

MANFRED LACHS SPACE LAW MOOT COURT COMPETITION 2022

TEAM NO. 3

IN THE INTERNATIONAL COURT OF JUSTICE

AT THE

PEACE PALACE, THE HAGUE

**Case Concerning Registration and
Damages Involving Objects Manufactured in Space**

Candidia

v.

Xenovia

ON SUBMISSION TO THE INTERNATIONAL COURT OF JUSTICE

MEMORIAL FOR THE APPLICANT

CANDIDIA

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LIST OF ABBREVIATIONS

AI	Artificial Intelligence
ARSIWA	2001 Articles on Responsibility of States for Internationally Wrongful Acts
ARRA	1968 Agreement on Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space
CTC	Convention on International Interests in Mobile Equipment
GSO	Geosynchronous Orbit
ICJ	International Court of Justice
IISL	International Institute of Space Law
ILC	International Law Commission
ISS	International Space Station
ITU	International Telecommunication Union
LEO	Low-Earth Orbit
LIAB	1972 Convention on International Liability for Damage Caused by Space Objects
OST	1967 Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies
PCIJ	Permanent Court of International Justice
REG	1975 Convention on Registration of Objects Launched into Outer Space
SAP	Protocol to the Convention on International Interests in Mobile Equipment on Matters Specific to Space Assets

SAR	Space Assets Registry
SDMGs	UN COPUOUS Space Debris Mitigation Guidelines 2007
UN	United Nations
UN COPUOS	United Nations Committee on the Peaceful Uses of Outer Space
UNGA	General Assembly of the United Nations
VCLT	1969 Vienna Convention on the Law of Treaties

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QUESTIONS PRESENTED

- 1) Whether Xenovia violated international law by interfering with Valerian 806;
- 2) Whether Xenovia is liable under international law for the loss of lives on board the Candidian cargo plane, the loss of the aircraft, and the loss of revenues from the destruction of Valerian 806;
- 3) Whether Candidia acted in accordance with international law in its peaceful uses of outer space, in authorising and supervising the activities of Selada, Inc. and in paying due regard to the interests of other States; and
- 4) Whether Candidia is liable for the loss of Fenix-3 under the OST and general international law.

STATEMENT OF FACTS

1. The State of Candidia (Candidia) is an independent nation with a thriving launch service and satellite fabrication sector and is ambitious in seeking to be competitive in its space activities. Pursuant to this aim, in 2020, Candidia adopted its National Legislation on Space Affairs (**NLSA**) and in 2022 established a national registry of objects launched into space. Candidia is a party to the 1967 Outer Space Treaty (**OST**) and the 1968 Rescue and Return Agreement (**ARRA**).
2. Under its laws, Candidia obtains technical representations and reports from companies seeking authorisation for space activities. Candidia offers favourable tax incentives to its space sector investors and launch service providers to attract investors and launch service companies to its private domestic space sector. It has also set up a State-owned Investment Fund for the commercial acquisition of private satellite owners and operators.
3. The State of Xenovia (Xenovia) is a neighbouring State also seeking to be competitive in the space market with its launch services. Xenovia is strategically located near the Equator, making it ideal for launches into geostationary orbit (**GSO**). In fact, Xenovia's launch site is the preferred launch site for the military satellites of several other countries. Xenovia is party to the OST, ARRA, the 1972 Liability Convention (**LIAB**) and the 1976 Registration Convention (**REG**).
4. In 2023, Selada, Inc., a company incorporated in the State of Safrandia (Safrandia), obtained financing for the Pacem space station (Pacem) from Alendularia S.A., a company incorporated in Xenovia. The security agreement for the financing of Pacem made between Selada,

Inc. and Alendularia S.A. operates under the laws of Xenovia but provides for the remedies set out in the Cape Town Convention (CTC) and Space Assets Protocol (SAP).

5. Pacem was owned and operated by Selada, Inc., and was constructed using 3D printing technologies. The components of Pacem were launched from Candidia, Xenovia, Safrandia and other states in 2025. No State registered any individual component.

6. Safrandia had authorised Selada, Inc.'s operation of Pacem for 5 years from the commencement of operations in July 2026. However, Safrandia did not register Pacem under its national registry or with the UN.

7. Pacem was assembled once in low-Earth orbit (LEO), just after Selada, Inc. moved its corporate charter and headquarters from Safrandia to Candidia.

8. The operations on board Pacem include the construction of satellite components which are 3D printed using materials supplied by companies under contract with Selada, Inc. Research conducted on board Pacem is considered the proprietary information of Selada, Inc.'s shareholders.

9. Some satellite components have been utilised in the Valerian satellite constellation, a system which provides broadband services and private secure networks. The constellation utilises AI technologies which allow it to modify its function and possesses capabilities of orbital manoeuvre.

10. Valerian satellites are designed to operate for three years, after which, in accordance with UNCOPUOS Space Debris Mitigation Guidelines (**SDMGs**), they are de-orbited and re-enter Earth's atmosphere by propulsion controlled from Pacem. A risk analysis conducted by Selada, Inc. in 2029 found that there was a 1 in 5,000 chance of Valerian satellite components surviving atmospheric re-entry.

11. Valerian satellites have been registered in various states, including Xenovia, although a few are unregistered and a few are registered on the Space Assets Registry (**SAR**).

12. Meanwhile, in 2024 and mindful of its duties under the OST, Candidia notified the International Telecommunication Union (**ITU**) of its intention to launch a large satellite constellation, with some components manufactured on Candidian territory and others manufactured on-orbit. The ITU replied that the time for processing filings could be as long as seven years.

13. In 2026, both Candidia and Xenovia ratified the CTC and adopted the SAP. Pursuant to the CTC, Candidia mandated the use of the SAR and requires satellite operators to use this registration system to register their international interests. In 2027, the regime under the CTC and SAP became applicable. The Space Asset Registry Foundation was also established as a Supervisory Authority.

14. In 2030, Xenovia, in a public-private partnership with Fenix LLC, announced it would be building a fleet of robotic space objects to provide on-orbit refuelling, repair and repositioning services. Candidia formally expressed its concern at the 2030 United Nations Committee on the

Peaceful Uses of Outer Space (**UN COPUOS**) meeting regarding the dual use of these satellites as potential military weapons, particularly since Xenovia had a reputation as a preferred launch site for military satellites of other countries.

15. On 29 July 2031, Pacem deployed Valerian 806, a small satellite owned by Candidia and which was an indispensable component of a private secure network to be utilised by Safrandia.

16. That same day, Selada, Inc. notified Alendularia S.A. of its inability to make the contractual payment due on 1 August 2031 due to cash flow issues. Alendularia S.A. demanded payment within 90 days, reserving its rights under the security agreement, but Selada, Inc. could not comply with this request.

17. On 1 November 2031, Alendularia S.A. contracted with Fenix LLC to possess Valerian 806 and relocate the satellite to another orbit in violation of Candidia's right of ownership of the satellite.

18. Xenovia's Fenix-3 satellite, part of their robotic fleet and registered in Xenovia, grabbed the Valerian 806 satellite with a three-jawed vise mechanism. This act crumpled the satellite and ruptured a fuel line, resulting in an explosion that destroyed both satellites.

19. The remnants of Valerian 806 burned up in the atmosphere, as had been predicted by Selada, Inc.'s risk analysis of 2029. However, the debris from the Xenovian-owned Fenix-3 did

not and survived re-entry. A large fragment of Fenix-3 struck a Candidian military cargo plane, which crashed into the ocean and killed all nine persons on board.

20. Both Candidia and Xenovia investigated the incident. Candidia contends that the basic structure of the satellite complied with the applicable engineering and construction standards and complied with the SDMGs. Candidia declined to release telemetry records due to national security and safety concerns. Candidia also rejected a request from Xenovia for consultation after the explosion took place.

21. Candidia claims that Xenovia violated international law in apprehending Valerian 806 and asks this Court for damages resulting from (1) the loss of lives on board the cargo plane, (2) the loss of the aircraft and (3) lost revenues from the destruction of Valerian 806.

SUMMARY OF ARGUMENTS

A. XENOVIA VIOLATED INTERNATIONAL LAW BY INTERFERING WITH VALERIAN 806 AND IS LIABLE FOR THE LOSS OF LIVES ON BOARD THE CARGO PLANE, THE LOSS OF THE AIRCRAFT, AND THE LOST REVENUES FROM THE DESTRUCTION OF VALERIAN 806.

1. Xenovia violated international law by interfering with Valerian 806, a space object owned by Candidia. This act constituted interference in the normative sense of the word in that it destroyed the satellite, and the interference is directly attributable to Xenovia because of Xenovia's decisive influence over its two national companies, Alendularia S.A. and Fenix LLC, which carried out the interference. Alendularia S.A. contracted with Fenix LLC, which used Fenix-3 to possess Valerian 806, leading to the destruction of Candidia's satellite.

2. Xenovia's actions constituted a violation of several tenets of international space law. First, Xenovia's interference violated Article I OST in denying Candidia its inherent right to the freedom of use outer space. Second, Xenovia violated three provisions of Article IX OST. This was by violating the due regard principle which requires a State to prove beyond reasonable doubt that everything possible was undertaken to prevent a harmful act from occurring. Indeed, there was a foreseeable risk that Xenovia's possession operation would result in the introduction of debris matter, and soft-law guidelines which aim to aid in the mitigation of debris propagation were not complied with. Moreover, a likelihood of harmful interference meant a further duty to consult Candidia which was not met. Finally, Xenovia violated Candidia's ownership of Valerian 806 and its right to jurisdiction and control under Article VIII OST in its appropriation of a Candidian-owned object.

3. Xenovia's interference was also not justified by reference to the CTC and SAP. There were no circumstances to trigger the application of the remedies under the CTC and SAP in the absence of a reference to Valerian 806 in the security agreement between Selada, Inc. and Alendularia S.A., the lack of power of Selada, Inc. to dispose of the asset and the absence of an event of default. Further, even if the remedies provided by the CTC and SAP were applicable to the current dispute, Xenovia did not act correctly in their possession of Valerian 806 and thus violated these instruments. Xenovia was violative of both the CTC and the SAP in that the possession of Valerian 806 was commercially unreasonable which is prohibited by Article XVII (1) SAP, and it failed to account for competing interests over Valerian 806.

4. Finally, in Xenovia's interference with Valerian 806, Xenovia violated a general principle of international law in the appropriation of another State's property.

5. Xenovia is liable under Article VII OST for the damages caused because of its interference with Valerian 806. Xenovia caused damages to the individuals on board Candidia's military cargo plane, the cargo plane itself and the Valerian 806 satellite. Xenovia also caused damages in the form of a loss of revenues for Candidia which are recoverable under Article VII OST. Xenovia meets the requirements for liability under Article VII OST. First, Xenovia can be considered to be a launching State of Fenix-3 since it registered the space object pursuant to REG. Second, Fenix-3 and the piece of debris that struck the cargo plane are considered 'space objects' or 'component parts' of space objects. Third, Xenovia's actions meet the applicable test for proximate causation. Fourth, all damages are recoverable under Article VII OST.

6. Xenovia is also responsible under general international law and under a duty to make reparation given that the conduct of Fenix LLC is attributable to Xenovia. The conduct is attributable under Article VI OST and under Article 8 ARSIWA, and the interference was a wrongful act since it violated several international obligations of Xenovia. This includes a violation of Article I OST, Article VIII OST, Article IX OST, the CTC and SAP and general principles of international law. Xenovia is therefore under an obligation to make full reparation to Candidia for the injury caused by the internationally wrongful act under Article 31 ARSIWA.

B. CANDIDIA ACTED IN ACCORDANCE WITH INTERNATIONAL LAW AND IS NOT LIABLE FOR THE LOSS OF FENIX-3.

1. Candidia and Selada, Inc.'s activities were conducted in accordance with international law.
2. Firstly, Candidia acted in accordance with the OST. Candidia acted in accordance with its obligations under Article I OST through its construction and communication satellite service provision. Candidia also fulfilled its authorisation and continuing supervision requirements under Article VI OST, adhering to the limited obligations on States that have developed around the requirement. This included establishing national law, licencing requirements and specific registration practices. Further, Selada, Inc.'s space activities were appropriately supervised by Candidia. Candidia's authorisation and supervision extended to mitigate against risks stemming from the normal operation of Valerian satellites, but not to ensure that its satellites could withstand physical appropriation by the abrasive grappling technologies employed by Xenovia.

3. Moreover, Candidia acted in accordance with its obligations under Article IX OST. It discharged its due regard obligation by considering the interests of other States and refraining from activities which might interfere with the interests of other States.

4. Secondly, Candidia cannot be held liable under the OST or LIAB and is not under a duty to make reparation to Xenovia under general international law for the loss of Fenix-3.

5. Candidia is not liable under Article VII OST since there is no proximate causation between Valerian 806 and the damage caused to Fenix 3. The explosion was not the consequence of an action or omission by Candidia, but a direct result of the Xenovian satellite Fenix-3 grabbing Valerian 806, crumpling the satellite and rupturing a fuel line. This action exploded both satellites and brought about the circumstances of damage.

6. Candidia is also not liable under LIAB since it is not a party to that Treaty. Therefore, no rights or obligations are bestowed on Candidia by LIAB.

7. Finally, international responsibility, and an obligation to make reparation under Article 31 ARSIWA, is established between States when an unlawful international act can be imputed to a State. Candidia has no duty to make reparation to Xenovia under ARSIWA because no wrongful act can be attributed to Candidia.

ARGUMENTS

A. XENOVIA VIOLATED INTERNATIONAL LAW BY INTERFERING WITH VALERIAN 806 AND IS LIABLE FOR THE LOSS OF LIVES ON BOARD THE CARGO PLANE, THE LOSS OF THE AIRCRAFT, AND THE LOST REVENUES FROM THE DESTRUCTION OF VALERIAN 806

Candidia submits that the acts of Xenovia constitute interference with Valerian 806, a space object owned by Candidia (A.1.). Substantively, the interference violated the Outer Space Treaty (OST) (A.1.3.1.-A.1.3.3.),¹ the Cape Town Convention (CTC)² and the Space Assets Protocol (SAP)³ (A.1.3.4.), as well as general international law (A.1.3.5.).

As a result of the interference and the violations of international law, damages were caused to Candidia (A.2.). These damages include the loss of lives on board Candidia's military cargo plane, the loss of the cargo plane itself and the loss of revenues resulting from the destruction of Valerian 806. Xenovia is liable for these damages under the OST and international law (A.2.3.).

A.1. Xenovia interfered with Valerian 806 by possessing it and destroying it

Xenovian interfered with Valerian 806 through Alendularia S.A., a company falling within the jurisdiction of Xenovia, and Fenix LLC, a company owned by Xenovia. The contractual engagement by Alendularia S.A. of Fenix LLC to take possession of Valerian 806 amounts to interference (A.1.1.), and this conduct is wholly attributable to Xenovia (A.1.2.).

¹ Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies, entered into force Oct.10, 1967, 610 U.N.T.S. 205.

² Convention on International Interests in Mobile Equipment, entered into force Mar.1, 2006, U.N.T.S 2307.

³ Protocol to the Convention on International Interests in Mobile Equipment on Matters Specific to Space Assets, Mar. 9, 2012.

A.1.1. The possession and destruction of Valerian 806 amount to interference

It is undisputed that Fenix-3 took physical possession of Valerian 806 and destroyed it. This possession and destruction is akin to physical appropriation and constituted an interfering act by Xenovia through Fenix LLC's satellite.

The Constitution of the International Telecommunication Union (ITU) provides that harmful interference is interference that 'seriously degrades, obstructs or repeatedly interrupts a radio communication service'.⁴ This definition is persuasive because of State-wide practice,⁵ and the role of the ITU in minimising interference from satellites.⁶ Applying this definition to physical interference, Xenovia's appropriation of the satellite amounted to a degradation in the usefulness of the satellite, because it was destroyed. Indeed, the ITU definition of interference is triggered even by 'endangering' such circumstances.⁷

A.1.2. Xenovia is internationally responsible for the interference with Valerian 806

Article VI OST provides that a State is internationally responsible for its national activities in outer space which it is able to control.⁸ National activities and jurisdiction in space law are closely

⁴ Constitution of the International Telecommunication Union, Article 45.

⁵ TANJA MASSON-ZWAAN AND MAHULENA HOFFMANN, INTRODUCTION TO SPACE LAW 136 (4th edn. 2019).

⁶ FRANS VON DER DUNK AND FABIO TRONCHETTI, HANDBOOK OF SPACE LAW 464 (2nd edn. 2017).

⁷ International Telecommunication Union Radio Regulations art. 1.169 (2012) ('ITU Radio Regulations').

⁸ MANFRED LACHS, THE LAW OF OUTER SPACE: AN EXPERIENCE IN CONTEMPORARY LAW-MAKING 114 (Masson-Zwaan and Hobe eds., 2010).

linked.⁹ Article VI OST refers to activities carried out by persons or entities under a State's jurisdiction.¹⁰

Both Alendularia S.A. and Fenix LLC fall within the jurisdiction of Xenovia as its nationals. Alendularia S.A. is incorporated and headquartered in Xenovia,¹¹ and Fenix LLC is 50% owned by Xenovia.¹² Under international law, a company which is headquartered in a particular State is considered a national of that State.¹³ Similarly, the State of incorporation of a company can also be used to determine the nationality of that company.¹⁴ Another criterion is the existence of a 'genuine link' between the company and the State in question.¹⁵ Fenix LLC owned and operated the Fenix fleet of satellites, with Xenovia specifically 'owning' the Fenix-3 satellite which caused the interference.¹⁶ Xenovia is also the State of Registry for the Fenix-3 satellite, and thus has jurisdiction and control over it.¹⁷ Therefore, both Alendularia S.A. and Fenix LLC are nationals of Xenovia, and Xenovia exerted significant control and influence on both parties to the contract for possession.¹⁸

⁹ Setsuko Aoki, *Nationality for Spacecraft? Revisited: Nationality to be Found*, 44 J. SPACE L. 400 (2020).

¹⁰ Frans von der Dunk, *The Origins of Authorisation: Article VI of the Outer Space Treaty and International Space Law*, SPACE, CYBER, AND TELECOMMUNICATIONS LAW 69 (2011).

¹¹ Compromis §14.

¹² Compromis §9.

¹³ *Barcelona Traction, Light and Power Company Ltd (Belgium v. Spain)* I.C.J. 1970 3, §33, §34 and §37 (Feb 5).

¹⁴ *Ahmadou Sadio Diallo (Guinea v. Democratic Republic of the Congo)* 2007 I.C.J. 582, 596 (May 24).

¹⁵ *Nottebohm (Liechtenstein v. Guatemala)* 1955 I.C.J. 4, §23 (April 6).

¹⁶ Compromis §17.

¹⁷ Article VIII, OST.

¹⁸ RICKY LEE, *LAW AND REGULATION OF COMMERCIAL MINING OF MATERIALS IN OUTER SPACE* 131 (2012); Lucien Rapp, Maria Topka, Lucas Mallowan, *Which Jurisdiction for Private In-space Assembled Autonomous Platforms?* 56 SPACE POLICY 8 (2021).

The activities of Fenix LLC and Alendularia S.A. are thus attributed to Xenovia pursuant to Article VI OST.

A.1.3. Xenovia's interference violated international law

Xenovia's interference violated Article I OST (A.1.3.1.), Article VIII OST (A.1.3.2.) Article IX OST (A.1.3.3.), the CTC and SAP (A.1.3.4.) and general principles of international law (A.1.3.5.).

A.1.3.1. Xenovia violated Article I OST

Article I OST grants States the 'freedom of exploration and use of outer space'. This freedom is limited by other provisions of the OST.¹⁹ Specifically, States are bound to ensure that their rights and freedoms in outer space do not interfere with or compromise the safety of space operations of other States.²⁰ By interfering with Valerian 806 and destroying it, Xenovia violated Article I OST and Candidia's freedom to use and explore outer space.

A.1.3.2. Xenovia violated Article VIII OST

Xenovia's interference constituted a violation of Candidia's ownership over Valerian 806 under Article VIII OST (a.). Valerian 806 is a space object and was launched into outer space (b.), thus satisfying the provisions of Article VIII.

¹⁹ Stephan Hobe, *Article I* in I COLOGNE COMMENTARY ON SPACE LAW 37 (Hobe et al eds., 2009).

²⁰ Sergio Marchisio, *Article IX* in I COLOGNE COMMENTARY ON SPACE LAW 175 (Hobe et al eds., 2009).

a. *Candidia had jurisdiction and control over Valerian 806*

Candidia's ownership of Valerian 806²¹ conveys jurisdiction and control upon it. First, pursuant to international practice, State owners of satellites regularly exercise jurisdiction and control over unregistered space objects.²² Second, by default there is no other jurisdiction.²³ Third, jurisdiction and ownership are commonly recognised as following each other.²⁴ Moreover, Candidia had no obligation to register its space objects as it is not a party to the Registration Convention (**REG**).²⁵

b. *Valerian 806 was a space object launched into outer space*

Valerian 806 was a space object containing 3D-printed components from Pacem. Upon its deployment from Pacem, it constituted a separate space object operating independently.²⁶ The OST does not provide a definition of a 'space object', but it has been held to denote an 'object launched for the purpose of a space mission'.²⁷ Highly qualified publicists, a subsidiary means for

²¹ Compromis §15.

²² Yoon Lee, *Registration of Space Objects: ESA Member States' Practice*, 22 SPACE POLICY 43, 44, 50 (2006); Bernhard Schmidt-Tedd et al., *The 1975 Convention on Registration of Objects Launched into Outer Space*, in II COLOGNE COMMENTARY ON SPACE LAW 261 (Hobe et al eds., 2013); VLADIMIR KOPAL, THE 1975 CONVENTION ON REGISTRATION OF OBJECTS LAUNCHED INTO OUTER SPACE IN VIEW OF THE GROWTH OF COMMERCIAL SPACE ACTIVITIES, IN AIR AND SPACE LAW IN THE 21ST CENTURY 380 (Benko ed. 2001); Setsuko Aoki, *In Search of the Current Legal Status of the Registration of Space Objects*, 54 I.I.S.L. PROC., 6 (2010).

²³ Paul B. Larsen, *The Draft Space Protocol and Jurisdiction over Commercial Space Assets*, 54 I.I.S.L. PROC 496 (2011).

²⁴ RAM S. JAKHU & JOSEPH N. PELTON, GLOBAL SPACE GOVERNANCE: AN INTERNATIONAL STUDY 344 (2017).

²⁵ Convention on Registration of Objects Launched into Outer Space, entered into force 15 Sep. 1976, 1023 U.N.T.S 15; Bernhard Schmidt-Tedd and Stephan Mick, *Article VIII* in I COLOGNE COMMENTARY ON SPACE LAW 146 (Hobe et al eds., 2009).

²⁶ Compromis §13.

²⁷ ISABELLA DIEDERIKS-VERSCHOOR AND VLADIMIR KOPAL, AN INTRODUCTION TO SPACE LAW 9 (3rd edn, 2008); Vladimir Kopal, *Some Remarks on Issues Relating to Legal Definitions of 'Space Objects', 'Space Debris' and 'Astronaut'* 37 I.I.S.L. PROC. 99, 108 (1995).

determining a rule of law,²⁸ frequently contend that a space object includes a satellite.²⁹ Valerian 806 is a satellite with autonomy in the utilisation of AI technologies and is physically separate from Pacem.³⁰ Therefore, Valerian 806 is a space object.

Valerian 806 was deployed from Pacem on 29 July 2031. Deployment falls under the definition of a launch, which includes being brought into orbit through a space station,³¹ since numerous States have accepted their status as ‘launching State’ for satellites deployed from the International Space Station (ISS).³² This approach is in line with the evolutionary approach to treaty interpretation in general international law.³³

Therefore, Candidia had a right to jurisdiction and control over Valerian 806, which could not be exercised because Xenovia interfered with it in violation of Article VIII OST.

²⁸ Statute of the International Court of Justice, Article 38 (1(d)); *Land, Island and Maritime Frontier Dispute (El Salvador v. Honduras: Nicaragua intervening)* 1992 I.C.J. 75 §592 (Sept. 11); *Legal Consequences for States of the Continued Presence of South Africa in Namibia (South Africa v. Namibia)* 1971 I.C.J. 16 §48 (June 21).

²⁹ Paul S. Dempsey, *Liability for Damage Caused by Space Objects under International and National Law*, XXXVII ANNALS AIR AND SPACE LAW 340 (2012); BIN CHENG, *STUDIES IN INTERNATIONAL SPACE LAW* 464 (1997); Ricky J. Lee, *The Liability Convention and Private Space Launch Services*, XXXI ANNALS AIR AND SPACE LAW 361 (2006).

³⁰ *Compromis* §12 and §13; Michael Chatzipanagiotis, *Artificial Intelligence and Liability in International Law*, 71 I.I.S.L. PROC. 6 (2020).

³¹ RAM S. JAKHU AND JOSEPH N. PELTON, *SMALL SATELLITES AND THEIR REGULATION* 13 (2014).

³² See Online Index of Objects Launched Into Outer Space, United Nations Office for Outer Space Affairs, http://www.unoosa.org/oosa/osoindex/search-ng.jsp?lf_id=; (ST/SG/SER.E/1002 (United Kingdom)), (A/AC.105/INF/447 (Paraguay)) and (A/AC.105/INF/448 (Mauritius)).

³³ Sondre Torp Helmersen, *Evolutionary Treaty Interpretation: Legality, Semantics and Distinctions*, 6 EUROPEAN J. LEGAL STUDIES 127 (2013); *Dispute regarding Navigational and Related Rights (Costa Rica v. Nicaragua)* 2009 I.C.J. 213, §64-66 (Sept 29).

A.1.3.3. Xenovia violated Article IX OST

Xenovia also violated Article IX OST by interfering with Valerian 806. Xenovia failed to pay due regard to the interests of Candidia in outer space (a.) and failed to consult Candidia (b.).

a. Xenovia violated the due regard principle

According to Article IX OST, States shall conduct their activities in outer space with due regard to the corresponding interests of other State Parties.³⁴ By interfering with Valerian 806, Xenovia failed to pay due regard to Candidia.

Due regard means that the State must prove beyond reasonable doubt that everything possible was undertaken to prevent a harmful act.³⁵ Further, it means not interfering with other States' freedoms,³⁶ and considering any available alternatives.³⁷ Applying this to Article IX OST, due regard includes refraining from interfering with other States in their freedom to use outer space.³⁸ This standard was not met by Xenovia in destroying Valerian 806 (A.1.1.).

Without interference by Xenovia, there was only a 1 in 5,000 chance that any component of a Valerian satellite would survive re-entry.³⁹ Xenovia should have foreseen the imminent danger

³⁴ Article IX, OST.

³⁵ Marchisio, *supra* no 20, at 176.

³⁶ M/V "Norstar" (Panama v. Italy), Judgment, 2019 I.T.L.O.S 512, §199 (April 10).

³⁷ Chagos Marine Protected Area Arbitration (Mauritius v. United Kingdom), Award, Perm. Ct. Arb. 2011-03, at 519 (March 18).

³⁸ Daniel Goedhuis, *Legal aspects of the utilisation of Outer Space*, 17 NETHERLANDS INTL L. REV. 33 (1970).

³⁹ Compromis §13.

posed, given that re-orbiting a satellite is a risk-prone operation.⁴⁰ Xenovia did not take steps to minimise risk in a dangerous act of interference. Instead, Xenovia acted specifically to cause it.

b. Xenovia violated the requirement for consultation

Article IX OST imposes a duty on States to enter consultations with another State Party if their space activity might cause harmful interference.⁴¹

The activities occurred in low-Earth orbit (LEO) and are therefore space activities.⁴² As mentioned, the ITU considers harmful interference as degradation in the output of the object.⁴³ Harmful interference in this context was the degradation of Valerian 806 beyond potential use. Due to the foreseeability of the creation of debris and the hazardous possession and re-orbiting operation,⁴⁴ Xenovia had reason to believe that their activity would result in harmful interference. In fact, the Fenix satellites were anti-satellite military weapons designed to disable or remove satellites from orbit.⁴⁵ Xenovia also failed to consider the United Nations Space Debris Mitigation Guidelines (SDMGs), in which Guideline 4 requires States to avoid intentional destruction and other harmful activities.⁴⁶ Whilst the SDMGs are not legally binding, they reflect the general

⁴⁰ Luftiee Ametova, *International interests in space assets under the Cape Town Convention*, 92 ACTA ASTRONAUTICA 218 (2013).

⁴¹ Article IX, OST.

⁴² Frans von der Dunk, *Liability for Damage Caused by Small Satellites- A Non-issue?* in SMALL SATELLITES: REGULATORY CHALLENGES AND CHANCES 154 (Irmgard Marboe ed. 2016).

⁴³ ITU Radio Regulations, *supra* no 7, art. 1.169.

⁴⁴ Ametova, *supra* no 40, 218; James P. Lampertius, *The Need for an Effective Liability Regime for Damage Caused by Debris in Outer Space*, 13 MICH. J. INT'L 454 (1992).

⁴⁵ Compromis §9.

⁴⁶ Space Debris Mitigation Guidelines of the Committee on the Peaceful Uses of Outer Space, UN GAOR, 62nd sess, Supp No 20, UN Doc A/62/20 annex (22 December 2007), Guideline 4.

practice and consensus of spacefaring nations⁴⁷ and indicate the standard of behaviour expected from ‘good’ launching States.⁴⁸

Further, Xenovia intended harmful interference for their own commercial advantage, since the purpose of the possession was to interfere with Candidia’s thriving LEO space sector⁴⁹ and relieve competitive pressure on Xenovia whose GSO launch capabilities were experiencing decreasing demand.⁵⁰

Xenovia therefore had an obligation to consult Candidia before its interference with Valerian 806 under Article IX OST, which it failed to do. Xenovia also failed to pay due regard to the interests of Candidia in outer space. Consequently, Xenovia violated Article IX OST with its interference and destruction of Valerian 806.

A.1.3.4. Xenovia’s interference with Valerian 806 was not justified by the CTC and SAP and amounted to a violation of those Conventions

A security agreement was entered into between Selada, Inc., a company which at the time of the incident was incorporated in Candidia, and Alendularia S.A., a company whose conduct has been attributed to Xenovia (A.1.2.) concerning the financing of Pacem.

⁴⁷ Also acknowledged by SDMGs, *id.*; Ronald L. Spencer, *State Supervision of Space Activity*, 63 AIR FORCE LAW REVIEW 79 (2009).

⁴⁸ Armel Kerrest, Space debris, remarks on current legal issues in Proceedings of the 3rd European Conference on Space Debris (2001) <<https://conference.sdo.esoc.esa.int/proceedings/sdc3/paper/3/SDC3-paper3.pdf>> last accessed 10 July 2022.

⁴⁹ Compromis §1.

⁵⁰ Compromis §4.

The security agreement is governed by Xenovian law and, although it incorporates the remedies available under the CTC and SAP, it does not operate under the CTC or SAP directly. The agreement was entered into in 2023, whereas Xenovia and Candidia became parties to the CTC and SAP in 2026.⁵¹ Since the application of the Conventions is not retroactive,⁵² and the agreement was not registered under the SAR,⁵³ only those provisions which were transposed into the agreement apply.

Nevertheless, Xenovia had no right under the security agreement to justify interfering with Valerian 806 (a.). Moreover, even if the remedies provided by the CTC and SAP applied, Xenovia did not exercise the correct remedies and therefore violated international law (b.).

a. There were no circumstances to trigger the remedies of the CTC and SAP

According to Article 8(1)(a) of the CTC, the chargee may take possession or control of any object charged to it. This remedy is invoked when there is default on the part of the debtor.⁵⁴ The chargee is the party with a security interest over the object charged to it.⁵⁵ Alendularia S.A. agreed to finance Pacem and is therefore the chargee under this Article. However, Alendularia S.A., and by extension, Xenovia (A.1.2.), did not act in accordance with the criteria laid out under Article 8, and therefore cannot rely on the CTC and SAP to preclude the wrongfulness of their interference with Valerian 806.

⁵¹ Compromis §10 and §3.

⁵² Article 28, VCLT.

⁵³ Article XVII (3), SAP.

⁵⁴ Article 8(1)(a), CTC; Article 11, CTC.

⁵⁵ ROY GOODE, COMMENTARY ON THE CAPE TOWN CONVENTION ON INTERNATIONAL INTERESTS IN MOBILE EQUIPMENT AND PROTOCOL THERETO ON MATTERS SPECIFIC TO SPACE ASSETS, para 4.79, 278 (2013).

First, the security agreement was entered to finance Pacem and not Valerian 806 (i.). Second, even if Xenovia held an interest over Valerian 806, Selada, Inc. did not have the power to dispose of Valerian 806 because it was owned by Candidia (ii.). Finally, there was no event of default to trigger the CTC (iii.).

i. Xenovia does not hold an interest in Valerian 806, as the security agreement between Selada, Inc. and Alendularia S.A. solely concerns Pacem

Alendularia S.A. cannot claim an interest in Valerian 806 as they do not hold any security agreement pertaining to that satellite. The security agreement was entered into for the financing of Pacem and concerns only that space station.⁵⁶ Indeed, Valerian 806 was never referenced in the agreement.⁵⁷

Moreover, Valerian 806 was a national asset of Candidia⁵⁸ and part of a constellation of satellites whose operation have no bearing on the operations of Pacem.⁵⁹ Pacem remains intact and operational, thereby rendering its possession the only proper remedy, if any default occurred.

Without a legitimate interest in Valerian 806, Xenovia's decision to possess Valerian 806 was outside the scope of any existing security agreement. Thus, the interference constitutes a violation of the OST and general international law.

⁵⁶ Compromis §14.

⁵⁷ Responses to Requests for Clarifications §3.

⁵⁸ Compromis §15.

⁵⁹ Compromis §13.

ii. Selada, Inc. did not have the power to dispose of Valerian 806

Under the CTC, the remedies capable of being exercised must relate to an asset which the debtor has the power to dispose of.⁶⁰ Valerian 806 was not the space asset mentioned in the security agreement.⁶¹ Moreover, even if Valerian 806 were mentioned, the agreement would have been invalid because Selada, Inc. did not have the power to dispose of it. The power to dispose is not defined under the CTC, but it is taken to mean the power of the owner to do with the object what it pleases.⁶² Seeing as Valerian 806 was owned by Candidia and not by Selada, Inc., Valerian 806 could not have validly been the space asset charged under the agreement.

iii. There was no event of default under Article 11 CTC

Alendularia S.A., Fenix LLC and, by extension, Xenovia (A.1.2.) possessed Valerian 806 because of the cash flow issues reported by Selada, Inc., a company incorporated in Candidia.⁶³ However, the cash flow issues did not amount to default, and therefore did not merit the invocation of the remedies concerned.

Where the parties have not agreed as to the meaning of default, it is taken to mean ‘a default which substantially deprives the creditor of what it is entitled to expect under the agreement’.⁶⁴ The expectations of the creditor are to be considered in light of the agreement,⁶⁵ which concerned the financing of Pacem.⁶⁶ Similarly, the term ‘substantially deprives’ typically refers to a high

⁶⁰ Article 7, CTC.

⁶¹ Requests for Clarifications §3.

⁶² SANAM SAIDOVA, SECURITY INTERESTS UNDER THE CAPE TOWN CONVENTION ON INTERNATIONAL INTERESTS IN MOBILE EQUIPMENT 7 (2018).

⁶³ Compromis §16.

⁶⁴ Article 11, CTC.

⁶⁵ SAIDOVA, *supra* no 62, at 180.

⁶⁶ Compromis §14.

probability of the debt not being repaid.⁶⁷ Selada, Inc.’s notification that it was experiencing ‘cash flow issues’ can hardly be considered to fall under this classification. Consequently, there was no default and Xenovia had no justification to possess Valerian 806.

b. Even if the remedies under the CTC and SAP were applicable, Xenovia did not act correctly in their possession of Valerian 806

Assuming *arguendo* that Selada, Inc. did default under the security agreement and that Valerian 806 was the correct asset to target, Xenovia’s unlawful decision to take possession of Valerian 806 still derogated from the remedies as set forth within the CTC and SAP. The possession was completed in a commercially unreasonable manner which violated the SAP (i.), and competing interests were not considered (ii.). For these reasons, Alendularia S.A. and Fenix LLC’s possession of Valerian 806 was violative of the CTC and the SAP.

i. Possession of Valerian 806 was commercially unreasonable and therefore violative of the SAP

Article XVII (1) SAP and Article 8 (3) CTC require any available remedies to be exercised in a commercially reasonable manner.⁶⁸ SAP defines this as a remedy exercised in conformity with a provision of the agreement, except where such a provision is ‘manifestly unreasonable’.⁶⁹ The physical possession of Valerian 806 was unreasonable because of the inherent difficulty in physically possessing a space object in orbit,⁷⁰ and because Xenovia failed to exhaust other more feasible and safer alternatives.

⁶⁷ SAIDOVA, *supra* no 62, at 181.

⁶⁸ Article XVII (1), SAP; *see also* Article 8 (3), CTC.

⁶⁹ Article XVII (1), SAP.

⁷⁰ Ametova, *supra* no 40, 218.

The drafters of the SAP did not envisage the possession of an object in orbit as Fenix-3 did because of the risk involved.⁷¹ Even if Valerian 806 was the correct asset to possess, Alendularia S.A. should have undertaken safer and more reasonable measures as recommended under the SAP, such as by requesting the command codes of Valerian 806⁷² or reprogramming its orbit vis-à-vis Valerian 806's built-in AI systems. Additionally, Valerian 806 was only intended to operate for three years, after which it would be de-orbited.⁷³ Xenovia instead forced physical possession without regard for the variety of safer, cheaper and more commercially reasonable measures readily available to accomplish the same end. By failing to exercise their remedies as a creditor in a commercially reasonable manner, Xenovia violated Article XVII (1) SAP and Article 8 (3) CTC.

ii. Alendularia S.A. did not have priority over other possible competing interests in Valerian 806 since it did not register an international interest

The SAP contains clear rules for the balancing of competing interests over space assets which have been registered in the Space Asset Registry (**SAR**).⁷⁴ Registration ensures priority,⁷⁵ which in turn allows the creditor to exercise their remedies effectively.⁷⁶ It is the State of the creditor, Xenovia,

⁷¹ Serap Zuvin and Onur Can Ucarer, *International Space Law and Turkey*, 4 AVIATION AND SPACE L. J. 29 (2020).

⁷² Article XIX, SAP.

⁷³ Compromis §13.

⁷⁴ Article XIII, SAP.

⁷⁵ Article 29, CTC; GOODE, *supra* no 55, para 2.27, 25 (2013).

⁷⁶ Kristin van Zwieten, *The insolvency provisions of the Cape Town Convention and Protocols: historical and economic perspectives*, 1 CAPE TOWN CONVENTION J. 58 (2012).

which must register its international interest in the SAR.⁷⁷ Valerian 806 was not registered in the SAR and therefore Alendularia S.A. did not have priority.⁷⁸

Alendularia S.A. did not take into consideration other competing interests on the asset. Valerian 806 ‘contained transponders and other equipment that was leased to multiple customers and was an indispensable component of a private secure network to be utilized by the Government of Safrandia’.⁷⁹ Transponders are an object which the SAP specifically details as being ‘a part of a spacecraft or payload in respect of which a separate registration may be effected’,⁸⁰ thus whilst the details of registered interests are unknown, other interests might have taken precedent over those of Alendularia S.A. Xenovia’s decision to unilaterally declare its priority is incompatible with the private international law surrounding priority interests in space assets and constitutes a disregard for the commercial interests of other States.⁸¹

Moreover, even if the interest was somehow registered on the SAR, this would have no bearing on the outcome. Since there was no default,⁸² Valerian 806 was not the correct asset to obtain and its possession was not commercially reasonable.⁸³

⁷⁷ Roy Goode, *The Cape Town Convention on International Interests in Mobile Equipment: a Driving Force for International Asset-Based Financing*, UNIFORM COMMERCIAL CODE L. J. 13 (2003).

⁷⁸ UNIDROIT Committee of Governmental Experts for the Preparation of a Draft Protocol to the Convention on International Interests in Mobile Equipment on Matters Specific to Space Assets, C.G.E./Space Pr./3/W.P. 7 rev. 2 (2009).

⁷⁹ Compromis §15.

⁸⁰ Article 1(2)(iii), SAP.

⁸¹ MARK J. SUNDAHL, *THE CAPE TOWN CONVENTION: ITS APPLICATION TO SPACE ASSETS AND RELATION TO THE LAW OF OUTER SPACE* 8 (2013).

⁸² Section A.1.3.4 (a)(iii).

⁸³ Section A.1.3.4 (b)(i).

A.1.3.5. Xenovia violated general international law by interfering

Xenovia violated international law in the appropriation of another State's property by interfering with Valerian 806.

Xenovia, through Alendularia S.A. and Fenix LLC, appropriated Valerian 806 without the consent of Candidia. As held in the *Norwegian Claims* and *German Interests in Polish Upper Silesia* cases,⁸⁴ a State which interferes with the property of another State is in violation of international law, even where that State expressly denies such an intention to interfere.⁸⁵ Given that Candidia owns Valerian 806, it follows that Xenovia violated this principle of international law for its unlawful interference and possession of Valerian 806.

A.2. Xenovia caused damage to Candidian property and persons and is liable for this damage

The Fenix-3 satellite, owned by and registered in Xenovia, grabbed Valerian 806, 'cracked and crumpled' a section of the satellite and ruptured its fuel line.⁸⁶ As a result, both satellites exploded and Fenix-3 debris re-entered the Earth environment, struck a Candidian military cargo plane and led to the loss of all nine persons on board and the loss of the aircraft (A.2.1).⁸⁷ The damage from the destruction of Valerian 806 also caused Candidia to lose significant revenues from its operation (A.2.2.).

⁸⁴ *Norwegian Claims Case* (Nor. v. U.S.), Judgement, 1922 P.C.I.J. 1, at 307 (Oct. 13); *Certain German Interests in Upper Polish Silesia* (Germany v. Poland), Judgement, 1926 P.C.I.J. 7 at 510, 540 (Feb. 5).

⁸⁵ George C. Christie, *What Constitutes a Taking of Property Under International Law?* BRIT YB INTL LAW 311 (1962).

⁸⁶ *Compromis* §17.

⁸⁷ *Compromis* §18.

A.2.1. Xenovia caused damage to the cargo plane and the people on board

Damage incorporates the concept of ‘loss’ in general international law, which includes damage to persons and property.⁸⁸ One large fragment of the Fenix-3 satellite struck Candidia’s cargo plane, which resulted in the death of all nine persons on board.⁸⁹ On the facts, it is undisputed that it was a piece of Fenix-3 which hit the cargo plane.⁹⁰ The damage caused is therefore damage to persons (the individuals on board the cargo plane) and damage to property (Valerian 806 and the cargo plane itself).

A.2.2. Xenovia caused damage in terms of loss of revenues

In terms of revenues, as the owner of Valerian 806, Candidia experienced economic loss.⁹¹ This included the loss of revenues from leasing multiple components of Valerian 806 to customers and Safrandia.⁹² These damages are aggravated with the time necessary for the ITU to process filings for any replacement satellite Candidia wishes to operate.⁹³

Economic loss falls within the scope of damage as envisaged by OST.⁹⁴ This type of damage can be defined as ‘damage, loss or injury [which] does not flow directly and immediately from the act,

⁸⁸ Factory at Chorzow (Germany v. Poland), Judgement, 1928 P.C.I.J. 13, at 31 (Sept. 13); Armel Kerrest and LJ Smith, *Article VII* in I COLOGNE COMMENTARY ON OUTER SPACE 141 (Hobe et al eds., 2009).

⁸⁹ Compromis §18.

⁹⁰ *Id.*; Carl Q. Christol, *International Liability for Damage Caused by Space Objects*, 74 AM. J. INT’L L. 346, 362 (1980).

⁹¹ Jean François Mayence, *The Relevance of the Concept of Ownership in Space Activities and their Regulation* in OWNERSHIP OF SATELLITES: A SIMPLE LEGAL FACT WITH COMPLEX CONSEQUENCES 20 (Hoffman ed., 2017).

⁹² Compromis §15.

⁹³ Compromis §8.

⁹⁴ BIN CHENG, GENERAL PRINCIPLES OF LAW AS APPLIED BY INTERNATIONAL COURTS AND TRIBUNALS, 241-53 (2d ed, 1987); Kerrest and Smith, *supra* no 88, at 141.

but only from some of the consequences or results of such act'.⁹⁵ The loss of revenues experienced by Candidia was an immediate result of the destruction of Valerian 806 by Fenix-3.

The damages claimed by Candidia are therefore the loss of life, the loss of the aircraft and the loss of revenues from the destruction of Valerian 806. The loss of the Valerian 806 satellite itself constitutes further direct damage from which flow the lost revenues.

A.2.3. Xenovia is liable for the loss of lives on board the cargo plane, the loss of plane itself and the lost revenues resulting from the destruction of Valerian 806

Candidia considers Xenovia liable for the damages in A.2. under Article VII OST (A.2.3.1.) and to have a duty of reparation under general international law (A.2.3.2.). Candidia does not consider the Liability Convention (**LIAB**)⁹⁶ applicable because Candidia is not a party to this Treaty, and a treaty does not create obligations or rights for a third State without its consent.⁹⁷

A.2.3.1. Xenovia is liable for damages under Article VII OST

In space law, Article VII OST constitutes the *lex generalis* for liability in space activities.⁹⁸ Liability under Article VII OST is unlimited in time, amount and location.⁹⁹ Where Article VI

⁹⁵ *Id*, 362.

⁹⁶ Convention on International Liability for Damage Caused by Space Objects, opened for signature Mar. 29, 1972, 24 U.S.T. 2389, 961 U.N.T.S. 187.

⁹⁷ VCLT, Article 34; Austro-German Customs Union Case, Advisory Opinion, 1931 P.C.I.J. 41, §48 (May 19); Chorzow Factory, *supra* no 88, §34.

⁹⁸ IRMGARD MARBOE, LEGAL ASPECTS OF PLANETARY DEFENCE 292 (2021).

⁹⁹ Kerrest and Smith, *supra* no 88, at 141.

OST holds States responsible for all national space activities, a State's international liability extends to public and private actors, including non-governmental entities.¹⁰⁰

Article VII OST provides four conditions for State liability: Xenovia must have launched or procured the launch of Fenix-3, or it must have been launched from Xenovia's territory or facility (a.); Fenix-3 and debris created by Fenix-3 must be a space object or a component part of a space object (b.); Fenix-3 must have caused the damage (c.); and the damage must be recoverable (d.).

a. Xenovia launched the object that caused the damage

The first requirement under Article VII OST is that Xenovia must have launched or procured the launch of an object, or it must have been launched from its territory or facility.¹⁰¹ There are two means by which Xenovia meets this requirement. First, the State of Registry of a space object is deemed to be a launching State.¹⁰² Xenovia has conveyed its status as a State which has launched Fenix-3 by registering the satellite, since only launching States can register satellite under the REG.¹⁰³ Second, Xenovia has procured the launch of Fenix-3 given that it both owns the satellite¹⁰⁴ and has a 50% equity share in Fenix LLC.¹⁰⁵ The ordinary interpretation of the word 'procurement', applicable under Article 31 of the Vienna Convention on the Law of Treaties

¹⁰⁰ Bin Cheng, *Article VI of the Outer Space Treaty Revisited: "International Responsibility", "National Activities" and the "Appropriate State*, 26 J. SPACE L. 7, 9 (1998).

¹⁰¹ Article VII, OST.

¹⁰² Arnel Kerrest, *Launching Spacecraft from the Sea and the Outer Space Treaty: The Sea Launch Project* 23 AIR AND SPACE LAW 17 (1998).

¹⁰³ Art. II, REG; Compromis §17.

¹⁰⁴ Compromis §17.

¹⁰⁵ Compromis §9.

(VCLT),¹⁰⁶ is to ‘cause the launch to take place’.¹⁰⁷ Therefore, Xenovia also procured the satellite by financially causing the satellite to come into being. Additionally, given that Fenix LLC was incorporated in Xenovia, Xenovia further ‘caused’ the launch to happen by permitting the incorporation of Fenix LLC in Xenovia.¹⁰⁸

b. Fenix-3 is a space object

A satellite is widely considered to be a space object.¹⁰⁹ Additionally, under REG, to which Xenovia is a party, only a ‘space object’ can be registered.¹¹⁰ Since Fenix-3 was registered by Xenovia and is a satellite,¹¹¹ Fenix-3 is a space object.

Further, the fragment of Fenix-3 that struck the Canadian cargo plane and caused damage can also be considered a space object for the purposes of this definition given that there is no legal presumption on the size or use of a space object.¹¹² However, Article VII OST also includes ‘component parts’ into the means by which damage can be caused.¹¹³ Therefore, irrespective of

¹⁰⁶ Vienna Convention on the Law of Treaties, entered into force 27 Jan. 1980, U.N.T.S 1155, Art. 31; This Article has been confirmed to have customary status in *Kasikili/Sedudu Island (Botswana/Nambia)* 1999 I.C.J. 1059 §18 (Dec. 13) and *LaGrand (USA v. Germany)*, Judgment, I.C.J. Rep 104, §501 (June 27).

¹⁰⁷ Armel Kerrest and Lesley Jane Smith, *Article I (Definitions) LIAB* in I COLOGNE COMMENTARY ON OUTER SPACE 114 (Hobe et al eds., 2009); see INGO BAUMANN AND LESLEY JANE SMITH, *CONTRACTING FOR SPACE: CONTRACT PRACTICE IN THE EUROPEAN SPACE SECTOR* (2011).

¹⁰⁸ MASSON-ZWAAN AND HOFFMANN, *supra* no 5, at 27; Peter van Fenema, *The Unidroit Space Protocol, the Concept of ‘Launching State’, Space Traffic Management and the Delimitation of Outer Space*, 28 AIR AND SPACE LAW 278 (2002).

¹⁰⁹ See Section A.1.3.2.; Bin Cheng, *International Responsibility and Liability for Launching Activities*, XX ANNALS OF AIR AND SPACE LAW 297 (1995).

¹¹⁰ Stephen Gorove, *Toward a Clarification of the Term Space Object - An International Legal and Policy Imperative*, 21 J. SPACE L. 21 (1993).

¹¹¹ *Compromis* §17.

¹¹² Kerrest and Smith, *supra* no 88, at 140.

¹¹³ Article VII, OST.

whether the fragment of Fenix-3 was a ‘component part’ of a space object or a space object itself, Xenovia is liable for the damage caused.¹¹⁴

c. Fenix-3 caused the damages

Under Article VII OST, causation must be established. Causation in international law requires a proximate causal link between the damage and the activity from which the damage resulted for liability to be established.¹¹⁵ Proximate causation requires a natural and foreseeable sequence between the act and the damage.¹¹⁶ This concept is tied to that of the reasonable person, and therefore only requires foreseeability of general harm.¹¹⁷

The damage caused to the persons on board the cargo plane, the cargo plane itself and Valerian 806 was a natural and foreseeable sequence of Xenovia’s actions for four reasons. First, the appropriation of a satellite in orbit, especially when employing an abrasive three-jawed vise grappling technology,¹¹⁸ is a dangerous operation which risks the creation and re-entry of debris into Earth’s atmosphere. Second, Xenovia owned satellites in the constellation¹¹⁹ and therefore was aware of their build structure and the fact that they would not be receptive to Fenix-3 grappling technology. Thirdly, if Xenovia believed that on-orbit manufacture resulted in weak satellite structures,¹²⁰ they should have foreseen that the Fenix-3 grappling technology was unsuitable for

¹¹⁴ GEORGE T. HACKET, *SPACE DEBRIS AND THE CORPUS IURIS SPATIALIS* 1 (1994).

¹¹⁵ Stephen Gorove, *Cosmos 594: Issues of Law and Policy*, 6 *J. SPACE LAW* 141 (1978).

¹¹⁶ *Naulilaa Incident (Portugal v. Germany)* 1928, 2 *R.I.A.A.* 1011, 1031 (June 30); BIN CHENG, *GENERAL PRINCIPLES OF LAW AS APPLIED BY INTERNATIONAL COURTS AND TRIBUNALS* 241 (1987); *CME Czech Republic B.V. v. The Czech Republic*, Partial award and separate opinion, 2001 *I.I.C.* 61 §170 (Sept. 13).

¹¹⁷ *Id.*

¹¹⁸ *Compromis* §17.

¹¹⁹ *Compromis* §12.

¹²⁰ *Compromis* §19.

a ‘repositioning’ operation. Fourthly, the prevalence of international efforts to minimise the creation of space debris (*i.e.*, the SDMGs to which Candidia ensured compliance) correlate the danger of such activity, and it was foreseeable by Xenovia that general harm would be caused due to its conduct. Therefore, Xenovia had foreseeability of general harm resulting from their apprehension of Valerian 806.

The same reasoning applies to the loss of revenue resulting from the destruction of Valerian 806 (A.2.2.). Valerian 806 was rendered inoperable by Fenix-3 and could no longer provide its communication network and other services to its customers.¹²¹ It was foreseeable that, in apprehending the satellite and with knowledge of its build quality, the satellite would be damaged and Candidia would lose revenue.

d. Damages are recoverable under the OST

The final requirement is that damages must be recoverable under the OST. Recoverability of damages under international law is dependent on damages to persons and property having a sufficient causal nexus.¹²² The requisite causal nexus has been established (A.2.3.1.c.) and therefore all damages Candidia claims for are recoverable under the OST. Particularly with regards to the economic loss suffered by Candidia, income lost is generally ‘cognisable as a component of compensation’.¹²³ Moreover, as confirmed in the *Ahmadou Sadio Diallo* judgement, if the amount of lost revenues cannot be calculated precisely, an estimation will be sufficient.¹²⁴

¹²¹ Compromis §15.

¹²² Chorzow Factory, *supra* no 88; Eritrea-Ethiopia Claims Commission, Final Award, Ethiopia's Damages Claims 2009 P.C.A., VOLUME XXVI (Aug. 17).

¹²³ Ahmadou Sadio Diallo (Guinea v. Democratic Republic of the Congo) 2007 I.C.J. 675 (May 24); Bin Cheng, *supra* no 109, at 297.

¹²⁴ *Id.*, 675.

If a higher standard of recoverability is applied, such as the standard held as applicable in the *Bosnian Genocide* case, the damages would still be recoverable. In *Bosnia*, it was held that there must be ‘a sufficient degree of certainty’ that if a State had acted according to its obligations under international law the damages would not have occurred.¹²⁵ In this case, if Xenovia had acted according to its Article IX OST obligation to consult Candidia before apprehending Valerian 806, Xenovia would either have had knowledge that they were not legally entitled to apprehend Valerian 806, or an exchange of Valerian 806 command codes could have been completed (assuming *arguendo* Xenovia had such a right). Therefore, all damages would be recoverable on both grounds of recoverability potentially applicable.

In summary, Xenovia has met the four conditions for Article VII OST liability for all damages as claimed by Candidia. Xenovia is therefore under a duty to make reparation to Candidia for its losses.¹²⁶

A.2.3.2. Xenovia owes reparation for damages under general rules of international law

Additionally, Xenovia is responsible under the International Law Commission’s Articles on State Responsibility¹²⁷ (**ARSIWA**) and has a duty to make reparation to Candidia pursuant to Article 31 ARSIWA. ARSIWA is a codification of customary international law principles, confirmed by

¹²⁵ Concerning Application of the Convention on the Prevention and Punishment of the Crime Of Genocide (*Bosnia And Herzegovina V. Serbia And Montenegro*), 2007 I.C.J., §462 (Feb. 26).

¹²⁶ *Chorzow Factory*, *supra* no 88, at 9; Article 31, ARSIWA.

¹²⁷ ILC Articles on Responsibility of States for Internationally Wrongful Acts with commentaries, 53 U.N. GAOR Supp. No. 10, U.N. Doc. A/56/10 (2001).

widespread State practice and *opinio juris*,¹²⁸ and this Court has specifically relied upon ARSIWA before.¹²⁹ Hence, their principles are binding on all States, including Xenovia.

Under ARSIWA, if a State commits a wrongful act, it is under obligation to make full reparation for the injury caused by the act.¹³⁰ An internationally wrongful act is triggered if the conduct is attributable to the State¹³¹ and the act is a breach of an international obligation.¹³²

a. Fenix LLC's conduct is attributable to Xenovia

The conduct of Fenix LLC and Fenix-3 satellite in possessing Valerian 806 can be attributed to Xenovia in two ways. First, under Article VI OST a State is responsible for the activities of its nationals (A.1.2.).¹³³ Second, under Article 8 ARSIWA where a non-State actor is 'acting on the instructions of, or under the direction or control of, that State in carrying out the conduct', conduct can be attribute to the State.¹³⁴ Prior case law has established that the non-State actor must act under the effective control of the State.¹³⁵ In this case, Xenovia possessed jurisdiction and control over the apprehending object given that Xenovia registered the object.¹³⁶ Further, Fenix LLC was

¹²⁸ G.A. Res. 65/96, Responsibility of States for internationally wrongful acts: Comments and Information received from Governments (May 14, 2010).

¹²⁹ Concerning Application of the Convention on the Prevention and Punishment of the Crime of Genocide (Cro. v. Ser), 2015 I.C.J., §401 (Feb. 6); Obligations Concerning Negotiations Relating to Cessation of the Nuclear Arms Race and to Nuclear Disarmament (Marshall Islands v. U.K.) 2016 I.C.J. §177 (Oct. 5).

¹³⁰ Article 31, ARSIWA.

¹³¹ Article 2, ARSIWA.

¹³² *Id.*

¹³³ Article VI, OST.

¹³⁴ Article 8, ARSIWA.

¹³⁵ Military and Paramilitary Activities in and against Nicaragua (Nicar. v U.S.), Judgement, 1986 I.C.J. Rep. 14, at 109 and 115 (June 27).

¹³⁶ Compromis §17.

a public-private partnership within which Xenovia possessed a 50% equity share.¹³⁷ Thus, Xenovia both controlled the space object and controlled the company, and Fenix LLC was acting under the effective control of Xenovia for the purposes of Article 8 ARSIWA.

b. Xenovia committed several wrongful acts

A.1.3. detailed the numerous violations of international law committed by Xenovia in its interference with Valerian 806, namely that Xenovia acted in violation of Article I OST by failing to respect the right of Candidia to freely use outer space, Article VIII OST by failing to respect Candidia's jurisdiction and control over Valerian 806 and Article IX OST by failing to pay due regard to the interests of Candidia. Xenovia also acted in violation of the CTC and SAP, and of international law.

Taking the attribution of conduct and the wrongful acts together, Xenovia's unlawful interference attracts international responsibility, and a duty to make reparation under the customary law on State responsibility.¹³⁸

¹³⁷ Compromis §9.

¹³⁸ Chorzow Factory, *supra* no 88, at 9; Article 31, ARSIWA.

B. CANDIDIA ACTED IN ACCORDANCE WITH INTERNATIONAL LAW AND IS NOT LIABLE FOR THE LOSS OF FENIX-3.

Candidia acted in accordance with the OST (B.1.) and is not liable under the OST, LIAB or under a duty to make reparation to Xenovia under general international law (B.2.) for the loss of Fenix-3.

B.1. Candidia acted in accordance with the OST

In conducting its space activities with Valerian 806, Candidia acted in accordance with Articles I, IV and IX OST.

B.1.1. Candidia acted in accordance with Article I OST

Article I OST grants States the freedom to explore and use outer space, including the Moon and other celestial bodies, without discrimination of any kind.¹³⁹ The freedom to explore and use outer space is a fundamental principle of the OST,¹⁴⁰ and means that the State Party does not require the approval of other States for its space activities.¹⁴¹ Candidia, in engaging in launch services and satellite fabrication without limiting or discriminating against the freedoms of any other State,¹⁴² has acted in accordance with this Article. The right to use outer space is granted to non-State entities, including Selada, Inc., through the fulfilment of a State's Article VI OST obligations (see B.1.2.).

¹³⁹ Article I, OST.

¹⁴⁰ FRANCIS LYALL AND PAUL B. LARSEN, SPACE LAW: A TREATISE 64 (2d ed. 2018).

¹⁴¹ Hobe, *supra* no 19, at 34.

¹⁴² Compromis §1.

B.1.2. Candidia acted in accordance with Article VI OST

Candidia fulfilled its obligation under Article VI OST to provide authorisation and continuing supervision for the activities of Selada, Inc. in outer space through its National Legislation on Space Affairs (NLSA).

B.1.2.1. Candidia became the appropriate State to authorise and supervise Selada, Inc. after Pacem was launched

Article VI OST obliges the appropriate State Party to authorise and continually supervise the activities of non-governmental entities.¹⁴³ National implementation of Article VI OST has shown that a State which authorises the activities of its nationals can be considered to have accepted its status as the appropriate State.¹⁴⁴ As a matter of practice, applicant companies seek authorisation under Candidia's NLSA.¹⁴⁵ The decision by Selada, Inc. to move its headquarters and corporate charter from Safrandia to Candidia therefore meant that authorisation was required by Candidia. This constituted a change in the appropriate state for the purposes of Article VI OST from Safrandia to Candidia.

In terms of the timeline for the launch of Pacem and deployment of Valerian 806, Candidia became the appropriate state after the launch of the components of Pacem into space. Candidia's obligation to authorise and supervise the activities of Selada, Inc. started thereafter.¹⁴⁶ Candidia assumed that

¹⁴³ Article VI, OST.

¹⁴⁴ FRANS VON DER DUNK, NATIONAL SPACE LEGISLATION IN EUROPE: ISSUES OF AUTHORISATION OF PRIVATE SPACE ACTIVITIES IN THE LIGHT OF DEVELOPMENTS IN EUROPEAN SPACE COOPERATION 18 (2011).

¹⁴⁵ Compromis §1.

¹⁴⁶ Compromis §10.

Safrandia's authorisation of Selada, Inc.'s activities had ended after the incorporation of Selada, Inc. in Candidia, given that Safrandia's jurisdiction over the company had ended. There was no registration from Safrandia to affect this presumption.¹⁴⁷

B.1.2.2. Candidia correctly authorised the activities of Selada, Inc.

It is a State's sovereign prerogative to implement Article VI in a manner they deem appropriate, and there is no practice of authorisation common to all space-faring nations.¹⁴⁸ However, Candidia implemented various measures to meet their obligation to authorise the activities of Selada, Inc.

First, the duty to authorise activities can be fulfilled through the enactment of national space legislation.¹⁴⁹ Candidia did through its NLSA of 2020¹⁵⁰ prior to the commencement of Selada, Inc.'s activities in outer space.¹⁵¹ It is a matter of practice that national companies seek authorisation under the NSLA.¹⁵² Further, there is no consistent international practice of independent verification by States of technical representations by applicant companies. For example, it is the practice of the United States that the Federal Aviation Administration relies on technical submissions from the applicant company.¹⁵³ The French Space Operations Act of 2008 similarly requires the applicant to submit a technical file to the Ministry for Space Affairs without

¹⁴⁷ Compromis §10.

¹⁴⁸ Michael Gerhard, *Article VI* in I COLOGNE COMMENTARY ON SPACE LAW 118 (Hobe, et. al. eds., 2009); Mark J. Sundahl, *Legal Status of Spacecraft* in ROUTLEDGE HANDBOOK OF SPACE LAW 46 (Jakhu and Dempsey eds., 2016).

¹⁴⁹ Tanja Masson-Zwaan, *Article VI in the Outer Space Treaty and Private Human Access to Space* 51 I.I.S.L. Proc. 535 (2009).

¹⁵⁰ Compromis §1.

¹⁵¹ Compromis §10.

¹⁵² Compromis §1.

¹⁵³ 49 U.S.C. §701 (1994).

an obligation for independent verification.¹⁵⁴ Therefore, Candidia's NLSA appropriately authorised its space activities according to the practice which has developed around the Article VI OST obligation.

Second, authorisation through Candidia's NLSA meant the registration of objects on Candidia's national space object registry and the SAR to aid in the safe identification of space objects after launch.¹⁵⁵ The information collected pursuant to authorisation is compliant with the information required under REG,¹⁵⁶ even though Candidia has no obligation to abide by REG as it is not a party to the Treaty.¹⁵⁷ This is further evidence of Candidia's adequate authorisation procedures.

B.1.2.3. Candidia supervised the activities of Selada, Inc.

The OST provides no guidance as to what constitutes 'supervision'.¹⁵⁸ Therefore, individual States should determine their own means of supervising national space entities.¹⁵⁹ For Candidia, this included a risk analysis conducted by Selada, Inc. during its incorporation in Candidia. This risk analysis confirmed a limited risk of debris re-entry with only a 1 in 5000 (0.0020%) chance that any component of a Valerian satellite would survive atmospheric re-entry.¹⁶⁰ This is significantly less than the internationally recognised ISO standard for post-mission disposal reliability which is

¹⁵⁴ Loi 2008-518 du 3 juin 2008 relative aux opérations spatiales (Fr.); Décret 2009-643 du 9 juin 2009 relatif aux autorisations délivrées en application de la loi n° 2008-518 du 3 juin 2008 relative aux opérations spatiales, Art. 11.

¹⁵⁵ Compromis §5.

¹⁵⁶ Compromis §5.

¹⁵⁷ Article 34, VCLT.

¹⁵⁸ Ronald L. Spencer, *State Supervision of Space Activity*, 63 AIR FORCE LAW REVIEW 79 (2009).

¹⁵⁹ *Id.*

¹⁶⁰ Compromis §13.

required to be 0.9%.¹⁶¹ Candidia also established an official post-accident Board of Inquiry to ascertain the compliance of its national company with Candidian procedures.¹⁶² Therefore, the means of supervision employed by Candidia were appropriate.

B.1.3. Candidia acted in accordance with Article IX OST

Candidia also acted with due regard to the interests of other States in outer space. The substance of the due regard requirement has been elaborated in A.1.3.3.a., as meaning considering the interests of other States and refraining from interfering with the rights and freedoms of other States.¹⁶³ In contrast to Xenovia’s conduct, Valerian 806’s space activities did not in any way interfere with any other State. The level of due regard was met according to the level of risk that Candidia believed its space activities posed to the interests of other States. Candidia also notified the ITU of its intent to launch a constellation so that spectrum analysis could begin and bandwidths could be assigned in an effort not to cause interference, and to pay due regard to other States interests.¹⁶⁴ There was no obligation on Candidia for the disclosure of telemetry data.¹⁶⁵

Evidence has therefore been presented of Candidia acting in accordance with international law in its activities with Selada, Inc.

¹⁶¹ ISO 24113 (Space systems – Space debris mitigation requirements), available at <https://www.iso.org/standard/72383.html> (last accessed 10 July 2022).

¹⁶² Compromis §19.

¹⁶³ Marchisio, *supra* no 20, 176; M/V “Norstar” Judgment, *supra* no 26, §199.

¹⁶⁴ Compromis §8.

¹⁶⁵ Paul B. Larsen, *Outer Space Traffic Management: Space Situational Awareness Requires Transparency*, 51 I.I.S.L. PROC. 338, 346 (2008).

B.2. Candidia is not liable under international law

A.2.3. elaborated the grounds of liability for entities engaging in space activities. Candidia submits that it is not liable for damage to the Fenix-3 satellite under Article VII OST (B.2.1.), LIAB (B.2.2.) and has no duty to make reparation to Xenovia under general international law (B.2.3.).

B.2.1. Candidia is not liable under Article VII OST

The requirements of Article VII OST liability have been set out in A.2.3.1. Candidia must have launched or procured the launch of a space object or launched a space object from its territory or facility, there must be a causal link between the act/omission and the damage and, finally, Xenovia must be able to recover the damages.

Candidia accepts that it is the launching State of Valerian 806 which is a space object (A.1.3.2.b.). However, no direct causal link is established between Valerian 806 and the destruction of Fenix-3 (B.2.1.1.).¹⁶⁶ The damages are also not recoverable (B.2.1.2.).

B.2.1.1. There is no causal link between Valerian 806 and the damage caused to Fenix-3

It must be established that there is proximate causation between the damage and the activity from which the damage resulted.¹⁶⁷ Causation is an issue of fact. This Court has reaffirmed that ‘the burden of proof rests in principle on the party which alleges a fact’.¹⁶⁸ Here, the fact asserted by Xenovia is that the basic structure of Valerian 806 was weaker having been fabricated in low

¹⁶⁶ Kerrest and Smith, *supra* no 88, at 141.

¹⁶⁷ Elena Carpanelli and Brendan Cohen, *Interpreting “Damage Caused by Space Objects” under the 1972 Liability Convention* 56 I.I.S.L. PROC. 7 (2013).

¹⁶⁸ Application of the Convention on the Prevention and Punishment of the Crime of Genocide (Croat. v. Serb.), 2015 I.C.J. 1, 65 (Feb. 3).

gravity compared to having been manufactured on Earth, and this resulted in the explosion of Valerian 806 after Fenix-3 grabbed the object.¹⁶⁹ This is an inaccurate interpretation for two reasons. First, on-orbit manufacture has been proven to be an optimal means of satellite construction,¹⁷⁰ and the materials used to construct Valerian 806 met appropriate standards.¹⁷¹ Second, the damage to Fenix-3 would not have happened had Xenovia not approached and physically crumpled the object, bringing into being the circumstances for damage.¹⁷²

Further, the apprehension was not a natural and foreseeable sequence of Candidia's activities. This is because Valerian 806 was not under a security agreement which entitled Xenovia to possess the satellite (A.1.3.4. a. i.), possession in space under the SAP is envisaged as the passing of command codes and not the physical possession of a satellite (A.1.3.4. b. i.) and, finally, there was no consultation by Xenovia (A.1.3.3. b.). Therefore, the damage was not foreseeable and no causal link is established.

B.2.1.2. The damages are not recoverable

Even if liability were to be found, the damages are not recoverable by Xenovia. This is due to the lack of causation (B.2.1.1.) which is required to recover damages.¹⁷³ Further, if using the *Bosnia* test for a 'sufficient degree of certainty' that, had Candidia complied with its legal obligations, the damage would not have happened, the damages would also not be recoverable. Candidia acted in

¹⁶⁹ Compromis §19.

¹⁷⁰ Rapp, Topka, and Mallowan, *supra* no 18, at 8.

¹⁷¹ Compromis §19; see Section B.1.2.3.

¹⁷² This Court has explicitly taken equity into account in previous cases. See *North Sea Continental Shelf* (F.R.G. v. Den./F.R.G. v. Neth.), 1969 I.C.J. 4, 48-50 (Feb. 20).

¹⁷³ *Chorzow Factory*, *supra* no 88, §31.

accordance with all its legal obligations (B.1.) and could not have expected its satellite to be apprehended and exploded.

Therefore, Candidia cannot be held liable under Article VII OST for damage to Fenix-3 since there is no causal link established. In any case, the damages are also not recoverable.

B.2.2. Candidia is not liable under LIAB

Although the principles of State liability in space are further elaborated in LIAB,¹⁷⁴ Article VII OST prevails where LIAB is inapplicable.¹⁷⁵ Candidia is not a party to LIAB and therefore the provisions of LIAB do not apply.¹⁷⁶ Even if LIAB were to apply, a causal link would still be required and the damages would still need to be recoverable.

B.2.3. Candidia does not have a duty to make reparation under general international law

Further, Candidia does not owe a duty of reparation under the customary international law on State responsibility.¹⁷⁷ For Candidia to be responsible, conduct must be attributable to Candidia and there must be a breach of an international obligation.¹⁷⁸ Candidia complied with its obligations

¹⁷⁴ VON DER DUNK AND TRONCHETTI, *supra* no 6, at 82.

¹⁷⁵ Kerrest and Smith, *supra* no 88, at 135.

¹⁷⁶ MARK E. VILLIGER, COMMENTARY ON THE 1969 VIENNA CONVENTION ON THE LAW OF TREATIES 469 (2009); Article 34, VCLT; Certain German Interests in Upper Polish Silesia, *supra* no 86, §30.

¹⁷⁷ Article 31, ARSIWA; Armed Activities on the Territory of the Congo (Democratic Republic of the Congo v. Uganda), Judgment, 2005 I.C.J. 168, 257 and 259 (Dec. 19).

¹⁷⁸ Article 2, ARSIWA; Joel Dennerley, *State Liability for Space Object Collisions: The Proper Interpretation of 'Fault' for the Purposes of International Space Law*, 29 EUROPEAN JOURNAL OF INTERNATIONAL LAW 288 (2018).

under international law (B.1.) and hence cannot be held liable for the damages to Fenix-3 as a matter of the international law on State responsibility for want of a wrongful act.

Therefore, for the purposes of establishing a duty to make reparation under general customary international law, responsibility cannot attach to Candidia because there was no breach of any international obligation.

SUBMISSIONS TO THE COURT

For the foregoing reasons, Candidia, the Applicant, respectfully requests the Court to adjudge and declare that:

- i) That Xenovia, the Respondent, violated international law by interfering with Valerian 806;
- ii) That Xenovia, the Respondent, is liable to Candidia, the Applicant, for the loss of lives on board the cargo plane, the loss of the aircraft, and the lost revenues from the destruction of Valerian 806;
- iii) That Candidia, the Applicant, acted in accordance with international law; and
- iv) That Candidia, the Applicant, is not liable for the loss of Fenix-3 under international law.