged DELTA for the benefit of all spacefaring nations as well as the insurers of DELTA, Floyd's. Applicant admits that "[i]nactive satellites present a great harm to active satellites."[101]

Astra is not responsible for the OMICRON collision damage. There is no duty to remove inactive satellites from space. Any such duty would be prohibitively expensive. It is the customary State practice of spacefaring nations to allow decaying satellites to continue to decay. Astra did just this. Without a clear standard of duty there can be no breach. Further, OMICRON was completely out-of-control. Without clear standards Astra can do no more than comply with customary State practice. Fault cannot lie with Astra for damage caused by the OMICRON collision.

Astra removed the NPS for proper safety reasons. There is no governing standard on removal of an NPS from space orbit. Unless a standard can be found, and it is proved that Astra breached this standard, fault cannot lie with Astra for any damage caused by removal of the NPS. Further, fault cannot lie with a State that acts to preserve life and property. Astra did no more than limit the exposure of its crew and recovery vehicle to unnecessary risks.

Astra believes that if it must return DELTA to Beta, it should be fully compensated for its efforts, at least the full salvage value of DELTA. This is consistent with international law. Astra risked lives and property for the first ever successful return of a nuclear powered satellite. Astra retrieved DELTA before any further harm befell it and before DELTA could cause harm to other satellites. Astra should be compensated accordingly.

Request for Relief

For the reasons disclosed herein, Astra respectfully asks the Court to

(1) decide that Astra did not violate international law in recovering DELTA and is not required to return DELTA to Beta.

Alternatively,

(2) decide that Astra is not liable to Beta for any damages caused to DELTA due to
   (a) the collision with OMICRON, and,
   (b) the removal of the NPS during Astra's salvage of DELTA, and,

(3) order that Beta compensate Astra for the DELTA recovery to the maximum amount possible under international law.

1.) Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies, opened for signature Jan. 27, 1967, 18 U.S.T. 2410, T.I.A.S. No. 6347, 610 U.N.T.S. 205 [hereinafter the Outer Space Treaty].

2.) Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Space, opened for signature Apr. 22, 1968, 19 U.S.T. 7570, T.I.A.S. No. 6599, 672 U.N.T.S. 119 [hereinafter the Rescue and Return Agreement]; Convention on International Liability for Damage Caused by Space Objects, opened for signature Mar. 29, 1972, 24 U.S.T. 2389, T.I.A.S. No. 7762 [hereinafter the Liability Convention]; Convention on the Registration of Objects Launched into Space, opened for signature Jan. 14, 1975, 28 U.S.T. 695, T.I.A.S. No. 8480 [hereinafter the Registration Convention].

3.) These notations cite to the record of stipulated facts as given in The Problem. The record is provided in the Appendix. Thus, "(R.4)" refers to page 4 of the record.

4.) See Ronald A. Anderson & Mark S. Rhodes, Couch on Insurance 2d § 55:16 (1983) [hereinafter Couch]; see also John A. Appleman & Jean Appleman, Insurance Law and Practice §§ 3701, 3704 (1972); R.J. Lambeth, Templeman on Marine Insurance Its Principles and Practice 214 (1981) (acknowledging the practice in English marine insurance).

5.) See Couch, supra, § 55:182.

6.) Outer Space Treaty, supra note 1, art. III (stating that space activities are to be carried out "in accordance with international law . . . ."). Sources of international law are specified in the Statute of the International Court of Justice (I.C.J.). See Statute of the I.C.J., art. 38(1), reprinted in 1983 Y.B. U.N. 1334, see also Hilton v. Guyot, 159 U.S. 113, 163 (1895) (the U.S. Supreme Court declaring the sources of international law to be "judicial decisions, . . . the works of jurists and commentators, and from the acts and usages of civilized nations."); The Paquete Habana, 175 U.S. 677, 686 (1900). The use of analogy is justified here for purposes of interpreting the legal status of outer space since there is no applicable law or practice within the emerging law of outer space to apply. See Space Activities and Emerging International Law 175 (Nicholas M. Matte ed., 1984) (and sources cited therein).

7.) Thomas J. Schoenbaum, Admiralty and Maritime Law, § 18-11 (1987); see also, Couch, supra note 4, §§ 55:13-55:15; Grant Gilmore & Charles L. Black, Jr., The Law of Admiralty § 2-14 (2d ed. 1975).

8.) The British Marine Insurance Act defines total loss as "[w]here the subject-matter insured is destroyed, or so damaged as to cease to be a thing of the kind insured, or where the assured is irretrievably deprived thereof . . . ." Schoenbaum, supra note 7, § 18-11 (referring to § 57(1) of Marine Insurance Act, 5 & 6 Edw. 7 (1906) (Eng.)).

9.) See Schoenbaum, supra note 7, § 18-11; Appleman, supra note 4, § 3704.

10.) Gilmore & Black, supra note 7, § 2-14 (emphasis added).

11.) A leading treatise on insurance law has stated this principle thus: "The insured, however, cannot recover for a constructive or technical total loss in the absence of proof of abandonment and of notice thereof to the insurer." Couch, supra note 4, § 55:287 (citing Gomilla v. Hibernia Ins. Co., 40 La. Ann. 553, 4 So. 490 (1888); Fooks v. Smith, 2 K.B. 508 (Eng. 1924)).

12.) See Gilmore & Black, supra note 7, § 2-14; Schoenbaum, supra note 7, § 18-11 (citing the British Marine Insurance Act, §§ 61-63); Couch, supra note 4, § 55:182 (citing Camberling v. M'Call, 2 U.S. (2 Dall.) 280 (1797) (wherein the Confederation-era Pennsylvania Supreme Court held, inter alia, that the insurer is entitled to notice of abandonment and thus title to a lost vessel in cases other than actual "total losses" in order to reclaim the remaining value of the vessel and recoup its losses)); Lambeth, supra note 4, at 218-227.

13.) See infra notes 37-47 and accompanying text (further discussing abandonment).

14.) Applicant's Memorial at §9.

15.) See Jean-Louis Magdelenat, Spacecraft Insurance, 7 Annals Air & Space L. 363, 373 (1982); see also Rod Margo, Some Aspects of Insuring Satellites, 1979 Ins. L.J. 555, 559 (1979); Edward R. Finch, Jr. & Amanda L. Moore, Astrobusiness: A Guide to the Commerce and Law of Outer Space 37 (1985).

16.) See Delbert D. Smith & Stefan M. Lopatkiewicz, Satellite Recovery: A Lawyer's Perspective, 1985 Air & Space Law. 1 (Spring 1985).

17.) Id. at 16. The signing of the contract for the payment of insurance claim and transfer of title of PALAPA from Indonesia on July 14, 1984, heralded the first time that insurers had ever received title to a satellite pursuant to a payment by the insured or that a spacecraft retrieval had ever been contracted for. Id. at 17.

18.) Applicant's Memorial at §10.

19.) See Geoffrey Brice, Maritime Law of Salvage 57-61 (1983) (discussing State immunity as applied to salvage of State vessels).

20.) Applicant's Memorial at §17.

21.) See Vernicos Shipping Co. v. United States, 223 F.Supp. 116, 118 (S.D.N.Y. 1963) (wherein a U.S. court held that sovereign immunity did not deprive it of jurisdiction over suit by Greek salvors against the U.S. to recover compensation for salvage of U.S. Navy vessels because the U.S. had waived sovereign immunity by statute, provided the suing nationals' law allowed similar waiver, which the court determined to be so); see also Brice, supra note 19, at 61 (discussing the Convention for the Unification of Certain Rules of Law Respecting Assistance and Salvage at Sea, Sept. 23, 1910, art. 14, 37 Stat. 1618, T.S. No. 176 [hereinafter 1910 Salvage Convention]); cf. International Convention on Salvage, 1989, art. 4, reprinted in 20 J. Mar. L. & Com. 589 (1989) (providing for waiver of sovereign immunity) [hereinafter 1989 Salvage Convention]. See infra notes 22-35 and accompanying text (further discussing salvage).

22.) See supra note 6 (discussing the use of analogy as a source of international law).

23.) See Hamilton DeSaussure, The Application of Maritime Salvage to the Law of Outer Space, 28 Proc. Colloquium L. Outer Space 127 (1985); Robert M. Jarvis, The Space Shuttle Challenger and the Future Law of Outer Space Rescues, 20 Int'l Law. 591, 610-21 (1986).

24.) DeSaussure, supra, at 128 (footnotes omitted).

25.) See 1910 Salvage Convention, supra note 21. See generally Ina H. Wildeboer, The Brussels Salvage Convention (1965) (discussing the effects and application of the 1910 Salvage Convention in several European countries and the United States).

26.) 1910 Salvage Convention, supra note 21, art. 2.

27.) See Interagency Group (Space), Report on Orbital Debris 45 (Feb. 1989) (produced for the National Security Council, Washington D.C.) [hereinafter the NSC Report]; accord Carl Q. Christol, Space Law: Past, Present, and Future 256 (1991); DeSaussure, supra note 23, at 132, n.20; see also Bruce A. Hurwitz, The Legality of Space Militarization 147, 151, 153-54 (1986) (and sources cited therein); Hamilton DeSaussure, An International Right to Reorbit Earth Threatening Satellites, 3 Annals Air & Space L. 383, 393 (1978). DeSaussure goes further by stating that "[d]eorbiting unmanned satellites have much in common with derelicts at sea. They are under no nation's territorial jurisdiction, they are out of control, and the flag state has no intention of recovering or returning to it, yet it may pose a danger to others. The recovery of derelict property is highly favored

in maritime law, and by analogy the salvaging of dangerous satellites is in the greatest interests of humanity." Id. at 391 (quoted approvingly in Hurwitz, supra, at n.58, 158). This position is consistent with the traditional definition of derelict. See M. Norris, The Law of Salvage 221 (1958).

28.) Jarvis, supra note 23, at 610. For a general overview of past and present salvage law, see Brice, supra note 19.

29.) See infra notes 67-70 and accompanying text (discussing the absence of any duty in international law to retrieve satellites).

30.) DeSaussure, supra note 23.

31.) See The Blackwall, 77 U.S. 1 (1870) (discussing the basis of salvage awards). See infra notes 94-100 and accompanying text (discussing the equity of Beta's settlement offer under international law).

32.) A maritime salvage award reflects the labor expended by the salvors, their promptitude, skill, and energy in rendering the service, the value of the property saved, and the degree of danger to the exposed property. See 1910 Salvage Convention, supra note 21, art. 8. The belief behind this was that the remuneration to the salvors was a reward for perilous service, not merely compensation for services under quantum meruit. See DeSaussure, supra note 23, at 128.

33.) Schoenbaum, supra note 7, § 15-7; Norris, supra note 28, at 221.

34.) See generally Schoenbaum, supra note 7, at 516-18; see also Brice, supra note 19, at 143-86 (discussing salvage and protection of the environment).

35.) Schoenbaum, supra note 7, § 15-6; Gilmore & Black, supra note 7, § 8-15.

36.) See supra notes 4-12 and accompanying text.

37.) Black's Law Dictionary 2 (5th ed. 1979).

38.) Applicant's Memorial at §5 (quoting Couch, supra note 4, at 760).

39.) Id.

40.) See supra notes 4-13 and accompanying text.

41.) See Legal Status of Eastern Greenland (Den. v. Nor.), 1933 P.C.I.J. (ser. A/B) No. 53, at 73 (wherein the Court held that the Norwegian government was estopped from asserting jurisdiction over part of Greenland as a result of its various agreements recognizing Danish sovereignty over Greenland); Case Concerning the Temple of Preah Vihear (Cambodia v. Thail.), 1962 I.C.J. 6, 30 (where this Court held that Thailand was estopped from denying it had consented to the validity of a map of a disputed border between Thailand and Cambodia since Thailand had acquiesced to the validity of a widely distributed map, had not disputed the map upon release, and enjoyed the benefits of the settlement under which the map was made while Cambodia had relied on Thailand's acquiescence).

42.) See Schoenbaum, supra note 7, § 15-7; Couch, supra note 4, §§ 55:182-55:341; Lambeth, supra note 4, at 218-27.

43.) See Application of the Convention on Registration of Objects Launched into Outer Space at 3, U.N. Doc. A/AC.105/382 (1987) (States generally register three to six months after launch, and only in a very few cases were registrations lodged more than a year after launch).

44.) Thomas Buergenthal & Harold G. Maier, Public International Law in a Nutshell § 1-9 (1990); see also Vienna Convention on the Law of Treaties, opened for signature May 23, 1969, at art. 27 & 46, U.N.Doc. A/CONF.39/27 (1969) [hereinafter the Vienna Convention].

45.) See supra notes 4-18 and accompanying text (discussing application of insurance law).

46.) The sources of international law for consideration by this Court under Article 38(1) of the Statute of the International Court of Justice do not include the unilateral legislation of one party. See supra note 6.

47.) See supra note 21 and accompanying text (discussing foreign sovereign immunity analysis).

48.) See Finch & Moore, supra note 15, at 37; Paul G. Dembling, Assessing the Space Insurance Field, 34 Proc. Colloquium L. Outer Space 387 (1991); Daniel E. Cassidy, Insuring Space Launch and Related Risks, 34 Proc. Colloquium L. Outer Space 389, 391 (1991); Kevin J. Madders, Space Insurance - A European Perspective, 34 Proc. Colloquium L. Outer Space 393, 395 (1991).

49.) Magdelenat, supra note 15, at 375.

50.) The PALAPA and WESTAR incidents also showed that even when the insurers are granted title, recover and refurbish the satellite for resale, their losses are not fully recouped. William E. Thiele, Assessing the Role of Insurance in the Commercialization of Space, in 3 American Enterprise, The Law and the Commercial Use of Space 136, 152 (1987). One example of additional costs of the recovery and resale of PALAPA and WESTAR was the over U.S.$100,000 per month it cost to store them while they awaited buyers, which were a long time in coming. See Aviation Wk. & Space Tech., Apr. 22, 1985, at 23.

51.) Jay H. Ginsburg, The High Frontier: Tort Claims and Liability For Damages Caused By Man-made Space Objects, 12 Suffolk Transnat'l L.J. 515, 517 (1989) (quoting Carl Q. Christol, The Legal Common Heritage of Mankind: Capturing An Illusive Concept and Applying it to World Needs, 18 Proc. Colloquium L. Outer Space (1976)). The International Law Commission supports this interpretation of the Lotus doctrine. See Robert Q. Quentin-Baxter, Special Rapporteur, International Liability For Injurious Consequences Arising Out of Acts Not Prohibited by International Law, 247, 257, U.N. Doc. A/CN.4/334 Add. 1 & 2 (1980). Furthermore, the U.N. has recommended standards encouraging the removal of inactive satellites from space. See Gunnar Leinberg, Note, Orbital Space Debris, 4 J. L. & Tech. 93, 105 n.89 (1989) (citing Proceedings of the Second United Nations Conference on the Exploration and Peaceful Use of Outer Space 101 (1982) [hereinafter UNISPACE]).

52.) See supra notes 4-14 and accompanying text.

53.) For contemporary discussions of the importance, and ambiguities of, definitions in space law, and for proposed definitions of several terms referred to in international agreements on the law of outer space, see Karl-Heinz Böckstiegel, The Terms "Appropriate State" and "Launching State" in the Space Treaties - Indicators of State Responsibility and Liability for State and Private Space Activities, 34 Proc. Colloquium L. Outer Space 13 (1991); Bin Cheng, "Space Objects", "Astronauts" and Related Expressions, 34 Proc. Colloquium L. Outer Space 17 (1991); He Qizhi, Review of Definitional Issues in Space Law in the Light of Development of Space Activities, 34 Proc. Colloquium L. Outer Space 32 (1991); Vladimir Kopal, Issues in Defining Outer Space, Space Object and Space Debris, 34 Proc. Colloquium L. Outer Space 38 (1991); William B. Wirin, Space Debris and Space Objects, 34 Proc. Colloquium L. Outer Space 45 (1991).

54.) Outer Space Treaty, supra note 1, art. VIII (emphasis added).

55.) Registration Convention, supra note 2, art. I(c).

56.) See Jerzy Sztucki, Legal Status of Space Objects, 9 Proc. Colloquium L. Outer Space 108 (1966) (advocating links to ownership derived from the factual circumstances of the launching); I.H.Ph. Diederiks-Verschoor, The Legal Status of Artificial Space Objects, 24 Proc. Colloquium L. Outer Space 93 (1981) (favoring the formal link of registration for determining the legal status of space objects); V. D. Bordunov, Rights of States As Regards Outer Space Objects, 24 Proc. Colloquium L. Outer Space 89 (1981) (stating that only the

State standing in real relation to the space object may register it and claim ownership).

57.) Registration Convention, supra note 2, art. I(a).

58.) Id. art. II(2).

59.) Id. art. II(2).

60.) Rescue and Return Agreement, supra note 2, art. 5.

61.) Id. art. 6.

62.) For similar discussions and interpretations of relevant provisions of the Rescue and Return Agreement by prominent scholars, see generally Piet-Hein Houben, A New Chapter of Space Law: The Agreement on the Rescue and Return of Astronauts and Space Objects, 15 Neth. Int'l L. Rev. 121, 127-28 (1968); Vladimir Kopal, Problems Arising from the Interpretation of the Agreement on the Rescue of Astronauts, the Return of Astronauts, and the Return of Objects Launched into Outer Space, 11 Proc. Colloquium L. Outer Space 98, 103 (1968); Stephen Gorove, Interpreting Salient Provisions of the Agreement on the Rescue of Astronauts, the Return of Astronauts, and the Return of Objects Launched into Outer Space, 11 Proc. Colloquium L. Outer Space 93 (1968); Pompeo Magno, Jerzy Sztucky & Vladimir Kopal, Interpretation of the Rescue Agreement - Part III: Introductory Report by the Special Working Group, 11 Proc. Colloquium L. Outer Space 85 (1968).

63.) U.N. Doc. A/AC.105/C.2/SR.87 (1987).

64.) Rescue and Return Agreement, supra note 2, art. 6.

65.) Id. art. 5, para. 5.

66.) See infra notes 91-93 and accompanying text (discussing double recovery).

67.) There is a need to develop space law so that it encourages commercial space activities as maritime law encouraged trade and commerce. See Glenn H. Reynolds & Robert P. Merges, Outer Space: Problems of Law and Policy 329 (1989). The commercial space industry is still in its infancy. To extend liability would chill the commercial use of outer space.

68.) There are more than three thousand inactive satellites and spent rocket stages in orbit. See NSC Report, supra note 27, at 1. Removal costs are in the tens of millions of dollars (U.S.) per satellite. Placing sufficient fuel on a board a spacecraft to boast it to a higher orbit costs in excess of U.S.$20 million. Id. at 33. Just the minimal costs of prevention of space debris, when multiplied by the number of inactive space devices in orbit, is truly astronomical.

69.) Applicant's Memorial at §26.

70.) A survey of available literature on the duty of States to remove inactive satellites clearly demonstrates the lack of an international duty or regime dealing with space debris. All sources are consistent in demonstrating that a space debris mitigation duty does not exist and can only arise through a multilateral diplomatic process. A space debris mitigation regime cannot now be imposed unilaterally upon Astra.

71.) Restatement (Second) of Torts § 281 (1965). U.S. tort doctrine is applied by analogy. See supra note 6 (discussing the sources of international law).

72.) See Liability Convention, supra note 2, art. III.

73.) Once OMICRON became non-functional, it ceased to be a space object and became space debris. Space debris is not covered by the Liability Convention. See Christol, supra note 27, at 251 (and sources cited therein).

74.) There is no international practice of settlement of claims under the Liability Convention. The only case of a claim under the Convention was the 1978 Cosmos 954 incident. A close review of this case reveals that it was settled by diplomacy and not under the Liability Convention. The Cosmos 954 settlement negotiations began nearly a year before Canada submitted its claim to the U.S.S.R. under the Liability Convention. See Bruce A. Hurwitz, Reflections on the Cosmos 954 Incident, 32 Proc. Colloquium L. Outer Space 348, 352 (1989). To claim that the eventual payment was made under the Convention is to deny the existence of lengthy diplomatic negotiations. The Protocol pursuant to which the U.S.S.R. paid Canada $3 million does not even refer to the Convention or even admit Soviet liability or responsibility. See Canada-Union of Soviet Socialist Republics: Protocol on Settlement of Canada's Claim for Damage Caused by 'Cosmos 954', 20 I.L.M. 689 (1981).

75.) That is not to say States are free to do anything they want in space. Even allowable actions on the high seas is limited. See United Nations Convention on the Law of the Sea, part VII, U.N. Doc. A/CONF.62/122 (1982). The freedom of the use of outer space must be exercised with regard to the interests of other States. Their freedom of use of outer space must not be unreasonably denied. Unlike the maritime rules governing navigable channels, there are neither specific rules of the road nor roadways in outer space. See Myres McDougal, Law and Public Order in Space 527 (1963) (noting the absence of space rules of the road and their importance and application in maritime and aviation law).

76.) Astra has failed to register OMICRON under the Registration Convention. See Registration Convention, supra note 2, art. V. However, Astra's omission is irrelevant in the instant case. Registration would not have changed the orbital location of OMICRON. A failure to register does not affect liability in these circumstances. The Liability Convention does not mention the Registration Convention as a requirement for liability. See Liability Convention, supra note 2, art. II, III.

77.) See James L. Weiss, Comment, Problems in the Resolution of Disputes Concerning Damage Caused in Outer Space, 59 Tul. L. Rev. 747, 767-69 (1985).

78.) See H. Kelson, Principles of Insurance Law 11-12 (1952).

79.) McDougal, supra note 75, at 593.

80.) If one adds up the number of space fragments in addition to the number of inactive devices, the sum exceeds several thousand. See NSC Report, supra note 27, at 3. This figure excludes small fragments beyond the abilities of tracking radar. Id. If a duty of recovery applies, the task would be truly daunting. The prohibitive cost and scope of recovery demands that States be very selective in choosing recovery targets.

81.) International practice in the space industry can rise to the level of international law. See The Paquete Habana, supra note 6, at 686 (stating that a practice "among civilized nations . . . gradually ripen[s] into a rule of law . . . ." Id. It is the practice of spacefaring nations to let satellites decay. This practice is the source of law to determine duty in these circumstances. There is no need to resort to other areas of international law and thereby applying analogy where no such analogy is necessary. The practice of nations is clear. There is no duty to retrieve a derelict space satellite. In addition, international practice in the use of cross-waivers of liability indicates that, in space activities, parties generally agree to bear their own losses. See, e.g., Cross-waiver of Liability, 56 Fed. Reg. 48,429 (N.A.S.A. 1991) (describing § 1266.101(c)(4) of the space station cross-waiver of liability applying to all forms of negligence, of every degree and kind). This new cross-waiver of liability supersedes previous space shuttle launch agreements, expendable vehicle launch agreements, and space station agreements. Id.

82.) NPS's typically contain dangerous Plutonium or Uranium. See Marietta Benkö, Willem de Graaff & Gijsbertha C.M. Reijnen, Space Law in the United Nations 69 (1985). Also, spacefarers lack experience with NPS's in space due the rarity of their use. See id. The combination of these facts alone justifies Astra's actions. Furthermore, Astra respectfully asserts that releasing the NPS in a

low-Earth orbit will allow a greater certainty of complete dispersal upon orbital decay than if the NPS were allowed to remain fully shielded in DELTA. Astra exercised its own best judgement as efforts to establish an international regime concerning removal of NPS's under these circumstances have not been completed. See, e.g., U.N. Doc. A/AC.105/238, Annex 2 (1979) (International Commission on Radiological Protection recommendations). Indeed, it may be that Beta itself violated existing international standards. DELTA's belligerent function may violate the notions of peaceful use of outer space as enunciated in the Outer Space Treaty. See Outer Space Treaty, supra note 1, art. IV; see also Milton L. Smith, Legal Implications of a Space-Based Ballistic Missile Defense, 15 Cal. W. Int'l L.J. 52, 71 n.105 (1985) (noting U.S. Government policy, international cases, U.N. General Assembly Resolutions, and learned treatises supporting the assertion that space can only be used for peaceful purposes); James J. Trimble, The International Law of Outer Space and its Effect on Commercial Space Activity, 11 Pepp. L. Rev. 521, 533 n.59 (1984) (referring to a Soviet scholar's view that the peaceful use of outer space excludes any activities of a military nature).

83.) See Vienna Convention, supra note 44, art. 32(b) (forbidding interpretations of treaties which would lead to an absurd result).

84.) See Rescue and Return Agreement, supra note 2, art. 5(4).

85.) Id.

86.) See Liability Convention, supra note 2, art. III; see also supra note 73 and accompanying text (discussing the limited meaning of the term "space object"). The strict liability provision does not apply since no damage occurred on the surface of the Earth or involved aircraft in flight. Id. art. II. The position is supported by the United States Senate, who, when ratifying the liability convention, were "advised by the Department of State that the Convention did not apply to intentional damage." Carl Q. Christol, Space Stations: A Lawyers's Point of View, 4 In. J. Int'l L. 367 (1964) quoted in Hurwitz, supra note 27, at 149.

87.) There is no precise definition of "space object." See Manfred Lachs, The Law of Outer Space 74 n.5 (1972). The term "space object" is partially defined in the Liability Convention. See Liability Convention, supra note 2, art. I(d). The same definition appears in the Registration Convention. See Registration Convention, supra note 2, art. I(b). Under both these definitions, damage must be caused by a space object rather than a person. See Stephen Gorove, Liability In Space Law: An Overview, 8 Annals Air & Space L. 373, 375 (1983).

88.) See Vienna Convention, supra note 44, art. 32(a) (allowing the use of preparatory work to interpret ambiguities in a treaty).

89.) See Weiss, supra, note 77 at 760 n.71 (1985) (quoting relevant portions of U.N. draft proposals). The Liability Convention applies to damage caused by satellites. However, if "the engineer was somehow negligent or culpable in launching the satellite, then he would be the instrumentality of damage and the Treaty would not be applicable because astronauts are not space objects." Id. at 765.

90.) See supra notes 4-12 and accompanying text (discussing payment on a total loss basis).

91.) Id.

92.) See Liability Convention, supra note 2, art. XII (demanding that the resolution of a conflict be just and equitable).

93.) Id. Analogy to maritime, tort and contract law is allowed for in the Liability Convention. See id. Article XII allows the use of international law in the determination of a just and equitable settlement of disputes under the treaty. The sources of international law are found in Article 38(1) of the Statute of the I.C.J. See Statute of the I.C.J., supra note 6 (discussing the use of analogy). Learned treatises have asserted that maritime, tort, and contract law as practiced by nations should be used as analogy to fill the lacunae left by the Liability Convention and State practice. See, e.g., DeSaussure, supra note 23; Vladimir Kopal, Analogies and Differences in the Development of the Law of the Sea and the Law of Outer Space, 28 Proc. Colloquium L. Outer Space 151 (1985); Christol, supra note 27, at 230.

94.) See supra notes 4-18 and accompanying text.

95.) Maritime salvage law provides for a maritime lien against the salvaged vessel. The 1989 Salvage Convention does not affect the use of the maritime lien. See 1989 Salvage Convention, supra note 21, art. 20.

96.) See Rescue and Return Agreement, supra note 2, art. 5(5); see also Thomas T. Janover, Note, Convention on International Liability for Damage Caused By Space Objects: Definition and Determination of Damages After the Cosmos 954 Incident, 8 Fordham Int'l L.J. 255, 260 n.37 (1985) (quoting learned treatises supporting the view of Astra in requiring payment before turning over DELTA).

97.) Liability Convention, supra note 2, art. XII.

98.) Beta cannot hold Astra strictly liable for its activities. Strict liability for ultrahazardous space activities should be established by bilateral agreements. See Christol, supra note 27, at 244. Further, Beta has the burden of proof to show that in its alleged future recovery effort that it or the State of Change would not have removed the NPS for safety reasons.

99.) See 1989 Salvage Convention, supra note 21, art. 13(1) (allowing greater awards where the salvage operation was complex, dangerous, or difficult). See The Blackwall, supra note 31 (discussing the U.S. view of factors to be taken into account when determining a salvage award). Astra believes that the encouragement of safe and successful recoveries is sound public policy. Beneficiaries should pay more in awards when the salvage operation is dangerous, exposes personnel to nuclear power sources, and involves complex outer space engineering skills such as entering into a satellite to remove dangerous radioactive contents.

100.) See 1989 Salvage Convention, supra note 21, art. 18 (declaring that the maximum salvage award cannot exceed the value of the vessel salvaged). The salvage award should reflect the value of DELTA's design. See id. art. 13(1). Since Astra exposed its personnel and its recovery vehicle to the perils of space, it should also be awarded special compensation. See id. art. 14. To fully compensate Astra is consistent with U.N. efforts to encourage the removal of inactive satellites from space by making these efforts more appealing and profitable. See UNISPACE, supra note 51.

101.) Applicant's Memorial at §27.