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SPACE LAW MOOT COURT COMPETITION
WORLD FINALS 2012

Team No.3



IN THE INTERNATIONAL COURT OF JUSTICE
AT THE
PEACE PALACE, THE HAGUE

**Case Concerning On-orbit Collision, Non-cooperative
Satellite Removal and Damages**

The Republic of Verona

vs.

The Commonwealth of Montague

ON SUBMISSION TO THE INTERNATIONAL COURT OF JUSTICE
MEMORIAL FOR THE RESPONDENT
COMMONWEALTH OF MONTAGUE

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LIST OF ABBREVIATIONS

| | |
|--------------------------------------|---|
| Clarification | Response to Requests for Clarification of the 2012 Manfred Lachs Moot Court Competition |
| Compromis | Special Agreement between the Republic of Verona and the Commonwealth of Montague |
| ECHR | European Court of Human Rights |
| ESA | European Space Agency |
| GA | General Assembly of the United Nations |
| GA/RES | General Assembly Resolution |
| IADC | Inter-Agency Space Debris Coordination Committee |
| ICJ | International Court of Justice |
| ILC | International Law Commission |
| ILC Articles on State Responsibility | The International Law Commission Articles on the Responsibility of States for Internationally Wrongful Acts |
| ISO | International Organization for Standardization |
| JAXA | Japan Aerospace Exploration Agency |

| | |
|----------------------|---|
| LEO | Low Earth Orbit |
| Liability Convention | Convention on International Liability for Damage Caused to Space Objects |
| LoSC | The United Nations Law of the Sea Convention |
| NASA | National Aeronautics and Space Administration |
| OST | Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and other Celestial Bodies (Outer Space Treaty) |
| PCIJ | Permanent International Court of Justice |
| UN | United Nations |
| UN COPUOS | United Nations Committee on the Peaceful Uses of Outer Space |
| UN/GA | The United Nations General Assembly |
| v. / vs. | Versus |

QUESTIONS PRESENTED

The Commonwealth of Montague respectfully asks the Honorable Court to adjudge and declare:

1. Whether Verona is liable to Montague for the destruction of the Romeo-22 in its collision with the uncontrollable Juliet-1 satellite

2. Whether Montague is liable or not to Verona for the loss of the Juliet-2 satellite, considering Verona's obligation of preserving the outer space environment by minimizing the potential threat resulting from the uncontrollable Juliet constellation and securing the satellites against risks of explosion at end-of-life

3. Whether Montague is liable or not to Verona for the consequences of the storm on Verona's territory, as a result of Verona's inability to take preventive and precautionary measures for the 2012 monsoonal storm

STATEMENT OF FACTS

The Commonwealth of Montague is a small island nation which respects all of its international obligations and has always demonstrated a responsible behavior while acting in outer space. In mid-2007, Montague procured the launching of a 30-satellite “Romeo” remote sensing constellation, through Tybalt Enterprises, a private company under its laws. The Romeo satellites weight 750 kilograms each and employ sophisticated imaging capabilities. They have been placed in near-polar, circular, multi-planned orbits, with a nominal mean altitude of 850 kilometers.

The Republic of Verona has, unlike Montague, quite an infamous reputation as it concerns its space activities. Between 2001 and 2010, several of Verona’s satellites orbited in LEO catastrophically broke up after end-of-life, due to battery or propulsion system explosions. Moreover, Verona feels it is not necessary to perform debris mitigation maneuvers at end-of-life, because this would shorten each satellite’s mission lifespan.

Verona is not a member of the Othello Space Situational Awareness Center, but rather performs its own space situational awareness activities and monitors all of its constellations with an indigenously produced global surveillance network of military ground-based radar and optical tracking systems. In fact, Verona refuses to trust and use systems produced by other States, even though, as it was proved by the facts, its technology is not as advanced. Moreover, Verona has always been deliberately secretive about all of the State’s military and space activities, as it was also acknowledged by the State’s minister of information, Desdemona Lago.

During 2009 and 2010, the Republic of Verona, orbited five Earth observation satellites. The “Juliet” 1-5 satellites are among the largest of the kind, weighting 16.220 kilograms each. They have been placed into slightly elliptical polar orbits, with a nominal mean altitude of 851 kilometers.

In January 2011, Verona lost complete control over the Juliet constellation and did not react, hoping that the system would reset automatically. Despite the fact that the latter did not happen, Verona chose to consider the matter as internal security and inform no one of the fact. Being clearly indifferent towards the danger this behavior could cause not only to safety in outer space, but also to the surface of the Earth, Verona completely concealed the Juliet satellites’ anomaly.

In early May 2011, the Othello Center warned Montague of a possible conjunction of orbits between the Romeo and Juliet constellations, which Montague’s scientists characterized as of low probability. In any case, Montague tried, ineffectively, to contact Verona and acquire any additional tracking data and other information.

Sadly, the unexpected collision that finally took place between Juliet-1 and Romeo-22 completely destroyed both satellites. Moreover, a debris fragment larger than 10 cm was generated, which along with Juliet-1 and the remaining 4 uncontrolled Juliet constellation satellites remain in an orbit that poses continuing conjunction and collision hazards for the next 50 years, not only to the remaining 29 Romeo satellites, but to other States’ satellite systems as well.

A while later, analysis provided to Montague's defense minister by the chief engineer of Tybalt Enterprises, proved that Verona never really attempted to recover the Juliet system and fix the anomaly, and that it was of low probability that Verona would be ever able to regain control over the system using its own means and technology. Apart from the above, the report concluded stating that there was a high risk that any of the remaining Juliet satellites could suffer an explosive breakup at end-of-life, posing immense hazard of new collisions; a conclusion supported by the Othello Center as well.

According to Tybalt Enterprises, in order to avoid any such conjunction hazard, each Romeo satellite would have to perform a collision avoidance maneuver resulting to a 15% lifespan loss. Consequently, the solutions proposed were either to replenish the system earlier, or to physically remove the Juliet satellites from orbit, using Tybalt's Escalus robotic satellite which had been developed for such purposes.

Montague's minister agreed with the latter. After making Montague's plans of removing the Juliet constellation known, Montague issued a carefully worded diplomatic demarche to Verona, explaining that this was to be done in order to protect the right of safe passage of Montague and all other space faring States. Moreover, Montague underlined that the uncontrollable Juliet constellation posed an immediate threat to Montague's and other States' satellite systems and demanded that Verona take immediately all necessary steps in order to diminish the peril.

At the same time, Montague's foreign minister held a press conference, explicitly stating that "if Verona failed to act as demanded, Montague would exercise its right to

protect its national interests and take steps to defend its space systems”. Verona wittingly chose to ignore and respond to neither the demarche, nor the minister’s declarations.

In October 2011, the Escalus-1 was launched and successfully de-orbited Verona’s Juliet-2 two weeks later. The already non-functional satellite burnt up in the atmosphere.

Immediately after the Juliet-2 de-orbiting, Verona’s minister Lago held a press conference stating that – a whole year after the beginning of the Juliet constellation problem – the State’s engineers had finally concluded after several laboratory tests that there was a “good chance” to regain control over the remaining constellation so that it could continue its important mission, refusing however to offer any confirming evidence.

Two months after the statement that Verona was close to regaining control over the three remaining satellites, in mid-December 2011 Verona finally contracted with Benedick Systems, which barely a month later managed not only to find the solution that Verona’s engineers seemed unable to find during a whole year, but to recover full control of Juliet 3, 4 and 5 as well.

In February 2012, Verona was hit by an extensive flooding caused by a severe monsoonal storm, characterized by Verona as “unexpected”. Consequently, the State proved to be unable to timely mobilize its civil defense forces, prepare its population to secure property along its coast, and evacuate its people to safety in order to escape

the storm's effects. Five thousands Verona citizens and several hundred international visitors were perished during the storm and associated flooding. Many thousands were injured and thirty thousand homes and businesses were destroyed. The flooding damaged Verona's large Beatrice Chemical Plant as well, which is now leaking deadly toxins into Verona's coastal waters, damaging its fisheries...

Analysis reveals that had both satellites or just even Juliet-2 in the worse scenario, remained operational, there is a high probability that sufficient data would have been provided, in order for Verona to predict the storm and take all adequate preventive measures. The fact, however, that Verona's own handling of the situation from day one was irresponsible and incorrect, may be the explanation of why Montague is to defend its lawful actions of protecting its property and the right of passage of all space faring States.

SUMMARY OF ARGUMENT

- 1.** Verona is liable to Montague for the damage done to Romeo-22 in its collision with Verona's Juliet-1
 - A.** Verona is liable for the destruction of Romeo-22, under article III of the Liability Convention
 - i.** Juliet-1 and Romeo-22 are space objects
 - ii.** Verona and Montague are launching States
 - iii.** Juliet-1 caused damage to Romeo-22 in outer space
 - iv.** The destruction of Romeo-22 is due to Verona's fault
 - B.** Verona breached the Clean Hands Doctrine
 - C.** Montague itself holds no liability over the collision

- 2.** Montague is not liable for the loss of the Juliet-2 satellite. Verona is under a duty to take actions to preserve the space environment by minimizing the potential threat to the use of outer space by arranging for the de-orbit of satellites in its Juliet system at the end-of-life, and by securing each satellite's battery and propulsion system to substantially reduce risk of explosion at end-of-life
 - A.** The Juliet constellation satellites pose a grave and imminent peril to space objects in orbit
 - i.** Juliet-2 constitutes space debris
 - ii.** The Juliet-2 space debris endangers the space environment and the safe use of outer space

- B.** In order to minimize the threat to the use of outer space, Verona should have de-orbited Juliet-2 by adopting debris mitigation measures
 - i.** Debris mitigation measures as emerging customary law
 - ii.** Verona should have taken debris mitigation measures
 - C.** Verona's behavior constitutes clear breach of the due diligence and sic utere tuo principles, justifying Montague's reaction
 - D.** Given Verona's indifference and dangerous conduct, Montague had to take steps in order to safeguard the space environment
 - i.** Montague acted in conformity with international law
 - ii.** Montague acted with Verona's acquiescence
- 3.** Montague is not liable for the deaths, terrestrial property loss and environmental poisoning suffered in Verona during the 2012 monsoonal storm.
- A.** Montague is not connected to the monsoonal storm and the damages it caused
 - i.** The inoperability of the Juliet constellation is due to Verona's fault and not Montague's
 - ii.** Montague is liable neither under the Liability Convention, nor according to the general rules on State responsibility for the damages caused by the monsoon
 - a.** Montague is not liable under article II of the Liability Convention
 - b.** In any case Montague's liability is exonerated under article VI of the Liability Convention

ARGUMENT

1. VERONA IS LIABLE TO MONTAGUE FOR THE DAMAGE DONE TO ROMEO-22 IN ITS COLLISION WITH THE JULIET-1

Verona is liable to Montague for the damage caused to Romeo-22 in its collision with Verona's Juliet-1, under article III of the Liability Convention. The fault of Verona is based on breaching its obligation of informing under the OST and violated the Clean Hands Doctrine¹ as well, while Montague was unable and not obliged to perform any collision avoidance maneuvers.

A. Verona is liable for the destruction of Romeo-22, under article III of the Liability Convention

According to Article III of the Liability Convention, in the event of damage being caused elsewhere than on the surface of the Earth to a space object of a launching State by a space object of another launching State, the latter shall be liable only if the damage is due to its fault.

i. Juliet-1 and Romeo-22 are space objects

The Juliet 1-5 as well as the 30 Romeo satellites are space objects, since the term is used to cover space crafts, satellites, and in fact anything that human beings launch or

¹As to why principles of international public law are used in the present memorial, Article III of the OST lays down one of the fundamental principles of space law, namely the principle of applicability of international law, which due to its wide acceptance and long standing practice can be considered a general principle of international law.

attempt to launch into space². It is therefore clear that Juliet-1 and Romeo-22 are indeed space objects.

ii. Verona and Montague are launching States

Both Verona and Montague are launching States, since in terms of article I(c) of the Liability Convention, a State is characterized as launching when it *inter alia* launches or procures the launching of a space object. As it is stated in the agreed facts, Verona indeed launched the Juliet satellites in order to detect weather conditions and to receive necessary information for its civil defense forces³, and therefore is the launching State of the Juliet constellation. Montague, on the other hand, procured the launching of the Romeo constellation through Tybalt Enterprises, a private entity under the laws of Montague⁴, and thus constitutes a launching State as well.

iii. Juliet-1 caused damage to Romeo-22 in outer space

According to article I(a) of the Liability Convention, damage means among others, loss of, or damage to property of States. Applying theory to facts, the Juliet-1/Romeo-22 collision took place in LEO, therefore “elsewhere than on the surface of the Earth”, between two space objects of launching States: Juliet-1 of Verona and Romeo-22 of Montague. As a result of the collision, immense damage was caused to Romeo-22, rendering it no longer functional⁵.

² B.Cheng, “Liability/Responsibility”, p.297.

³ Compromis, paragraph 1, 16.

⁴ Compromis, paragraph 3, 4.

⁵ Compromis, paragraph 14.

iv. The destruction of Romeo-22 is due to Verona's fault

As it concerns the fault prerequisite of article III of the Liability Convention, it is clearly Verona's. Fault constitutes of any act or inaction which violates an obligation⁶. In the present case, Verona's fault is fulfilled since it violated its obligation arising from article XI of the OST.

Under the aforementioned article, "*while promoting international cooperation in the peaceful exploration and use of outer space, States - Parties to the Treaty conducting activities in outer space, including the Moon and other celestial bodies, agree to inform the Secretary-General of the United Nations as well as the public and the international scientific community to the greatest extent feasible and practicable, of the nature, conduct, locations and results of such activities*". The obligation which, therefore, derives from the wording of article XI of the OST is that, of informing the international community about space activities⁷.

Verona was absolutely aware of the fact that the Juliet constellation it launched was rendered completely uncontrollable and unable of returning to functional status⁸. Until the collision between Juliet-1 and Romeo-22, the Juliet constellation still broadcasted satellite health and status information to Verona⁹, constantly re-affirming that the five Juliet satellites had not yet reset automatically as was hoped by Verona, in order to continue their mission. Nevertheless, Verona refrained from informing anyone at all, characterizing the issue as "*an internal security matter*"¹⁰.

⁶ B.Cheng, "General Principle of Law", p.225.

⁷ R.Bender; R.S.Jakhu, p.12.

⁸ Compromis paragraph 7, 8.

⁹ Clarification no. 2.

¹⁰ Compromis paragraph 8.

By further expecting for a whole year¹¹ the system to reset, Verona wittingly ignored the high risk of collisions within LEO, the most “populated” Earth orbit, and the subsequent threat such a voluminous uncontrolled constellation could pose to the rest of the international community, both in outer space and the surface of the Earth¹².

By this behavior, Verona clearly breached its international obligation deriving from article XI of the OST and actually set the basis of its fault as it concerns the collision between its satellite and Montague’s Romeo-22.

B. Verona breached the Clean Hands Doctrine

By acting in a manner that was not fair, equitable and honest¹³ Verona has clearly breached the Clean Hands Doctrine. According to the aforementioned doctrine, “an injured party’s wrong-doing may limit its claim to reparation¹⁴”, since as it is graphically put “its ‘hands’ are not clean¹⁵”. The “wrong-doing” consists of Verona’s breaching of the OST and simultaneous fault over the collision, consequently leading to Verona’s exclusion from any compensation claims.

C. Montague itself holds no liability over the collision

On the contrary, Montague was under no way obliged to maneuver any of its satellites.

¹¹ Compromis, paragraph 7, 24.

¹² Compromis paragraph 2.

¹³ P.C.Tobin, p.60; A.Shapovalov, p.856; UN Yearbook 2008.

¹⁴ L.J.Laplante, p.65.

¹⁵ P.Malanczuk, p.269.

This is based upon the interpretation of the *common interest* principle, found in article I of the OST¹⁶, according to which, the only use of space exercised under the notion of “common interest” is that which targets at each State’s economic benefits resulting from the exploitation of outer space¹⁷. Since by moving any of its satellites, Montague would undergo not only economic, but also objective damage as this maneuver would decrease its satellites lifespan and endanger their mission, Montague did not have any obligation of performing any conjunction avoidance maneuvers, especially when the collision was regarded as of extremely low probability, according to its scientists¹⁸.

In any case, Montague would have not been able to perform any kind of maneuver after Verona’s non-cooperation during Montague’s efforts to communicate¹⁹. This is due to the fact that according to numerous collision estimation and avoidance Guidelines²⁰, the time left was not enough in order for a maneuver to be organized, uploaded into the satellites’ software and executed correctly.

It is consequently clear that since all prerequisites of article III of the Liability Convention are fulfilled and Montague could have done nothing on its behalf, in order to prevent this highly unlikely collision from taking place, Verona is indeed liable to Montague for the damage caused to Romeo-22 in its collision with Juliet-1.

¹⁶Article I of the OST States that “The exploration and use of outer space, including the Moon and other celestial bodies, shall be carried out for the benefit and in the interests of all countries, irrespective of their degree of economic or scientific development, and shall be the province of all mankind”.

¹⁷ M.Benkö, W.de Graaff, G.C.M.Reijnen, p.74.

¹⁸ Compromis, paragraph 11.

¹⁹ Compromis, paragraph 13.

²⁰Protecting the Space Shuttle from Meteoroids and Orbital Debris (1997), Commission on Engineering and and Technical Systems, NASA Flight Rule A4.1.3-6; NASA Collision Avoidance Maneuver Guidelines; ESA process for the identification and assessment of high-risk conjunction events; JAXA Collision Estimation.

2. MONTAGUE IS NOT LIABLE FOR THE LOSS OF THE JULIET-2 SATELLITE. VERONA IS UNDER A DUTY TO TAKE ACTIONS TO PRESERVE THE SPACE ENVIRONMENT BY MINIMIZING THE POTENTIAL THREAT TO THE USE OF OUTER SPACE BY ARRANGING FOR THE DE-ORBIT OF SATELLITES IN ITS JULIET SYSTEM AT THE END-OF-LIFE, AND BY SECURING EACH SATELLITE’S BATTERY AND PROPULSION SYSTEM TO SUBSTANTIALLY REDUCE RISKS OF EXPLOSION AT END-OF-LIFE

Montague is not liable for the loss of Verona’s Juliet-2 satellite, because its de-orbit by Montague’s Escalus-1 robotic system was the only solution in order to protect all other space faring States’ systems located in outer space.

The Juliet constellation, including Juliet-2, after the malfunction occurred, constitutes space debris. Thus, Verona should have de-orbited its satellites, due to its obligation of preserving the space environment and minimizing the threat to the use of outer-space²¹. *Per contra*, Verona continued acting in the same irresponsible manner and refrained from fulfilling its customary obligation. In any case, Verona, after being informed about Montague’s plans of safeguarding the space environment and protecting its own property, tacitly acquiesced to them.

A.The Juliet constellation satellites pose a grave and imminent peril to space objects in orbit

i. Juliet-2 constitutes space debris

The Juliet constellation, including Juliet-2, constitutes “space debris”. According to the UN COPUOS Debris Mitigation Guidelines and numerous scholars, any non-functional man-made object located in Earth orbit or re-entering the atmosphere, such as an uncontrolled satellite, is characterized as space debris²².

²¹ F.Lyall, P.B.Larsen, p.303.

²²UN COPUOS Space Debris Mitigation Guidelines, p.1; L.Perek, p.43; H.Klinkrad, p.27; N.N.Smirnov, p.1-229; L.Anselmo, p.1003.

The Juliet satellites meet all the aforementioned conditions, being man-made objects located in LEO, and also non-functional, since their inoperability was indeed determined by their State of Registration, Verona, through its behavior²³. Consequently, it comes without any doubt that Verona's Juliet-2 satellite does indeed fall within the notion of space debris.

ii. The Juliet-2 space debris endangers the space environment and the safe use of outer space

Since the commencement of human activity in outer space in 1957, an augmenting number of man-made objects have been introduced in the region. Several of the objects launched to space are now space debris, moving in orbits around the Earth at speeds that render them constantly hazardous towards other operating space objects and manned space crafts, let alone the hazard on Earth²⁴.

The increasing presence of space debris will consequently enlarge the number of collisions, therefore creating more space debris in a process called the *Kessler Syndrome*²⁵. According to it, the escalating amount of debris in orbit could eventually render space exploration, even the mere use of satellites, "too prone to loss to be feasible for many generations"²⁶.

²³Compromis, paragraph 7, 8; Clarification no. 2.

²⁴Examples of collisions with operating space objects are those of the Kosmos 1275 and Kosmos 1484; possible collisions with manned space crafts occurred inter alia in the STS-48, STS-53, STC-72 and STC-82 Space Shuttle Missions; a characteristic example of what could have happened on Earth is the 2003 Columbia disaster, where large parts of the space craft reached the surface of the Earth.

²⁵M.T.Savage 149; J.Schefter, p.48; W.S.Wong, J.Ferguson, p.69.

²⁶S.Tkatchova, p.213.

Following the events of September 2011 and March 2012 when the ISS was threatened by space debris generated either by collisions or by *res derelictae*²⁷, the necessity of taking measures is more than evident.

Bearing under consideration the fact that the uncontrolled Juliet constellation consists of the largest Earth observation satellites ever put into orbit²⁸, the grave peril and necessity to act are more than obvious. If, for instance, a collision should take place between the ISS and any of the Juliet satellites, the result would be such an amount of cascading space debris that LEO could be rendered practically impassable. Therefore, the de-orbiting of the Juliet satellites, which are no longer functional space objects, is the only effective means to keep LEO clean and safe²⁹.

B. In order to minimize the threat to the use of outer space, Verona should have de-orbited Juliet-2 by adopting debris mitigation measures

Given the danger posed to all space faring States' systems located in outer space by Verona's satellites, it is clear that Verona must fulfill its international obligations of preserving the space environment and securing the use of outer space.

According to articles VI³⁰ and VII³¹ of the OST, as well as article III of the Liability Convention, it is clear that no other State but Verona is obliged to take initiatives in

²⁷ International Space Station Crew Forced to Evacuate, The Telegraph, 28 June 2012; Space Evasion: debris threatens ISS *in* www.rt.com, 29 September 2011; Near Miss: ISS narrowly escapes debris disaster *in* www.rt.com, 24 March 2012.

²⁸ Compromis, paragraph 2.

²⁹ R.Jehn, p.451.

³⁰ Article VI of the OST States the following: "State Parties to the Treaty shall bear international responsibility for national activities in outer space, including the moon and other celestial bodies, whether such activities are carried on by governmental agencies or by non-governmental entities ...".

³¹ Article VII of the OST States that "Each State Parties to the Treaty that launches or procures the launching of an object into outer space, including the moon and other celestial bodies, (...) is internationally liable for damage to another State Party to the

order to mitigate the threat. These steps, consist of taking debris mitigation measures³² the adoption of which has been already characterized as emerging international customary law³³.

i. Debris mitigation measures as emerging customary law

Verona should have adopted debris mitigation measures regarding its Juliet constellation, as this obligation is of customary nature.

The emerging customary character of the aforementioned measures derives beyond any doubt from the activity of the UN/GA, as well as from rich State practice³⁴.

The UN General Assembly Resolution 60/99³⁵, as well as the UN UN COPUOS Debris Mitigation Guidelines GA/RES/26/217³⁶ reflect an *opinio juris* of States on that matter. This is because it is accepted that guidelines adopted by UN Resolutions reflect a strong expectation that members of the international community will abide by them³⁷.

Treaty or to its natural or juridical persons by such object or its component parts on the Earth, in the air or in outer space, including ...”.

³² D.H.Kim, p.322; F.Alby, p.283-290; Orbital Debris. p.125-128; ISS Debris Protection Techniques, p.8191-8200; E.Levin, p.100-108; J.Mason, p.1643-1655.

³³ M.Mejia-Kaiser, “Debris Mitigation”; K.Gable,p.4.

³⁴ Article 38(1)(b), ICJ Statute; I.H.P.Diederiks-Verschoor, V.Kopal, p.9-10; A.Perreau-Saussine, J.B.Murphy, p.274; H.W.A.Thirlway, p.1-158; P.Malanczuk, p.39 and 68.

³⁵ International Cooperation in the Peaceful uses of Outer Space, UN GA/RES/60/99 (2005), paragraph 27: “*The General Assembly [...] considers that it is essential that Member States pay more attention to the problem of collisions of space objects . . . with space debris, and other aspects of space debris, calls for the continuation of national research on this question, . . . and agrees that international cooperation is needed to expand appropriate and affordable strategies to minimize the impact of space debris on future space missions*”.

³⁶ UN COPUOS Space Debris Mitigation Guidelines.

³⁷ B.Cheng, “UN/RES on outer space”, p.133.

By further endorsing, through GA/RES/26/217, the pre-existing IADC Guidelines on debris mitigation, the General Assembly also “agrees that the voluntary guidelines reflect the existing practices developed by a number of national and international organizations”³⁸. According to this, State practice is clearly demonstrated through several codes of conduct; national legislations on space debris mitigation; and the production of standards by the ISO³⁹, which are harmonized with the UN COPUOS and IADC Guidelines⁴⁰. In fact, the NASA Technical Standard⁴¹; the European Code of Conduct⁴²; the National Standard of the Russian Federation⁴³; the JAXA Debris Mitigation Standard⁴⁴; the Chinese Space Debris Mitigation Design Standards⁴⁵ and the ISO Space Debris Related Standards⁴⁶, demonstrate not only *opinio juris*, but also State practice, since through them, the UN COPUOS and IADC Guidelines have been incorporated within national legislations⁴⁷.

³⁸ UN GA/RES A/RES/62/217, paragraph. 27.

³⁹ M.Mejia-Kaiser, “Debris Mitigation, p.32.

⁴⁰ M.Mejia-Kaiser, “Debris Mitigation, p.26; 4.

⁴¹ NASA-STD-8719.14.

⁴² ESA Requirements on Space Debris Mitigation for Agency Projects, ESA/ADMIN/IPOL (2008)2, Annex 1.

⁴³ <http://lfvn.astronomer.ru/report/0000048//010/index.htm>.

⁴⁴ Space Debris Mitigation Mechanism in Japan, presentation to the 48th Session of the Legal Subcommittee of the UN COPUOS.

⁴⁵ <http://www.cnsa.gov.cn/n615708/n.676979/n676983/n886611/66292.htm>.

⁴⁶ <http://www.iso.org>.

⁴⁷ M.Mejia-Kaiser, “Debris Mitigation, p.26; J.Nie, p.4.

ii. Verona should have taken debris mitigation measures

Debris mitigation is divided into two broad categories: cutting back on the generation of potentially harmful space debris in the near term, and limiting their generation over the longer term⁴⁸.

The first involves the reduction of the production of mission-related space debris and the avoidance of break-ups⁴⁹. The second concerns the end-of-life procedures that remove decommissioned space objects from populated space regions, such as LEO⁵⁰.

In order to fulfill the aforementioned obligation of performing debris mitigation, Verona should have, as it concerns the first category, implemented safe satellite designs. For example, propulsion systems should be designed in such a way so as to not allow propellants to cause an explosion that would fragment the satellite structure into a myriad of small pieces of debris⁵¹; and batteries should be evaluated and approved so as to not be characterized as able to cause a “catastrophic hazard”⁵². However, as it is stated in the agreed facts, Verona’s history of satellites’ end-of-life explosions⁵³ proves that the said State has not complied with its obligations.

Furthermore, the end-of-life procedures which constitute the second category of debris mitigation have obviously been breached by Verona, since the State did not de-orbit the Juliet constellation satellites.

⁴⁸W.Rathgeber, p.185.

⁴⁹ UN COPUOS Space Debris Mitigation Guidelines.

⁵⁰ UN COPUOS Space Debris Mitigation Guidelines.

⁵¹ J.N.Pelton, R.S.Jakhu,p.123.

⁵²NASA Safety Requirements.

⁵³Compromis, paragraph 16.

C. Verona's behavior constitutes clear breach of the due diligence and sic utere tuo principles, justifying Montague's reaction

What is clear from all the above is that Verona did not demonstrate due diligence, a general principle of international law, and violated the *sic utere tuo, ut alienum non laedas* principle.

The due diligence duty of a State standardizes its conduct in such a way so as to protect the rights of other States and not violate them⁵⁴. At the core of the due diligence principle is the existence of injury to the property of another State. In the case at hand, Montague's property was obviously injured by Verona, since Romeo-22 was destroyed and the risk of further collisions between the remaining Juliet and Romeo satellites is ongoing⁵⁵.

Further support is to be found in the *sic utere tuo, ut alienum non laedas* principle, characterized as a "general rule" of international law⁵⁶, found in the *Trail Smelter Arbitration*⁵⁷, as well as the ICJ *Corfu Channel* case⁵⁸. According to the aforementioned principle, a State's property has to be used in such a way so as to not harm that of another State's⁵⁹.

⁵⁴L.Viikari,p.155 ; UN Yearbook 2000; T.Koivurova, p.1; X.Hanquin, p.162; L.M.Jurgielewicz,p.57; A.T.Gallagher, p.447.

⁵⁵Compromis, paragraph 1, 3.

⁵⁶*Nuclear Tests* case, p.389.

⁵⁷*Trail Smelter* case: "under the principles of international law...no State has the right to use or permit the use of territory in such a manner as to cause injury by fumes in or to the territory of another or the properties of persons therein, when the case is of serious consequence and the injury is established by clear and convincing evidence.", in 35 AJIL 684 (1941).

⁵⁸According to the *Corfu Channel* case in p.22, "every State's obligation not to allow knowingly its territory to be used for acts contrary to the rights of other States".

⁵⁹G.T.Hacket, p.146.

It is however clear that Verona's actions and omissions led to immense damage and injury of Montague's property. Therefore, given Verona's own unwillingness to take the appropriate mitigation measures, it is more than clear that Montague had no other choice but to act. This action is legitimate and lawful according to international law.

D. Given Verona's indifference and dangerous conduct, Montague had to take steps in order to safeguard the space environment

i. Montague acted in conformity with international law

Montague is accused as liable for the destruction of Juliet-2 after its de-orbiting by Montague's Escalus-1 space object.

Nevertheless, Montague rectified⁶⁰ the consequences of Verona's actions, by exercising self-help⁶¹. In any case, Montague was obliged to act, being in a state of necessity. According to article 25(1)(a) of the ILC Articles on State Responsibility, "necessity may not be invoked by a State as a ground for precluding the wrongfulness of an act [...] unless the act is the only way for the State to safeguard an essential interest against a grave and imminent peril". As stated by the ICJ in the *Gabcikovo-Nagymaros* case, "the state of necessity is a ground recognized by customary international law for precluding the wrongfulness of an act"⁶².

In the present case, Montague's essential interest is to prevent potential collisions of the uncontrolled Juliet satellites with its system. The Romeo satellites' undisturbed operation had to be safeguarded against Verona's voluminous uncontrolled constellation, which could cause new conjunctions anytime within the next 50 years,

⁶⁰ J.H.W.Verzijl, p.101; R.Lemkin, p. 145-151; J.Paulsson, p.110.

⁶¹ J.C.Barker; J.Brunée, "Academia".

⁶² *Gabcikovo-Nagymaros* case (judgement), paragraph 51.

commencing from Verona's complete loss over the satellites in early January 2011⁶³. Therefore, by acting under a state of necessity, it is clear that Montague's actions are lawful.

ii. Montague acted with Verona's acquiescence

In October 2011 Montague launched the Escalus-1 robotic satellite system, whose mission was to de-orbit Juliet-2⁶⁴. It has to be mentioned that the action chosen by Montague, which is removal through an Earth controlled system, such as the Escalus-1, is regarded as one of the most sufficient methods⁶⁵ of space debris mitigation.

Before de-orbiting Juliet-2, Montague issued a diplomatic demarche to Verona, mentioning the grave peril its satellites posed to Montague and demanding that Verona take action⁶⁶. At the same time, Montague's foreign minister, Caesar Brutus, convened a press conference and stated that if Verona failed to act as demanded, Montague would exercise its right of protecting its national interests and take steps to defend its space systems⁶⁷. Verona did not respond to either of Montague's briefings⁶⁸.

Montague considered that Verona, by refraining from a further reaction to the aforementioned statements, tacitly acquiesced to Montague's forthcoming actions. Indeed Verona consented to the de-orbit of Juliet-2 by Escalus-1, by "keeping quiet when a protest was called for"⁶⁹, given Verona's own international obligation of

⁶³ Compromis, paragraph 7, 15.

⁶⁴ Compromis, paragraph 21.

⁶⁵ M.Mejia-Kaiser, "Space Objects", p.4.

⁶⁶ Clarification no. 5; Compromis, paragraph 20.

⁶⁷ Compromis, paragraph 20.

⁶⁸ Compromis, paragraph 20.

⁶⁹ M.N.Shaw, p.84, 437; P.Malanczuk, p.154; I.McGibbon, "Acquiescence" p.143; I.McGibbon, "Protest in International Law", p.293.

preserving the safety and the environment of outer space. Acquiescence is a unilateral manifestation of State will, well-recognized and accepted in international law⁷⁰, found *inter alia* in the Gulf of Maine⁷¹, the El Salvador v. Honduras⁷² and the Georgia vs. South Carolina⁷³ cases. As it has been rightfully considered “[...]l’absence de protestation d’un gouvernement face à l’apparition d’une situation de fait ou de droit, susceptible d’avoir des incidences sur ses intérêts, est la plupart du temps considérée comme un acquiescement à la validité et l’opposabilité de cette situation a son égard, sur lequel il ne saurait revenir”⁷⁴.

Consequently, it is more than obvious that Montague is not liable for the loss of Verona’s Juliet-2, since it was Verona’s own duty under international customary law and the existing debris mitigation State practice, to de-orbit its own Juliet-2 space debris. By refusing to do so, Verona tacitly acquiesced to Montague’s actions of de-orbiting Juliet-2, while trying to preserve the safety and environment of outer space from grave and imminent peril.

3. MONTAGUE IS NOT LIABLE FOR THE DEATHS, TERRESTRIAL PROPERTY LOSS AND ENVIRONMENTAL POISONING SUFFERED IN VERONA DURING THE 2012 MONSOONAL STORM

Montague is not liable for the deaths, terrestrial property loss and environmental poisoning caused by the monsoonal storm in Verona, because it is not connected to them in any possible way. This is due to the fact that Verona’s inability of predicting

⁷⁰ I.McGibbon, “Customary International Law”, p.115-131.

⁷¹ *Gulf of Maine* case, paragraph 130.

⁷² *El Salvador v. Honduras* case, paragraph 80.

⁷³ *Georgia v. South Carolina* case.

⁷⁴ P.M.Dupuy, p.342.

the storm is not attributable to Montague, but to Verona itself. By not being liable for the loss of the Juliet-1 and Juliet-2 satellites⁷⁵, Montague can not be held liable for the inadequacy of the remaining Juliet constellation to provide sufficient warning data to Verona on time, either. Last but not least, if Verona had taken all necessary precautionary and preventive measures as it should have, following the annual character of the monsoons, none of these catastrophes would have taken place.

A. Montague is not connected to the monsoonal storm and the damages it caused

Since it was not a fault of Montague's that the entire Juliet constellation, which was supposed to monitor weather conditions⁷⁶, was rendered uncontrollable and inoperable since January 2011, Montague cannot be held liable either for the Juliet constellation's inability of predicting the storm or the consequent damages the latter caused on Verona's surface.

i. The inoperability of the Juliet constellation is due to Verona's fault and not Montague's

In early January 2011, Verona lost complete control over the Juliet constellation satellites⁷⁷, as a result of the integration of a completely new software patch, which had been never tested before⁷⁸, into the operating system of the Juliet satellites.

Over the time period of a whole year⁷⁹, Verona proved to be unable of finding the solution. By doing nothing in order to resolve the Juliet constellation's technical problem, Verona demonstrated clear negligence over the matter, and failed to use due

⁷⁵ Memorial for the Respondent, p. 1-15.

⁷⁶ Compromis, paragraph 1.

⁷⁷ Compromis, paragraph 7.

⁷⁸ Compromis, paragraph 7.

⁷⁹ Compromis, paragraph 7, 24.

care in this given situation⁸⁰. Verona's gross negligence⁸¹, as far as the effective administration of the Juliet satellite constellation is concerned, is clearly proved by the fact that, the long-term unresolved Juliet control issue was in fact resolved effectively, only within a month, by Benedick Systems' engineers⁸².

Had Verona decided to cope on time with the technical malfunction of the Juliet satellites and perhaps contracted with Benedick Systems earlier, the evolution of facts would be different. Not only would the Juliet-1/Romeo-22 collision have been prevented, since it took place four months after the loss of control⁸³, but the de-orbiting of Juliet-2 would have been avoided as well, due to the inexistence of future conjunctions risk⁸⁴.

Therefore, by insisting in using technologically inferior resources of its own production⁸⁵ and by not attempting, for a year, to revive the Juliet system, Verona is the sole liable for the inoperability of its own Juliet constellation satellites, and, consequently, for the absence of sufficient warning data as it concerns the 2012 monsoonal storm.

ii. Montague is liable neither under the Liability Convention, nor according to the general rules on State responsibility, for the damages caused by the monsoon

a. Montague is not liable under article II of the Liability Convention

Under article II of the Liability Convention, "a launching State shall be absolutely liable [to pay compensation] for damage caused by its space object on the surface of

⁸⁰ M.Mejia-Kaiser, "Iridium-Cosmos", p.4.

⁸¹ I.H.P.Diederiks-Verschoor, V.Kopal, p.38; L.Viikari, p.66; F.Lyall, P.B.Larsen, p.110.

⁸² Compromis, paragraph 24.

⁸³ Compromis, paragraph 7, 10.

⁸⁴ Compromis, paragraph 17.

⁸⁵ Compromis, paragraph 17.

the Earth [...]”. According to the wording of the aforementioned article, Montague is excluded from liability over the said damages, since the article is inapplicable in the present case. This is because liability under article II solely refers to direct damages caused by space objects on the surface of the Earth⁸⁶. However, the damages in question were caused neither by the Juliet-1/Romeo-22 collision, nor by the Juliet-2 de-orbit by Montague’s Escalus-1. Instead, they were clearly caused by a natural phenomenon⁸⁷.

b. In any case Montague’s liability is exonerated under article VI of the Liability Convention

Whatever the case may be, due to Verona’s aforementioned gross negligence, Montague is exonerated from liability regarding this matter in conformity with Article VI (1) of the Liability Convention, according to which, “[...] exoneration from absolute liability shall be granted to the extent that a launching State establishes that the damage has resulted [...] from gross negligence [...]”.

c. Montague is not liable under the general rules on State responsibility

Montague cannot be held liable not even under the rules on State responsibility: It did not commit any internationally wrongful act, as it is not liable neither for the satellite collision nor for the satellite de-orbiting, as it has already been explained *in extenso*⁸⁸.

⁸⁶ I.H.P.Diederiks-Verschoor, V.Kopal, p.39 ; Soviet Space Programs.

⁸⁷ Compromis, paragraph 25.

⁸⁸ Memorial for the Respondent, p.1-15.

It, consequently, comes without any doubt that Montague is not connected either to the non-acquisition of warning data regarding the monsoonal storm, or the unfortunate events that followed it.

B. Verona is the sole liable for the deaths, terrestrial property loss and the environmental poisoning provoked by the monsoonal storm

Historically, Verona has always suffered from annual monsoons⁸⁹. It is therefore obvious that intense weather conditions such as those presented in the case at hand come natural to Verona, which should have taken all necessary precautionary measures to mitigate the, always, disastrous effects of monsoons.

i. Verona failed to protect its people

Protecting the right to life is a general obligation of States under international law, which can be found in several legal texts, such as article 8 of the Universal Declaration of Human Rights; article 6 of the UN International Covenant on Civil and Political Rights and; article 12 of the European Convention of Human Rights.

Furthermore, the ECHR has held in the, similar to this case, *Budayeva v. Russia*⁹⁰, that the Russian Federation violated indeed its positive obligation of protecting the right to life, under Article II of the European Convention on Human Rights⁹¹, by failing to establish a legislative and administrative framework which would deter any threat to the right to life.

Under the said Article, there is a positive obligation of the State to safeguard the lives of people within its jurisdiction, depending both on the origin of the threat and the

⁸⁹ Compromis, paragraph 1.

⁹⁰ *Budayeva* case, p.147-160.

⁹¹ European Convention.

extent on which it can be mitigated. More specifically, the aforementioned obligations apply to imminent, clearly recurring natural calamities affecting a distinct area developed for human habitation⁹².

The monsoonal storm which struck Verona undoubtedly constitutes a natural disaster which recurrently takes place within the distinct area of its territory. This fact reveals that, just like the Russian Federation in the *Budayeva* case, Verona omitted to establish the required administrative and legislative framework in its territory in order to protect all human lives within its jurisdiction.

Furthermore, Verona breached its obligation of adequately informing foreign visitors within its territory, in order to protect them. This obligation derives from the ICJ *Corfu Channel* Case, where Albania was held internationally responsible for failing to inform the British ships about the sea-mines found in its territorial waters. *Mutatis mutandis*, Verona must also be held responsible for neither informing, nor preparing all people found within its territorial jurisdiction⁹³ for the occurrence of a monsoonal storm.

ii. Verona failed to protect its property, as well as the land and sea environment

Verona failed to exercise due care⁹⁴, since it did not secure the Beatrice Chemical Plant which conducts extremely hazardous activities and upon which it has⁹⁵. Also given the annual character of the monsoons in Verona, its omission of exercising due care is more than obvious.

⁹²*Budayeva* case.

⁹³ Compromis, paragraph 25.

⁹⁴ L.Viikari, p.156.

⁹⁵R.P.Barnidge, p.8.

a. Verona failed to protect the environment from hazardous activities

In the present case, while constructing the Plant, Verona was highly aware of the fact that monsoonal storms have always been a frequent, regularly occurring, meteorological phenomenon in its territory. However, it did not take the appropriate measures in order to secure the Beatrice Chemical Plant against the occurrence of a natural disaster. Since the aforementioned Plant was severely damaged by the flooding subsequent to the monsoonal storm, there is clear evidence that Verona had never demonstrated an adequate environmental care, through the adoption of necessary preventive measures.

As it concerns the protection of the environment, a preventive approach is based on the idea that it is better to prevent environmental damage than to employ measures to restore the environment afterwards.

Prevention has been *la raison d'être* of environmental policy⁹⁶ and as the ICJ has repeatedly stressed, the importance of demonstration of vigilance regarding the adoption and implementation of measures concerning environmental protection is indispensable, due to the nature of the hazard involved. As it is highlighted in the *Gabčíkovo-Nagymaros* case, "*in the field of environmental protection, vigilance and prevention are required on account of the often irreversible character of damage to the environment and of the limitations inherent in the very mechanism of reparation of this type of damage*"⁹⁷.

⁹⁶E.Louka, p.50.

⁹⁷ Gabčíkovo-Nagymaros case, paragraph 78.

Verona's aforementioned obligation is further expanded by the relatively new precautionary principle⁹⁸, which is based on the premise that action on environmental matters should be taken even if there is a lack of total scientific certainty⁹⁹. Through its acts and omissions, however, Verona has obviously breached the aforementioned principle as well.

b. Verona failed to protect the marine environment

The leakage of deadly toxins into Verona's coastal waters and the subsequent damage to Verona's fisheries constitutes contamination of the *marine* environment.

The 1982 LoSC¹⁰⁰ provides a series of articles applicable to the present dispute, concerning the balance between the human economic and technological development and natural environment. By crystallizing international customary law, specific rules of the Convention¹⁰¹ are binding upon Verona, which should act in good faith as a member of the UN¹⁰².

As far as the pollution of Verona's coastal waters is concerned, Article 192 of the LoSC introduces a general obligation for all States to protect and preserve the marine environment¹⁰³. Article 193 of the LoSC also provides for a "*duty to protect and preserve the marine environment*", which is related to the concept of States' sovereign right to exploit their natural resources. The importance of its preservation is stressed by the fact that, according to Sub-Committee III of the Sea-Bed Committee, the said obligation must be combined with the sovereign right of States of exploiting

⁹⁸Supra note 5.

⁹⁹P.W.Birnie,A.E.Boyle, p.98; J.Cameron, J.Abouchar; L.Gündling, p.23.

¹⁰⁰UN LoSC.

¹⁰¹L.A.Malone, p.382.

¹⁰²Compromis, paragraph 29.

¹⁰³D.M.Ong, p.570.

natural resources, as also with the right to apply national environmental policies to the sea-bed exploration¹⁰⁴.

The prescribed balance between these concepts is noticeably disturbed by Verona's practice, since the facts undoubtedly prove that the aforementioned State did nothing in order to secure that the Beatrice Plant would not be a menacing issue to the environment around its coastal waters.

In the same context, Verona also violated Article 196 of the LoSC, which stipulates that "*States shall take all measures necessary to prevent, reduce and control pollution of marine environment resulting from the use of technologies under their jurisdiction or control*". This article recognizes that States, in the context of preserving the aquatic environment and in particular preventing pollution by applying appropriate rules and measures, have to act demonstrating due diligence in respect to all activities taking place under their jurisdiction and control, which Verona has clearly never done.

The aforementioned provisions of the LoSC are also found in principles 6 and 7 of the Stockholm Declaration of 1972¹⁰⁵. These principles underline the necessity for States to take all possible steps so as to prevent pollution of the seas by hazardous substances, which harm living resources and marine life. The two aforementioned principles were obviously violated by Verona, which did not use the best practicable means in its disposal regarding the protection of the environment, in accordance with its capabilities, and thus broke the balance between its economic development and the preservation of the marine and human environment.

¹⁰⁴LoSC Commentary, p.49.

¹⁰⁵L.B.Sohn, p.423-425; A.Kiss, p.411-412; J.Brunée, p.67.

Moreover, it is indeed enlightening to underline the correlation between the damage to the large Beatrice Chemical Plant, because of the 2012 monsoonal storm, and the recent similar damage caused to the Fukushima Daiichi Nuclear Plant in Japan, because of a massive earthquake and *tsunami*, which hit this State on March 11, 2011¹⁰⁶. The common characteristics are several: both damages have been caused by a natural disaster and in both cases the factories were not secured against the possibility of a frequent, according to the special geographical characteristics of each area, natural disaster. As a result, both factories are currently leaking hazardous substances into sea water. The great difference is that while Japan issued a Parliamentary report stating that the incident was a “man-made disaster, which could have been prevented”, Verona chooses to blame the Commonwealth of Montague for something which Montague is not even connected to. It is obvious that in the case of Verona, too, the pollution could have undoubtedly been prevented, since Verona was obliged to be prepared to face the 2012 monsoon, even if it occurred with short notice.

By showing negligence in taking the adequate measures in its territory in order to protect its people, terrestrial property and the environment, Verona is undoubtedly responsible for failing to exercise due care and diligence. In that way, Verona indeed reassured itself a place in the causal chain of the events which finally led to the damages caused by the monsoonal storm within its own territory and bears liability itself.

¹⁰⁶Charter on Cooperation.

Submissions to the Court

For all the above reasons, Respondent, the Commonwealth of Montague, respectfully requests the Court to adjudge and declare that:

1. Verona is liable to Montague for the damage done to Romeo-22 in its collision with Verona's Juliet-1

2. Montague is not liable for the loss of the Juliet-2 satellite. Verona was under a duty to take actions to preserve the space environment by minimizing the potential threat to the use of outer space by arranging for the de-orbit of satellites in its Juliet system at the end-of-life, and by securing each satellite's battery and propulsion system to substantially reduce risk of explosion at end-of-life

3. Montague is not liable for the deaths, terrestrial property loss and environmental poisoning suffered in Verona during the 2012 monsoonal storm.