24th MANFRED LACHS SPACE LAW MOOT COURT COMPETITION

The 2015 Manfred Lachs Space Law Moot Court Competition

Case Concerning Planetary Defense

SPIDR v URA

PART A: INTRODUCTION

The 24rd World Final of the Manfred Lachs Space Law Moot Court Competition took place in Jerusalem, Israel, on Thursday, 15 October, 2015, at the Crown Plaza Hotel. This event was produced within the framework of the 58th IISL Colloquium on Space Law in conjunction with the 66th International Astronautical Congress.

The 2015 Moot Problem *Case Concerning Planetary Defense (SPIDR v. URA)* was written by Prof. Dr. Frans G. von der Dunk (The Netherlands) and Leslie I. Tennen, Esq. (United States). There were national funding rounds in China (12 teams) and India (13 teams). China Institute of Space Law financed the champion team members to attend the 2015 Asia Pacific Regional in Bandung, Indonesia. Correspondingly, the India Space Research Organization financed the winner of the India National Funding Round to attend the Asia Pacific Regional. Sixty one teams from around the world registered for the Manfred Lachs Competition and submitted memorials. More than 150 persons judged memorials and/or oral pleadings and many more were involved in logistics and sponsoring.

Two Semi-Finals took place in parallel sessions on 13 October, 2015. The winner teams of each semi-final proceeded to compete in the World Final, which was judged by Judges Peter Tomka, Dalveer Bhandari and Kirill Gevorgian, from the International Court of Justice.

The IISL's Moot Court Committee expresses its gratitude to the following persons that helped with the local organization of this event and the IISL Dinner:

Sponsors

The following organizations kindly sponsored the World Finals' teams:

- North American Finalist sponsor: Secure World Foundation (SWF)
- Asia Pacific Finalist sponsor: Japan Aerospace Exploration Agency (JAXA)
- European Finalist sponsor: European Centre for Space Law, ECSL/ESA
- African Finalist sponsor: Individual Donations from IISL Members

The following organizations kindly sponsored the IISL Annual Awards Dinner and the Moot Court Competition:

- ESA
- Excalibur-Almaz Ltd.
- Heinlein Prize Trust
- IAF
- Matthew & Lee Love Foundation
- Sterns & Tennen

Book donations and brochure design:

- Martinus Nijhoff Publishers
- Eleven International Publishing
- South African Space Association

Individual sponsors:

- Dr. Dennis Burnett
- Ms. Axelle Cartier
- Dr. Diane Howard
- Ms. Marta Gaggero
- Ms. Kimi Ide Foster
- Ms. Justine Limpitlaw
- Mr. George Long (Esq.)
- Ms. Tanja Masson-Zwaan
- Mr. Maury Mechanick
- Dr. Martha Mejía-Kaiser
- Dr. Peter Nesgos
- Dr. Kai-Uwe Schrogl
- Ms. Marcia Smith
- Dr. Milton 'Skip' Smith
- H.E. Judge V.S. Vereshchetin

The IISL is most grateful to all these generous sponsors.

The Moot Court Committee is also thankful to all its members for their voluntary work through the year:

- Dr. Martha Mejía-Kaiser (Mexico/Germany), Co-Chair
- Ms. Melissa K. Force Esq. (US), Co-Chair
- Mr. Les Tennen (Esq.) (US), Co-Chair
- Adv. Lulu Makapela (South Africa), Regional Organizer for Africa
- Ms. Siti Noor Malia Putri (Indonesia), Regional Organizer for Asia Pacific
- Dr. Milton S. 'Skip' Smith (US), Regional Organizer for North America, through March, 2015
- Prof. Sergio Marchisio, ECSL Chairman, Regional Organization for Europe
- Ms. Maria-Vittoria 'Giugi' Carminati Esq. (US/Italy), Regional Organizer for North America, from April, 2015
- Mr. V. Gopalakrishnan (India), Associate Regional Organizer for Asia Pacific
- Mr. Christopher D. Johnson Esq. (US/UK) to April, 2015
- Mr. Nathan Johnson (US)
- Ms. Sara Langston Esq. (US/Italy)
- Mr. James D. Rendleman Esq. (US)
- Dr. Zhenjun Zhang (China)

World Finals

Winner of World Finals / Lee Love Award:
University of Mississippi, School of Law, US
Students: Ms. Olivia B. Hoff, Mr. C.J. Robison and Mr. Ian Perry
Faculty Advisor: Prof. Michael Dodge
Faculty Advisor Assistant: Prof. Dr. Michael Mineiro

Runner up:
National and Kapodistrian University of Athens, Greece
Students: Ms. Maria Vasilaki, Ms. Marianthi Koutri, Mr. Athanasios Plexidas
Faculty Advisor: Prof. George D. Kyriakopoulos
Faculty Advisor Assistant: Charalampos Panagiotopoulos

Semi-finalists:
Obafemi Awolowo University, City of Ile-Ife, Nigeria
Students: Ms. Peace Omotayo Onashile, Mr. John Benjamin Odey, and Mr. Toheeb Oluwabukola Amuda
Faculty Advisor: Dr. Orifowomo Odunola Akinwale

and

NALSAR University of Law, Hyderabad, India

Students: Ms. Chinmayi Sharma, Mr. Ravishankar Krishnan, and Mr. Debarpan Ghosh
Faculty Advisor: Prof. Balakista Reddy

Best memorials / Eilene M. Galloway Award, sponsored by Ms. Marcia Smith:
University of Mississippi, School of Law, US

Best oralist / Sterns and Tennen Award:
Mr. Athanasios Plexidas, National and Kapodistrian University of Athens, Greece

Judges for Final:
H.E. Judge Peter Tomka, International Court of Justice
H.E. Judge Dalveer Bhandari, International Court of Justice
H.E. Judge Kirill Gevorgian, International Court of Justice

Judges for Semi-Finals (Oral Pleadings):
Dr. Marco Ferrazzani (Italy)
Prof. Dr. Steven Freeland (Australia)
Dr. Diane Howard (United States)
Dr. Ranjana Kaul (India)
Dr. Kai-Uwe Schrogl (Germany)
Prof. Dr. Frans G. von der Dunk (The Netherlands)

Judges for Semi-Finals (Memorials):
Dr. Ulrike M. Bohlmann (Germany)
Ms. Icho Kealotswe (Botswana)
Prof. LI Juqian (China)
Maury J. Mechanick, Esq. (United States)
Prof. Dr. Vernon Nase (Australia)
Dr. Zeldine Niamh O'Brien (Ireland)
Chris Okegbe, Esq. (Nigeria)
Ms. Marcia Smith (United States)

The IISL gave a Certificate of Gratitude to the Japan Aerospace Exploration Agency (JAXA) for it continued support since 2002 to the Asia Pacific Regional Winner teams to attend the World Finals.

Participants in the regional rounds

Africa:
1. Babcock University, Ilishan-Remo, Nigeria
2. Makere University, Kampala, Uganda
3. Mount Kenya University, Thika, Kenya
4. Niger Delta University, Wilberforce Island, Nigeria
5. Obafemi Awolowo University, City of Ile-Ife, Nigeria

6. University of Juba, College of Law, Juba, South Sudan
7. University of Pretoria, Faculty of Law, Pretoria, South Africa

Asia Pacific:

1. Amity Law School, Delhi, India
2. Beijing Foreign Language Study University (BFSU), Beijing, China
3. Beijing Institute of Technology (BIT), Beijing, China
4. China University of Political Science and Law (CUPL), Beijing, China
5. Government Law College, Mumbai, India
6. Gujarat National Law University, Gandhinagar, India
7. Hidayatullah National Law University, Raipur, India
8. Indian Law Society Law College (ILS), Pune, India
9. Institute of Law, Nirma University, Ahmedabad, India
10. Kyoto University, Kyoto, Japan
11. Murdoch University, Murdoch, Australia
12. NALSAR University of Law, Hyderabad, India
13. National Law Institute University, Bhopal, India
14. National Law School of India University (NLSIU), Bangalore, India
15. National Law University, Delhi, India
16. National Law University, Jodhpur, India
17. National Law University, Odisha, India
18. National University of Singapore, Singapore
19. Nepal Law Campus, Tribhuvan University, Kathmandu, Nepal
20. Padjajaran University, Bandung, Indonesia
21. Universitas Islam, Yogyakarta, Indonesia
22. Universitas Katolik Parahyangan, Bandung, Indonesia
23. The West Bengal National University of Juridical Sciences, Kolkata, India
24. Zhongnan University of Economics and Law, Wuhan, Hubei Province, China

Europe:

1. Faculty of Law, University of Cologne, Cologne, Germany
2. Jagiellonian University, Krakow, Poland
3. International Institute of Air and Space Law, Leiden University, Leiden, The Netherlands
4. Leuphana University, Lüneburg, Germany
5. National & Kapodistrian University, Athens, Greece
6. National Research Tomsk State University, Tomsk, Russia
7. Union University Law School, Belgrade, Serbia
8. University of Bucharest, Bucharest, Romania
9. University of Edinburgh, Edinburgh, United Kingdom
10. University of Helsinki (Law), Helsinki, Finland
11. University of Lodz (Law and Administration), Lodz, Poland
12. University Nicolae Titulescu, Bucharest, Romania

13. University of Warsaw, Warsaw, Poland
14. University of Wroclaw, Wroclaw, Poland
15. Université Paris Sud, Paris, France

North America:

1. Arizona State University Sandra Day O'Connor, College of Law, Tempe, Arizona, USA
2. Florida State University College of Law, Tallahassee, Florida, USA
3. Georgetown University Law Center, Washington D.C., USA
4. George Washington University, Washington D.C., USA
5. McGill University, Institute of Air and Space Law, Montreal, Quebec, Canada
6. St. Thomas University School of Law, Miami, Florida, USA
7. Temple University, Beasley School of Law, Philadelphia, Pennsylvania, USA
8. University of California Davis School of Law, Davis, California, USA
9. University of Mississippi, School of Law, Oxford, Mississippi, USA
10. William S. Richardson School of Law, Honolulu, Hawai'i, USA
11. Universidad Sergio Arboleda, Bogotá, Colombia University of Nebraska College of Law, Lincoln, Nebraska, USA

Regional organizers of the 2015 competition:

Africa: Adv. Lulu Makapela (South Africa)
Asia Pacific: Ms. Siti Noor Malia Putri (Indonesia) and Mr. V. Gopalakrishnan (India)
Europe: ECSL
North America: Dr. Milton 'Skip' Smith (USA) and Ms. Maria-Vittoria 'Giugi' Carminati (US/Italy)

Contact details of 2015 regional organizers:

Africa: Adv. Lulu Makapela <lachsmoot-africa@iislweb.org>
Asia Pacific: Ms. Siti Noor Malia Putri and Mr. V. Gopalakrishnan <lachsmoot-asiapacific@iislweb.org>
Europe: ECSL, attn. Prof. Sergio Marchisio <lachsmoot-europe@iislweb.org>
North America: North America: Dr. Milton Smith and Ms. Maria-Vittoria Carminati <lachsmoot-northamerica@iislweb.org>

Dedicated internet sites to the competition:

Lachs Space Law Moot Court (main page): http://www.iislweb.org/lachsmoot
Facebook page Lachs Moot Court: http://www.facebook.com/spacemoot
Twitter account Lachs Moot Court: http://twitter.com/SpaceLawMoot

PART B: THE PROBLEM

Statement of Facts

1. The United Republic of Adventura (URA) and The Sovereign Peoples Independent Democratic Republic (SPIDR) are separated by the Cold Ocean, a large body of water with URA on its Western shores and SPIDR sharing its Eastern shores with a number of other countries. Both have major space agencies conducting civil space activities: the Federal URA Space Agency (FUSA) and the SPIDR Space Agency.
2. FUSA and the SPIDR Space Agency have developed programs to address potential threats posed by near-Earth objects (NEOs). In addition, URA and SPIDR have been actively engaged in the Working Group on Near-Earth Objects of the United Nations Committee On Peaceful Uses of Outer Space (UNCOPUOS).
3. URA is the lead state of a consortium of nations which was formed for the purpose of developing capabilities to address actual collision threats posed by individual NEOs. Those programs focus on development of "gravity tractors"[1] to deflect NEOs such that they do not pass through any threatening "keyholes".[2] The URA Consortium (URAC) also licenses the utilization of NEO resources. All of the members of the consortium have signed or ratified the Moon Agreement, however, not all the states that have signed or ratified the treaty are part of the URAC.
4. The most ambitious element of FUSA's NEO Program involves the development, construction, launch and operation of a Titanium Autonomous Save-the-Earth Robotic Orbiting Industrial Depot (TASEROID) in an Earth orbit at an altitude of approximately 1,000 km. TASEROID, an unmanned space station, was launched into orbit by FUSA and became fully operational as of 1 February 2019. It serves as an on-orbit warehouse for consumables. FUSA uses the depot for its own space activities and stores and then sells oxygen, hydrogen, and other natural resources

1 A 'gravity tractor' works on the basis of two-way gravitational attraction between the NEO and the 'tractor', such that placing the tractor in front of the NEO would marginally 'speed it up' within its orbit whereas placing the tractor behind the NEO would marginally 'slow it down' likewise. By speeding it up, the NEO would pass a future intersection with the orbit of the Earth well ahead of Earth passing that intersection, hence avoiding a collision; whereas slowing the NEO down leads it to pass that intersection sufficiently much later than the Earth to achieve the same net result – no collision.

2 A 'keyhole' is a fairly limited three-dimensional area in outer space of such a nature that if the orbit of a NEO passes through it, that NEO is quite certain to collide with the Earth a number of years later on a date which can be rather precisely determined. Consequently, making sure a NEO misses a keyhole ('keyhole deflection') ensures it will *not* collide with the Earth.

brought back from NEO missions to other space-faring nations or commercial entities.

5. Anticipating the launch and operation of TASEROID, FUSA started development of TYRUS (Twelve Yard Resource Utilization System) in July 2010. TYRUS is a highly capable robotic space system designed to be launched to NEOs in order to harvest valuable mineral resources there and deliver them to TASEROID.
6. Meanwhile, the SPIDR Space Agency had developed its own national space program, which included the establishment and operation of a manned space station in Earth orbit. SPIDR also conducted a NEO program, and in that context, had realized in 2003 that Floyd-4, a roughly pig-shaped asteroid of some 600 by 150 by 200 meters in size, would make a near-Earth pass in June 2011. That discovery came to public attention in November 2010, when the SPIDR Space Agency announced that its calculations undertaken in April 2010 had shown a heightened likelihood for Floyd-4's trajectory to present a serious risk of colliding with Earth sometime in the future. the SPIDR Space Agency also announced that it had been preparing a robotic spacecraft called KNUD-1 (Kosmic Near-earth Utility Developer) to visit the asteroid and if possible land[3] on it to conduct scientific research as part of an early phase of its own NEO assessment and threat mitigation program. KNUD-1 was launched in November, 2010.
7. Over the Spring of 2011, based on the general scientific information available regarding Floyd-4, FUSA singled out that same asteroid as a particularly interesting target for its first mission, with a second nearby pass in February 2024 giving rise to a launch window of less than two months in the course of late 2023. While KNUD-1 was en route, FUSA scientists examined Floyd-4 with telemetry using ground based equipment and lunar-orbiting spacecraft, and concluded that it likely was a carbonaceous chondrite containing considerable deposits of water and hydrocarbons. At a press conference in May 2011 FUSA announced that it had established a telepresence on Floyd-4 by such telemetry, and would establish a physical presence on the asteroid by sending the first TYRUS mission to the NEO.
8. This announcement gave rise to public protests and heated debate within SPIDR as the public viewed the TYRUS mission as an affront to the SPIDR space program. The SPIDR government published an official statement on 1 June 2011 which included claims that SPIDR had 'priority' rights to any use or exploitation of Floyd-4, that KNUD-1 was due to

3 Spacecraft such as are mentioned in the text do not "land" on an asteroid in the traditional sense due to its weak gravity. Rather, a spacecraft will attach itself to the surface by means of a variety of mechanisms.

arrive at the NEO later that month, and that once KNUD-1 attached to Floyd-4 only the SPIDR Space Agency would have the competence to properly judge the safety risks involved in attaching a second craft to the surface, including possible risks of altering the structural consistency and/or orbital characteristics of the asteroid. the SPIDR Space Agency issued a press release that declared that it had authorized the development of a much larger spacecraft, KNUD-2, to visit Floyd-4 during its next pass close to Earth during February 2024, to harvest the resources of the NEO and deliver any resources so collected to the SPIDR space station.

9. While in transit to the NEO, sensors on board KNUD-1 examined Floyd-4 and a landing/attachment site was designated as the most feasible and convenient location on the asteroid due to its complicated topography. KNUD-1 arrived at Floyd-4 as scheduled, and after orbiting the asteroid for a few weeks, successfully touched down at the designated attachment spot on the NEO's surface and anchored itself to the asteroid's regolith in June 2011. In the following months, KNUD-1's scientific instruments radioed back a wealth of information on the Floyd-4. The scientific results of the KNUD-1 mission were widely shared with the global space operator and scientific community. Notably, KNUD-1 confirmed FUSA's conclusion that Floyd-4 was a carbonaceous chondrite and contained significant deposits of water and hydrocarbons.
10. The URAC decided to commercially exploit the resources of Floyd-4 to provide a funding source for further NEO planetary defense activities. The URAC announced that it intended to leverage the innovation capacities in the private sector, and invited private entities so interested to develop autonomous NEO docking capabilities and engage in NEO threat mitigation activities together with the URAC. In return for the technologies developed and future royalties, the URAC stated it would license such private entities to undertake missions to Floyd-4 for the purpose of harvesting the mineral resources. The URAC declared that there was a moratorium on the extraction and exploitation of the resources of Floyd-4 and other NEO's pending the issuance of the licenses, and that only those entities from states which are party to the Moon Agreement would be allowed to apply for a license.
11. Both SPIDR and URA issued periodic warnings to each other not to interfere with or otherwise put at risk their own respective missions. During the meetings of UNCOPUOS, URA and SPIDR each asserted they had the right under international law to land on Floyd-4 and conduct their respective missions on the asteroid. Both FUSA and the SPIDR Space Agency proceeded with preparations for their respective missions.
12. FUSA launched TYRUS on 22 October 2023 from the FUSA launch facility in URA. The spacecraft rendezvoused with Floyd-4 on 6 February 2024, and tried to touch down in the same preferred attachment area as

KNUD-1. After several unsuccessful attempts, TYRUS managed to attach itself to the asteroid. The surface of the NEO was altered in the process.

13. Whilst SPIDR had made a great effort to launch KNUD-2 before the launch of TYRUS, it was not able to overtake URAC's mission; the original launch date of KNUD-2 had to be postponed twice because of minor but potentially risky anomalies. Ultimately, the spacecraft was launched on 3 December 2023, a few days before the launch window for Floyd-4 closed.
14. Following the launch, SPIDR announced, without any consultations with either FUSA, URAC, or other states members of the UNCOPUOS NEO Working Group, that KNUD-2 was scheduled to arrive at Floyd-4 on 7 March 2024. SPIDR publicly summoned FUSA to ensure that TYRUS would have disengaged from its position by that date to allow KNUD-2 upon its arrival to use the same preferred attachment area where the KNUD-1 had attached to the surface. SPIDR stated that the presence of TYRUS in the proximity of the attachment area substantially increased the risk of a failure in attaching KNUD-2 to the NEO. Neither URA nor the URAC made any public response to the demand to disengage TYRUS.
15. As TYRUS was undertaking its first thorough close-up inspection of Floyd-4 from its attached site on the surface and KNUD-2 was making its way to the same site, new developments took place with respect to an asteroid named Syd-1. Syd-1 was a more or less diamond-shaped NEO estimated to be about 100 meters in size, with a preliminary indication of being a carbonaceous chondrite.
16. Syd-1 had already been detected by FUSA in 2020, and had been estimated at the time to have a chance in the order of 1 to 650 of colliding with the Earth on 27 October 2031 because of a keyhole in its trajectory which it was scheduled to pass on 27 October 2028. On 17 February 2024, however, following analysis of new tracking data FUSA officially announced a recalculated estimate of a 1 in 80 chance of Syd-1 encountering the keyhole resulting therefore in a subsequent impact with Earth on 27 October 2031. The risk corridor of potential impact points was shown to cross the Earth passing over both URA and SPIDR as well as the Cold Ocean between the two countries, with the Earth situated approximately at the center of the uncertainty ellipse.[4]
17. FUSA also calculated that, within six months, Syd-1 would happen to enter a window whereby it would be in a position where the TYRUS could be relaunched from Floyd-4 and rendezvous with the Syd-1. This would offer a unique opportunity to redirect the TYRUS mission to act

4 The "uncertainty ellipse" is the area around a central virtual impact point where, due to the margins of error in the calculations of orbital trajectories, there is *a* possibility of impact, with statistically speaking the most likely actual impact being in the heart of the ellipse – the central virtual impact point.

as a gravity tractor on Syd-1, causing the asteroid to change velocity sufficiently for the risk of collision with the Earth to be removed. Once that objective would have been achieved, any valuable natural resources on Syd-1 could also start to be harvested, if feasible.

18. On 26 February 2024, after various rapidly drafted alternative options for addressing the threat posed by Syd-1 had been discarded, FUSA announced that URAC would relaunch TYRUS from Floyd-4, fly it to Syd-1, confirm whether the asteroid was indeed on a trajectory for the keyhole, and if so, employ gravity tractoring for the asteroid to miss the keyhole.
19. Four days later, the TYRUS relaunch from Floyd-4 took place. However, the KNUD-1 was knocked over in the process and its antenna was oriented down toward the surface of the asteroid. This resulted in the loss of all communications to and from KNUD-1. TYRUS reached Syd-1 on 19 August 2024. Based on TYRUS transponder tracking shortly after arrival, it was determined that the asteroid was indeed headed for the 2028 keyhole and that the nominal impact point of Syd-1 in 2031 would lie in the Cold Ocean between URA and SPIDR. Within three days FUSA decided to station the spacecraft ahead of the asteroid to speed it up in order to ensure that the asteroid would miss the 2028 keyhole. Within three more days, FUSA announced that TYRUS had been able to move itself into a relatively stationary position ahead of the asteroid, and that the process of gravity tractoring to gradually speed it up had been successfully initiated.
20. Following the announcement of the decision on 22 August 2024 to speed up Syd-1, the SPIDR Space Agency quickly calculated that the effects of the TYRUS mission on the asteroid would amount to virtually dragging the potential impact point across the surface of, *inter alia*, SPIDR before it would disappear off the Earth altogether. This also meant, according to the SPIDR Space Agency, that if something went wrong in the course of TYRUS' operations, the chances of Syd-1 actually crashing into SPIDR territory would be considerably larger.
21. The government of SPIDR consequently protested in various fora, most notably UNCOPUOS, against the "unilateral decision by FUSA to put SPIDR at greater risk", even temporarily, where in its opinion moving the Syd-1 in the other direction – that is slowing it down rather than speeding it up – "would have virtually moved the possible impact points over a considerably smaller amount of territory before disappearing off the earth altogether, even if that would have included a portion of URA territory".
22. Meanwhile, on 7 March 2024 KNUD-2 had rendezvoused with Floyd-4 according to plan, found the preferred attachment site available since TYRUS had left on its second mission. The physical structure of the surface had been altered due to TYRUS' previous efforts to attach to Floyd-4, and KNUD-2 had a difficult time successfully attaching to the NEO. In

the process, the scientific instruments which were planned to further investigate Floyd-4 were damaged irretrievably. In addition, the solar panels of KNUD-2 were damaged and could operate only at 30% of their intended capacity.

23. As a consequence KNUD-2, instead of remaining on Floyd-4 for over three years as originally intended, had to depart just four months after docking, on 4 July, in order to safely make it to the SPIDR manned space station. It did so on 20 August 2024, and delivered just 10% of the resources intended to have been extracted from Floyd-4.
24. The government of SPIDR immediately issued a statement that it held URA responsible and liable for the damage caused to KNUD-2 and the consequent limitations to the ability of KNUD-2 to harvest any valuable minerals. URA responded by claiming the right to prior harvesting in combination with its decision to redirect the TYRUS mission to mitigate the threat posed by Syd-1 for the benefit of SPIDR as well as the rest of mankind.
25. The orbit of the Syd-1 was altered by the gravity tractoring, however it was determined after the keyhole event of 2028 that the risk corridor for the 2031 encounter did not completely miss the Earth but rather moved toward the SPIDR coast of the Cold Ocean.
26. In September 2031, the asteroid entered the atmosphere and produced an air burst with the estimated equivalent of 2.1 megatons of TNT at an altitude of roughly 10.1 kilometers over the Cold Ocean near SPIDR. The airburst completely destroyed the town of Dropgum, a fishing village located on the coast in northern SPIDR. Mass evacuations had been conducted along the impact corridor within SPIDR in advance of the impact, including Dropgum, and the loss of life was held to several dozen people.
27. Ensuing diplomatic discussions failed to resolve the dispute. Both states agreed to bring their dispute before the International Court of Justice by way of this Compromis.
28. The government of the Sovereign Peoples Independent Democratic Republic requests the Court adjudge and declare that:
    (i) URA is liable for damages under international law to SPIDR for changing the orbit of Syd-1, which resulted in the loss of life and damage to Dropgum; and
    (ii) URA is liable under international law for the loss of or damage to the first KNUD-1 spacecraft, and the loss of the KNUD-2 harvesting operation on Floyd-4;

    and to dismiss all claims to the contrary.
29. The government of the United Republic of Adventura requests the Court adjudge and declare that:
    (i) URA is not liable under international law for damages to SPIDR caused by Syd-1;

(ii) URA is not liable under international law for any loss of or damage to the two KNUD spacecraft;

and to dismiss all claims to the contrary.

30. Both URA and SPIDR are parties to the Outer Space Treaty, the Rescue Agreement, the Liability Convention, the Registration Convention, the UN Charter, the ITU Constitution and ITU Convention, as well as members of the UNCOPUOS Working Group on Near-Earth Objects, having signed up to the general commitments undertaken in that context. URA is a party to the Moon Agreement. There is no issue regarding the jurisdiction of the Court. The law at the time the case is heard is substantially the same as of 31 December 2014.

Problem Clarifications

1. Did URA made (sic) formal consultations before it had launched TYRUS from FLOYD-4 to Syd-1?
   Response: Further clarification is declined
2. If there was the reasonable doubt that the Syd-1 will crash in SPIDR's territory why weren't any actions undertaken in order to mitigate the potential damage to SPIDR territory?
   Response: Further clarification is declined
3. In addition to extraction for scientific purposes as stated in paragraph 6 of the Problem, did the SPIDR Space Agency also intend to use the resources extracted from Floyd-4 for commercial purposes?
   Response: Further clarification is declined
4. As per paragraph 3 of the Problem, is the URAC an inter-governmental agency which, in addition to its competence to issue exploitation licences, also serves public administrative functions?
   Response: Further clarification is declined
5. By whom will the "further NEO planetary defence activities" be undertaken? (par. 10)
   Response: Further clarification is declined
6. By whom "was it determined" that the risk corridor was moved toward the SPIDR coast of the Cold Ocean? (par. 25)
   Response: Further comment is declined
7. Which one or ones of the space crafts were manned or were any of the space crafts manned in the case?
   Response: Unless otherwise indicated, spacecraft should be considered to be unmanned.
8. What is the correct time for the re-launch of Tyrus. Is it four dates later (on March 1st 2024) as written in point 19 of the problem, or on March 2nd 2024 (5 days later) as written in the overview? Currently the description of the problem and the overview are not matching.
   Response: TYRUS launched on 2 March 2024.

9. Who is the responsible actor regarding the TYRUS mission? The formulation "FUSA announced that URAC would relaunch TYRUS" in No. 18 Sentence 1 gives the impression that since then URAC is the responsible actor. In No. 19 Sentence 6 again FUSA makes a decision regarding TYRUS. Such potential permutations of FUSA, URA and URAC occurs throughout the whole fact scenario (compare: No.13 S.1 ("URAC's mission"); No.19 S.7 ("FUSA announced that TYRUS"); No.21 S.1 ("unilateral decision by FUSA"); No.24 S.2 ("URA responded [...] with its decision to redirect the TYRUS mission").
   Response: Further clarification is declined
10. Does the formulation "claiming the right to prior harvesting" in No. 24 S.2 mean, that URA claimed "priority rights" on Floyd-4 as well as SPIDR did? Or does the "prior" indicate the chronology of the events?
   Response: Further clarification is declined
11. What is the "keyhole event of 2028" as referred to in paragraph 25?
   Response: Further clarification is declined
12. Does loss of communication with KNUD-1 mean that SPIDR also lost its ability to operate KNUD-1?
   Response: Yes
13. Is TYRUS registered by URA (a State) or by URAC (an international organization)?
   Response: Further clarification is declined
14. Please clarify what date is being referred to in paragraph 20? Pursuant to paragraph 19 TYRUS reached SYD-1 on 19 August 2024, and within three days (22 August 2024) FUSA had made a decision and within three more days (25 August 2014) FUSA made an announcement.
   Response: Further clarification is declined
15. When was this dispute brought before the ICJ? (For purposes of statute of limitations).
   Response: The Compromis specifies that there is no issue regarding the jurisdiction of the Court.
16. Did URA and SPIDR register their rockets, space crafts, space objects, or missions with the UN as required by article 8 of the outer space treaty?
   Response: Further clarification is declined
17. Is URAC a private or public entity?
   Response: Further clarification is declined
18. Whether the URA Consortium is recognized as an official licensing authority by the International community and the UNCOPUOS?
   Response: Further clarification is declined
19. 19. Prior to the attempted landing of Knud-2, was the URA aware of the alterations made to the surface of Floyd-4 caused by TYRUS?
   Response: No.

20. In 2020, when the URA detected the NEO Syd-1, did the URA publicly announce the discovery?
    Response: Yes, in conformity with its general commitments undertaken in the COPUOS Working Group on NEOs.
21. Whether URAC is an international organization?
    Response: Further clarification is declined
22. If URAC is not an international organization, is there a contract/ treaty between the member states which governs their right and liabilities within URAC and the status of URAC?
    Response: Further clarification is declined
23. According to Paragraph 7 of the problem, FUSA singled out Floyd-4 as a target mission based on general scientific information available. Was this based on the information released by SPIDR only, or did other sources also give the same information?
    Response: Further clarification is declined
24. According to Paragraph 14, SPIDR announced the KNUD-2 was scheduled to arrive on Floyd-4 at on 7 March, 2024 without any consultation. Was this consultation done by URA and SPIDR in their earlier space operations? (specifically, landing of TYRUS and KNUD-1)
    Response: Further clarification is declined

PART C: FINALISTS MEMORIALS

Memorial for the Applicant, the Sovereign Peoples Independent Democratic Republic (SPIDR)

National and Kapodistrian University of Athens, Greece
Students: Ms. Maria Vasilaki, Ms. Marianthi Koutri, Mr. Athanasios Plexidas
Faculty Advisor: Prof. George D. Kyriakopoulos
Faculty Advisor Assistant: Charalampos Panagiotopoulos

Argument

I. URA is Liable for Damages under International Law to SPIDR for Changing the Orbit of Syd-1, Which Resulted in the Loss of and Damage to Dropgum

URA is liable to SPIDR for the loss of life and damage caused to Dropgum after changing the orbit of Syd-1, under the LIAB. In doing so, URA must also be found responsible for the violation of primary rules of the OST. Furthermore, URA's action violated fundamental principles of international environmental law. Finally, it is submitted that URA cannot invoke the existence of circumstances precluding the wrongfulness of its actions.

A. URA is Liable under Article II LIAB for the Loss of Life and Damage to Dropgum

According to Article II LIAB, "a launching State shall be absolutely liable to pay compensation for damage caused by its space object on the surface of the Earth [...]."[5] In the present case, Article II is applicable since its conditions are indeed fulfilled:

1. The Destruction of Dropgum Constitutes Damage under Article I LIAB

Article I(a) LIAB stresses that the term "damage" includes "loss of life, personal injury or other impairment of health; or loss of or damage to property."[6] The definition of damage is broad, as is the scope of application of the Convention.[7] According to the agreed facts, the town of Dropgum was completely destroyed and the loss of life was held to several dozen people.[8] This resulted from the gravity tractoring operation of TYRUS, which altered the orbit of Syd-1, resulting in the risk corridor moving toward the SPIDR coast of the Cold Ocean.[9] Subsequently, the asteroid produced an airburst over the Cold Ocean near SPIDR. Following the provisions of LIAB, both loss of life and damages to property fall within the scope of Article I(a).

2. The Damages Sustained by Dropgum Are Covered under Article II LIAB

The Respondent might argue that the damage caused to Dropgum by Syd-1's entrance in the atmosphere is an indirect one and, thus, it is not covered by the LIAB. In this respect, SPIDR submits that, although the damage to Dropgum is indeed indirect (a), the LIAB covers not only direct but also indirect damages (b). It follows that URA must be held absolutely liable under Article II LIAB for indirect damages caused to Dropgum, as there is proximate causal connection between TYRUS' gravity tractoring and the damages (c). Therefore, URA is under an obligation to pay compensation for the damages caused by its TYRUS mission.

a) The Damage Caused to Dropgum Is Indirect

In the present case, it was calculated by FUSA, URA's Space Agency, that Syd-1 was heading for the 2028 keyhole, being quite certain that it would collide with the Earth in the future. It was FUSA's unilateral decision to try to mitigate the threat posed by Syd-1 which resulted in the alteration of the

5 Article II, Convention on International Liability for Damage Caused by Space Objects, *entered into force* Sept. 1 1972, 24 U.S.T. 2389, 961, U.N.T.S. 187 (LIAB).
6 Article I, LIAB.
7 Armel Kerrest & Lesley Jane Smith, *Article VII*, I COLOGNE COMMENTARY ON SPACE LAW, 142 (Stephan Hobe, Bernhard Schmidt-Tedd & Kai-Uwe Schrogl eds. 2009 (Kerrest/Smith), II, 113.
8 Special Agreement between the United Republic of Adventura and the Sovereign Peoples Independent Democratic Republic (Compromis), §26.
9 Compromis, §25.

asteroid's trajectory, *id est*, the shift of its risk corridor toward the SPIDR coast of the Cold Ocean.[10] As already submitted, this action inevitably caused the loss of life of several dozen people and the total destruction of Dropgum. Hence, these losses constitute damages connected to and indirectly caused by TYRUS' gravity tractoring, as the consequences of this initial act.

b) The LIAB Covers Both Direct and Indirect Damages

Article II LIAB establishes that in cases of damage caused by the space object of a launching State on the surface of the Earth or to aircraft in flight, that State shall be absolutely liable to pay compensation for such damage.[11] Thus, Article II contains a non-fault based liability system, in which liability is automatic and unlimited, providing full compensation for victims.[12] However, the Convention does not comprise any further explanation or reference as to whether only direct or indirect damage are covered as well; nor does any international legal document stipulate that only direct damages are covered by said Article.[13] Damage in the context of Article II LIAB would be direct if it flowed directly and immediately from the operation of a space object, e.g. damage caused by contact with a space object.[14] A damage without those characteristics, which is remote or consequential to the act, would be indirect.[15] Indirect damage is in any event not explicitly denied.[16] On the contrary, the compensability of indirect damage is widely accepted in legal doctrine.[17] Furthermore, it is contended that the omission of any requirement regarding the way in which damage occurs leads to the conclusion that both

10 Ibid.
11 Article II, LIAB.
12 Kerrest/Smith II, 121-122.
13 Special Agreement between the United Republic of Adventura and the Sovereign Peoples Independent Democratic Republic (Mosteshar), 404; Ricky J. Lee, *Reconciling International Space Law with the Commercial Realities of the Twenty-first Century*, 4 S. J. I. C. L., 194, 225 (2000) (Lee).
14 Elena Carpanelli & Brendan Cohen, *Interpreting "Damage Caused by Space Objects" Under the 1972 Liability Convention*, IAC-13.E7.1.5, 2013, (Carpanelli/Cohen), 2.
15 Carl Q. Christol, *International Liability for Damage Caused by Space Objects,* 74 No 2 A.J.I.L., 346, 359-362 (1980) (Christol); Report of the Committee on Aeronautical and Space Sciences (1972) (U.S) (Report of CASS).
16 Joseph A. Burke, Convention on International Liability for Damage Caused by Space Objects: Definition and Determination of Damages After the Cosmos 954 Incident, 8 FORDHAM INT'L L.J. 255, 282 (1985) (Burke); CARL QUIMBY CHRISTOL, THE MODERN INTERNATIONAL LAW OF OUTER SPACE, 96 (1982). (CHRISTOL, THE MODERN INTERNATIONAL LAW).
17 William F. Foster, *The Convention on International Liability for Damage Caused by Space Objects,* 10 CAN. Y.B. INT'L L. 157, 158 (1972) (Foster); Carpanelli/Cohen, 5; BRUCE HURWITZ, STATE LIABILITY FOR OUTER SPACE ACTIVITIES, 15 (1992) (HURWITZ).

types of damage, directly and indirectly caused, are included.[18] Specifically, it has been elaborated that the operating state of a space mission which causes damage on Earth as a consequence of only partially deflecting an asteroid is absolutely liable for that damage.[19]

Apart from that, this reasoning is enforced via treaty interpretation. Therefore, recourse must be made to the rules of interpretation of the 1969 VCLT in order to clarify Article II LIAB in this respect. In citing the general rule and the supplementary means of interpretation of treaties, Articles 31 and 32 VCLT codify customary international law.[20] Article 31 VCLT emphasizes that a treaty shall be interpreted "in the light of its object and purpose".[21] The purpose of the LIAB is stressed in its Preamble which, according to the VCLT, is considered as an integral part of the text of a treaty.[22] More explicitly, States Parties recognize, *inter alia,* the need to ensure, in particular, the prompt payment under the terms of this Convention of a full and equitable measure of compensation to victims of such damage and seek to elaborate effective international rules and procedures concerning liability.[23] It follows that the LIAB is a victim-oriented treaty, with a primary aim to protect individuals from the activities of those undertaking an inherently dangerous activity.[24] Since the purpose of the Convention is to ensure a prompt payment, *id est,* the efficient protection of the victims of damage caused by space objects, "damage" must be interpreted so that it includes both direct and indirect damage.[25] Therefore, the recovery must be authorized for damages resulting both from a direct contact and for the indirect or consequential aspects caused by the operation of a spacecraft.[26]

---

18 Andre G. DeBusschere, *Liability for Damage caused by Space Objects*, 3 J. INT'L L. & PRAC., 101, 102 (1994) (DeBusschere), 101, 102; E.R.C. VAN BOGAERT, ASPECTS OF SPACE LAW, 172 (1986) (VAN BOGAERT); Foster, 157, 158.

19 Association of Space Explorers, *Asteroid Threats: A Call for Global Response*, 50 (Jessica Tok, ed., 2008) (ASE), 50.

20 MALCOLM N. SHAW, INTERNATIONAL LAW, 839 (2008) (SHAW); Evan Criddle, *The Vienna Convention on the Law of Treaties in U.S. Treaty Interpretation*, 44 VIRG. J. INT. L., 2 (2004) (Criddle); Arbitral Award of 31 July 1989 (Guinea-Bissau v. Senegal) (Judgment) 1991 I.C.J. 53 (Nov. 12) (Arbitral Award of 31 July 1989 (Judgment)).

21 Art. 31, Vienna Convention on the Law of Treaties, *entered into force* Jan. 27, 1980, 1155 U.N.T.S. 331 (VCLT); Libyan Arab Jamahiriya/Chad Territorial Dispute (Libya v. Chad) (Judgment) 1994 I.C.J. 6 (Feb. 3) (Territorial Dispute 1994 (Judgment)).

22 Art. 31(2), VCLT.

23 Preamble to the LIAB.

24 Armel Kerrest, *Liability for Damage Caused by Space Objects,* SPACE LAW – CURRENT PROBLEMS AND PERSPECTIVES FOR FUTURE REGULATION, 92 (Marietta Benkö & Kai-Uwe Schrogl eds., 2005) (Kerrest).

25 Philippe Sands, Principles of International Environmental Law, 898 (2003) (Sands).

26 *Supra,* note 13.

The settlement of Soviet Cosmos 954 incident also supports this view. After the satellite crashed on Canadian territory in 1978, the government of Canada addressed a claim to the Soviet Union based on the LIAB.[27] This incident constitutes subsequent State practice,[28] reaffirming the compensability of indirect damage.

c) The Causal Connection between TYRUS' Gravity Tractoring and the Damage to Dropgum Is Adequate and Proximate

Article II LIAB stresses that damage must be "caused by" the space object of a launching State.[29] It follows that a causal link must exist between the damage and the space object, in order for the former to be compensable under Article II.[30] The required degree of causality for liability to arise is determined as adequate and proximate.[31] A cause is defined as adequate when the outcome flows from the conduct in natural sequence. With regards to proximity, there must be proof of an uninterrupted initial causal link, namely of the absence of intervening causes "cutting off" the initial course of action.[32] Moreover, "caused by" can also be interpreted as simply directing attention to the need for a causal connection between the operation and the damage. It is the Applicant's submission that causation under the aforementioned requirements is established. Any damage, therefore, that is one way or another linked with the initial act is compensable under LIAB.[33]

Furthermore, it is submitted that the action must be the actual cause of damage, a *sine qua non* condition for its occurrence,[34] so that damage would not have occurred "but for" the initial action.[35]

---

27 Settlement of Claims Between Canada and the Union of Soviet Socialist Republics for Damage Caused by "Cosmos 954", Released on April 2 1981, Article I ("Cosmos 954" Settlement of Claims).

28 Article 31(3) (b), VCLT.

29 Article II, LIAB.

30 *Supra,* note 20, at 97-99.

31 Bin Cheng, *International Liability for Damage Caused by Space Objects, in* I MANUAL ON SPACE LAW, 115, 117 (Nandasiri Jasentuliyana, Roy S. K. Lee, eds., 1979). (Cheng, Liability); Second Report on State Responsibility by Gaetano Arangio-Ruiz, U.N. Doc. A/CN.4/425 & Add. 1 (1989) (Arangio-Ruiz), 12; Stephen Gorove, *Implications of International Space Law for Private Enterprise*, 7 ANNALS AIR & SPACE L., 141, 319, 141 (1982) (Gorove); P. Dembling, *Cosmos 954: Space Treaties*, 6 J. SPACE L. 135 (1978) (Dembling).

32 Leon Castellanos-Jankiewicz, *Causation and International State Responsibility,* AMSTERDAM CENTER OF INTERNATIONAL LAW, 46, 47 (2012) (Castellanos-Jankiewicz); CHRISTOL 1991, 223; Lesley Jane Smith, *Facing up to Third Party Liability for Space Activities: Some Reflections*, in PROCEEDINGS OF THE 52ND COLLOQUIUM ON THE LAW OF OUTER SPACE, 257 (2009) (Smith).

33 Kerrest, at 91-93, 158.

34 JEAN COMBACAU, SERGE SUR, DROIT INTERNATIONAL PUBLIC, 545 (1995) (COMBACAU/SUR); Max Planck Encyclopedia of Public International Law, Vol. XI, 2007 (MPEPIL), *Compensation*.

In this case, the facts evolved in the following sequence: TYRUS initiated the gravity tractoring of Syd-1 to speed up the orbit of the asteroid. The orbit of Syd-1 was thus altered.[36] Nevertheless, Syd-1 did not miss the 2028 keyhole event and its collision with the Earth became certain.[37] Therefore, it was due to TYRUS' intervention that the risk corridor did not miss the Earth, but rather moved toward the SPIDR coast of the Cold Ocean. Moreover, there is no indication of any subsequent incident altering the causal link between URA's action and the orbit of Syd-1, thus establishing adequacy and proximity. Because of this alteration in Syd-1's trajectory, said asteroid entered the atmosphere in 2031 and produced an airburst which destroyed the town of Dropgum and killed several dozen people.[38] Thus, the damage caused to Dropgum resulted from TYRUS, launched by FUSA. Consequently, URA is liable towards SPIDR, under Articles I and II LIAB.

3. No Fault Is Required for Liability to Arise

The damages to property and the loss of life suffered by SPIDR occurred on the surface of the Earth, therefore Article II LIAB is applicable. This Article highlights that a State does not need to be at fault to be held liable.[39] Given the fact that outer space activities are ultra-hazardous,[40] namely inherently dangerous, a higher standard of caution is imposed on States, so that only the prerequisite of damage is needed.[41]

In the case at hand, TYRUS' gravity tractoring operation on Syd-1 was potentially risky, as calculated by the SPIDR Space Agency[42] and as evidenced by the subsequent damages sustained to Dropgum. Indeed, had TYRUS not altered Syd-1's initial orbit, SPIDR would not have been exposed to greater risk and damage would have most probably been avoided.

Therefore, URA must be held absolutely liable for the damages to Dropgum.

---

35 H.L.A. Hart, T. Honore, Causation in the Law, 114-121 (1985) (Hart/Honore).
36 Compromis, §§19, 25.
37 Compromis, footnote 2.
38 Compromis, §§25, 26.
39 MANFRED LACHS, THE LAW OF OUTER SPACE – AN EXPERIENCE IN CONTEMPORARY LAW-MAKING, 115 (2010) (LACHS 2010); Rylands v. Fletcher [1868] UKHL 1, 3 HL 330 (Rylands *v.* Fletcher).
40 Alexander Soucek, *International Law*, *in* OUTER SPACE IN SOCIETY, POLITICS AND LAW, 342 (Christian Brünner, Alexander Soucek eds., 2012) (Soucek); MICHAEL G. FAURE & SONG YING, CHINA AND INTERNATIONAL ENVIRONMENTAL LIABILITY, LEGAL REMEDIES FOR TRANSBOUNDARY POLLLUTION, 328 (2008) (FAURE/YING); BUNKER, 74; LACHS 2010, 115; VIIKARI, 278; WASSENBERGH, 92; Marchisio, 176.
41 Kerrest/Smith II, 118.
42 Compromis, §20.

4. URA is under an Obligation to Provide SPIDR with Full Compensation under Article XII LIAB

The issue of compensation for damages caused by outer space activities is regulated by Article XII LIAB. According to this Article, the measure of compensation to be granted to the injured State is such that will restore the State "to the condition which would have existed if the damage had not occurred".[43] This Article is therefore based on the applicable rule of international law *restitutio in integro ex ante*.[44] Nevertheless, international jurisprudence has ruled that, according to customary law, in case *restitutio in integro* is not possible, full monetary compensation would bear to cover the damages sustained by the claimant State.[45]

In the present case, *restitutio in integro* is no longer possible, as several dozen people died and the town of Dropgum was completely destroyed. Consequently, compensation is owed to SPIDR by URA for the aforementioned losses.

B. URA Is Responsible for the Destruction of Dropgum, as It Violated Rules of International Law under the corpus juris spatialis

1. The General Rules of International Law Are Applicable in Outer Space

SPIDR also submits to this honorable Court that URA must be held internationally responsible for the destruction of Dropgum due to TYRUS' gravity tractoring, under the rules of international law on responsibility of States. Pursuant to Article III OST, international law applies to outer space;[46] this includes not only long-established rules of customary international law, but other branches, *inter alia*, international environmental law.[47]

The regime of international responsibility of a State is reaffirmed in the OST, under Article VI, which states, *inter alia*, that "States Parties to the Treaty shall bear international responsibility for national activities in outer space, including the Moon and other celestial bodies."[48] Thus, for every activity in outer space, a State shall bear international responsibility, even for private operations,[49] as paragraph 2 of this Article broadens the scope of interna-

---

43 Article XII, LIAB.

44 UN Doc. A/AC.105/85, 3; Maureen Williams, *International Law in the Wake of UNISPACE III, in* JUDICIAL REVIEW IN INTERNATIONAL PERSPECTIVE, 79 (M. Adenas, D. Fairgrieve eds., 2000) (Williams International Law), 79; NICOLAS MATEESCO MATTE, AEROSPACE LAW, 169 (1977) (MATTE).

45 Opinion in the Lusitania Cases (USA *v.* Germany) 1923, R.I.A.A. 32 (Lusitania), 39; Factory at Chorzów (Germany v. Poland) (Merits) 1928 P.C.I.J. (ser. A) No 17 (Sept. 17) (Chorzów Factory), 47.

46 Article III, OST.

47 Olivier Ribbelink, *Article III*, I COLOGNE COMMENTARY ON SPACE LAW, 67 (Stephan Hobe, Bernhard Schmidt-Tedd & Kai-Uwe Schrogl eds. 2009) (Ribbelink).

48 Article VI, OST.

49 Manfred Lachs, The Law of Outer Space-An Experience in Contemporary Law Making, 22, 122 (1972) (Lachs).

tional responsibility in outer space. Responsibility shall be borne especially when violation exists of the other provisions of the OST.[50] Article VI is understood as a specification of the general scheme for State responsibility.[51] Therefore, Article VI is a secondary rule of international law, which stresses the requirements for international responsibility to arise regarding outer space activities, once a primary obligation is breached. In the OST, including its context as well as the travaux préparatoires, there is no indication or evidence that a deviation from the general concept of public international law was intended.[52]

Articles III and VI OST provide a basis for invoking the responsibility of URA for damages to SPIDR under the general rules of international law on the responsibility of States, as codified in the "Articles on Responsibility of States for Internationally Wrongful Acts" (hereinafter 'ARSIWA'), adopted by the International Law Commission (hereinafter 'ILC') in 2001. ARSIWA are widely regarded as a codification of the customary law of State responsibility[53] and pre-existing rules, since the Commission was based on State practice and international jurisprudence.[54]

The ARSIWA set out the consequences for the breach of primary rules.[55] Article 1 ARSIWA stipulates that "every internationally wrongful act of a State entails the international responsibility of that State." An internationally wrongful act exists when, according to Article 2, conduct consisting of an action or omission (a) is attributable to a State under international law and (b) constitutes a breach of an international obligation of this State.[56] These elements are mentioned in several judicial decisions such as the Phosphates in Morocco case,[57] the Diplomatic and Consular Staff case[58] and the Dickson Car Wheel Company case.[59]

---

50 Michael Gerhard, *Article VI*, I COLOGNE COMMENTARY ON SPACE LAW, 104, 114 (Stephan Hobe, Bernhard Schmidt-Tedd & Kai-Uwe Schrogl eds. 2009) (Gerhard).

51 H. L. van Traa-Engelmann, *Problems of State responsibility in international space law,* in PROCEEDINGS OF THE 26th COLLOQUIUM ON THE LAW OF OUTER SPACE, 140 (1983) (Van Traa-Engelmann).

52 *Supra* note 46, at 114.

53 Robert Rosenstock, *The ILC and State Responsibility*, 96 A.J.I.L., 792 (2002) (Rosenstock); Olufemi Amao, Corporate Social Responsibility, Human Rights and the Law – Multinational Corporations in Developing Countries, 173 (2011) (Olufemi).

54 Ian Brownlie, State Responsibility, 35-41 (2001) (Brownlie).

55 Rep. of the Int'l Law Comm'n, 53rd session, April 1-June 1, July 2-August 10, 2001, 151 U.N.Doc. (A/56/10) (Report of the ILC 53rd session).

56 Yearbook of the International Law Commission, 2001, vol. II (Part Two), 34, 55 U.N. Doc. A/CN.4/SER.A/2001/Add.1 (ILC Yearbook).

57 Phosphates in Morocco (Italy v. France) (Preliminary Objections) 1938 P.C.I.J., (ser. A/B) No 74 (Jun. 14) (Phosphates in Morocco (Preliminary Objections)).

58 United States Diplomatic and Consular Staff in Tehran (U.S. v. Iran) 1980 I.C.J. 3 (May 24) (Diplomatic and Consular Staff).

59 Dickson Car Wheel Company (U.S. v. Mexico) 1931, R.I.A.A. 669 (Dickson Car Wheel).

Therefore, the ARSIWA are applicable in the case at hand, with regards to responsibility, an issue extraneous to the LIAB. Indeed, URA has breached its primary obligations both under the *corpus juris spatialis* and general international law as will be elaborated below.

2. URA Breached Its Duty to Cooperate and Did Not Achieve an International Response to the Threat Posed by Syd-1

The first sentence of Article IX OST stresses that "[i]n the exploration and use of outer space, including the Moon and other celestial bodies, States Parties to the Treaty shall be guided by the principle of cooperation." In the field of space law, the principle of international cooperation is widely accepted as a prerequisite for any State activities in outer space.[60] Legal doctrine is firm in stating that international cooperation is a statutory obligation, rather than a mere aim, verifying the binding character of the principle on States.[61] Equally, cooperation in good faith is a general obligation on all States, with the United Nations Charter defining "cooperation in solving international problems" as one of its purposes.[62] In addition, URA's obligation is more apparent by the fact that cooperation is a principle of the OST,[63] the ITU Constitution[64] and the MA.[65] Thus, it is evident that the principle of cooperation has permeated through all sectors of international law, being a sine qua non condition in the lawful and orderly conduct of States.[66] Specifically, this Court ruled in the Nuclear Tests case that "[t]rust and confidence are inherent in international co-operation, in particular in an age when this co-operation in many fields is becoming increasingly essential."[67] Finally, the binding character of the Declaration on Principles of International Law concerning Friendly Relations and Co-operation among States, and therefore the principle of cooperation, as pars pro toto, was verified in the jurisprudence of this Court.[68]

---

60 Williams, Derecho Internacional, 489.

61 Manuelo Augusto Ferrer, *Contenidos Eticos y Juridicos de la Transferencia de Tecnologia Espacial*, in Estudios Internacionales Avanzados: *Etica, Derecho, Ciencia, Tecnologia y Cooperacion Internacional,* 223 (1985) (Ferrer).

62 UN Charter, Article 1(3).

63 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, 18 U.S.T. 2410, 610 U.N.T.S. 205 (OST), Preamble; Article IX, OST.

64 Constitution and Convention of the International Telecommunication Union as amended by the 2010 Plenipotentiary Conference (2011) (ITU Constitution), Article 1.

65 Agreement Governing the Activities of States on the Moon and Other Celestial Bodies, *entered into force* July 11, 1984, 1363 U.N.T.S. 3 (MA), Article 4(2).

66 Malcolm N. Shaw, International Law, 1205 (2008) (Shaw).

67 Nuclear Tests Case (New Zealand v. France) (Judgment) 1974 I.C.J. 457 (Dec. 20) (Nuclear Tests), para. 49.

68 Military and Paramilitary Activities in and Against Nicaragua (Nicaragua v. United States of American) (Merits) 1986 I.C.J. 14 (Jun. 27) (Nicaragua), para. 191; Accor-

The obligation of international cooperation in outer space has been further elaborated and specified under the auspices of the UNCOPUOS, concerning the mitigation of Near-Earth Objects (NEOs) – celestial bodies which might cross the Earth's orbit.[69] As NEOs constitute a possible danger to the Earth, their mitigation requires an international and interdisciplinary approach. In 2001, the UNCOPUOS established an Action Team on Near-Earth Objects (Action Team 14), aiming to formulate recommendations of principles governing NEO threat mitigation. Additionally, the Scientific and Technical Subcommittee of COPUOS established, in 2007, a Working Group on Near-Earth Objects, to propose international procedures to address the NEO threat.[70]

Paragraph 186 of the Report of the Scientific and Technical Subcommittee in 2013 stresses that "activities in protecting the Earth from an asteroid impact involved diverse and complex scenarios that could be best addressed through international cooperation."[71] Paragraph 23 of the Action Team 14 Recommendations in 2011-2012 stipulates that "[r]esponse to the NEO impact hazard requires measures to detect, track and characterize the orbital and physical properties of potentially hazardous NEOs, as well as measures to modify the trajectory of such NEOs in order to prevent an impact and measures to limit the consequences on the ground."[72] Concerning the long-term preparation and detection on planetary defense, there has been extensive practice from States and international organizations. Specifically, the European Space Agency has developed a multi-segment Space Situational Awareness Program. The European Commission established the NEO Shield preparing techniques' program. Moreover, the Russian Federation operates the MASTER network of robotic telescopes for asteroid discovery.[73] It follows that the NEO threat can be effectively addressed only through international cooperation.

---

dance with International Law of the Unilateral Declaration of the Independence in Respect of Kosovo, Advisory Opinion, 2010 I.C.J. 403 (Jul. 22) (Kosovo), para. 80.

69 Silvia Maureen Williams, International Responsibility Vis-à-Vis Natural Near-Earth Objects (NEOs) and Their Possible Implications, IAC-08-E8.4.1, 2008, at 4, 5 (Williams).

70 G.A. Res. 62/217, U.N. GAOR, 62nd Sess., U.N. Doc. A/RES/62/217 (2008) (A/RES/62/217).

71 Report of the Scientific and Technical Subcommittee, U.N. GAOR, 56th Sess., at 30, U.N. Doc. A/AC.105/1038 (2013) (Report of Scientific and Technical Subcommittee); Interim report of the Action Team on Near-Earth Objects, U.N. GAOR, 44th Sess., at 7, 8, U.N. Doc. A/AC.105/C.1/L.290 (2007) (Interim report); G.A. Res. 51/122, U.N. GAOR, 51st Sess., at article 4, U.N. Doc. A/RES/51/122 (1996) (A/RES/51/122); DON DAVIS, NEAR-EARTH OBJECTS: RESPONDING TO THE INTERNATIONAL CHALLENGE, 14 (2014) (DAVIS).

72 Recommendations of the Action Team on Near-Earth Objects for an international response to the near-Earth object impact threat, U.N. GAOR, 50th Sess., Supp. No. 20, at 5, 10, U.N. Doc. A/AC.105/C.1/L.329 (2012) (Recommendations of the Action Team; Planetary Defense Conference Report), 11.

73 Davis, 8, 9.

Albeit said recommendations are not a formal source of international law under Article 38 of the I.C.J. Statute, their elaboration was accompanied by an active participation of States, including SPIDR and URA.[74] Such participation is indicative of a positive opinio juris[75] and a consensus of the international community with regard to their implementation. Although these recommendations are not binding themselves upon States, the duty to international co-operation is already established in Articles I and III of the Outer Space Treaty. Specifically, co-operation under Article III is an essential principle of both the UN Charter and the Friendly Relations Declaration of 1970 and has, therefore, binding character upon States. It is the principle of good faith that shapes States' obligations. Therefore, the UN COPUOS Recommendations are regarded as an elaboration of the principle of co-operation, and must be followed by States.[76]

Nevertheless, URA chose to ignore them. In this case, URA acted unilaterally in order to mitigate the threat posed to Earth by Syd-1. URA followed a unilateral course of action during the gravity tractoring operation, contrary to the COPUOS Recommendations. Indeed, not only URA disregarded SPIDR's proposal for an effective threat mitigation technique,[77] but also the alternative options assessed in URAC were rapidly discarded and URA proceeded unilaterally in an attempt to mitigate the threat.[78] It also failed to determine the risk of potential damage to SPIDR by Syd-1. URA did not operate any long-term preparation or telescoping system so as to be prepared for Syd-1's threat, contrary to current widespread practice. Consequently, URA did not verify the alteration of Syd-1's orbit and thereby did not inform SPIDR of the consequences, as owed to.[79] Following this unilateral action, URA failed to effectively mitigate the threat posed by Syd-1, which caused significant damage to SPIDR. Since URA did not act in accordance with its duty of international cooperation under the COPUOS Recommendations, it is internationally liable for the damage to Dropgum.[80]

---

74 Compromis, §§2, 30.

75 Luis F. Castillo Argañarás, *Natural Near Earth Objects and the International Law of Outer Space*, IAC-08-E8.4.2, 2008, at 8 (Argañarás).

76 JAMES CRAWFORD, BROWNLIE'S PRINCIPLES OF PUBLIC INTERNATIONAL LAW 8th EDITION, 723 (2012) (CRAWFORD); Land and Maritime Boundary between Cameroon and Nigeria (Cameroon v. Nigeria: Equatorial Guinea intervening) (Preliminary Objections) 1998 I.C.J. 4 (Jun. 11) (Land and Maritime Boundary 1998 (Preliminary Objections)); Robert Kolb, *General Principles of Procedural Law,* in THE STATUTE OF THE INTERNATIONAL COURT OF JUSTICE, A COMMENTARY, 872 (Andreas Zimmermann, Christian Tomuschat, Karin Oellers-Frahm, Christian J. Tams eds., 2012) (Kolb).

77 Compromis, §§20, 21.

78 Compromis, §18.

79 Compromis, §25.

80 Report of the Scientific and Technical Subcommittee; Interim report.

3. URA Did Not Act with "Due Regard to the Corresponding Interests of All States Parties to the OST"

SPIDR submits that URA has simultaneously violated the "due regard" principle under Article IX OST, stressing that States shall conduct all their activities in outer space, including the Moon and other celestial bodies, with due regard to the corresponding interests of all other States Parties to the Treaty.[81] The principle of due regard encapsulated in Article IX imposes the duty to explore and use outer space and conduct space activities with a certain standard of care, taking into account the rights and interests of other States.[82] This duty was first introduced in the field of air law[83] and then included in the OST, thus being generally accepted as legally binding. The degree of care is measured *ad hoc*, so that it is appropriate to the demands of the particular case.[84] Specifically, it must be proven, in the context of an activity in outer space, beyond reasonable doubt, that everything were made to avert the occurrence of harm.[85]

In the case at hand, however, no such proof can be established. URA's TYRUS interfered with Syd-1's trajectory and altered it. In response, the SPIDR Space Agency warned that, if something went wrong, the risk and chances of Syd-1 actually crashing into SPIDR territory would be considerably larger.[86] This "unilateral decision by FUSA to put SPIDR at greater risk" disregarded the interests of SPIDR. As a result, URA acted solely for its own interests, and did not perform the mitigation technique with due regard to the corresponding interests of all other States Parties to the Treaty.

4. URA Failed to Avoid Adverse Changes to the Environment of the Earth Resulting from the Introduction of Extraterrestrial Matter and Failed to Undertake Appropriate Measures under Article IX OST

Article IX OST further stresses that States "shall pursue studies of outer space, including the Moon and other celestial bodies and [...] conduct exploration of them so as to avoid [...] adverse changes in the environment of the Earth resulting from the introduction of extraterrestrial matter and, where necessary, shall adopt appropriate measures for this purpose."[87] This is a primary rule of international law whose violation brings about the international responsibility of States.

---

81 Article IX, OST.
82 Sergio Marchisio, *Article IX*, in I COLOGNE COMMENTARY ON SPACE LAW, 175 (Stephan Hobe, Bernhard Schmidt-Tedd, Kai-Uwe Schrogl eds., 2009) (Marchisio).
83 Chicago Convention on Civil Aviation, *entered into force* Apr. 4 1947, Art. 3(d), 15 U.N.T.S 295 (Chicago Convention).
84 Black's Law Dictionary 544, 590 (4th ed. 1968) (Black's 4th edition).
85 Marchisio, 176.
86 Compromis, §20.
87 Article IX, OST.

In the present case, Article IX OST has been violated by URA, whose spacecraft caused adverse changes to SPIDR's territory through its gravity tractoring operation and the measures adopted unilaterally were inappropriate.

Article IX OST refers to "adverse changes in the environment of the Earth resulting from the introduction of extraterrestrial matter." The notion of "adverse changes" is closely related to that of "harmful contamination" which refers to a contamination that is capable of causing significant harm.[88] In parallel, the obligation to take all appropriate measures to prevent harm, or to minimize the risk thereof, is not confined to activities appreciated as presenting such a risk, but extends to identification of a possible risk involved in any activity in outer space.[89] It requires reasonable efforts by a State to inform itself of factual and scientific data regarding a contemplated activity and address it through measures in timely fashion. Said Article must be read in conjunction with Article 7 (1) MA, which imposes the obligation on States to take measures to avoid the disruption of the existing balance of outer space and "also take measures to avoid harmfully affecting the environment of the Earth through the introduction of extraterrestrial matter or otherwise."[90]

In the case at hand, the asteroid's entering the atmosphere of the Earth due to TYRUS' gravity tractoring of Syd-1 constitutes "introduction of extraterrestrial matter". The subsequent airburst led to the total destruction of Dropgum, loss of lives and damage to properties in SPIDR territory.[91] Such damage constitutes an "adverse change" of SPIDR territory, as human lives cannot be revived and the environment cannot be restored to its pre-existing shape. Moreover, the measures undertaken by URA were inappropriate: it did not take into consideration the warnings of the SPIDR Space Agency about increasing the risk of potential damage to SPIDR and disregarded the alternative proposal of the Applicant's government.[92] Thus, URA has violated its obligations under Article IX OST.

C. URA Is Responsible for the Destruction of Dropgum under General International Law

Under general international law, States are prohibited from conducting activities without regard for the rights of other States. States' obligations may arise from conventional rules, but also from international custom, as evidence of a general practice accepted as law.[93] It is widely supported that a duty of prevention of

88 D. A. Cypser, *International Law & Policy of Extraterrestrial Planetary Protection*, 33 JURISMETRICS-JOURNAL OF LAW, SCIENCE AND TECHNOLOGY, 315, 324 (1993) (Cypser).
89 Marchisio, 177.
90 MA, Article 7.
91 Compromis, §26.
92 Compromis, §§20, 21.
93 Article 38 (1)(b), Statute of the International Court of Justice (I.C.J. Statute).

harm already exists, not just as a rule of responsibility for injury *ex post facto*,[94] but imposing the adoption of appropriate measures before actual damage has occurred, or to exert a State's best possible efforts to minimize the risk.[95] International jurisprudence and legal doctrine consistently reaffirm the existence of the principle[96] and its application to the environment as a principle of general international law.[97] As crystallized in Principle 21 of the Stockholm Declaration,[98] the prevention principle has acquired the status of customary law,[99] stressing the responsibility of States "to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States."
Furthermore, a fundamental rule of customary nature is the "no harm" principle,[100] namely a State's duty not to cause damage to the environment of other States. This customary obligation has been emphasized by the I.C.J.[101] Notably in the *Corfu Channel* case, the Court stressed a State's obligation "not to allow knowingly its territory to be used for acts contrary to the rights of other States".[102] The application of the principle extends to situations where harm is caused by an activity not within the territory of a State, but merely under its control e.g. a polluting spacecraft.[103] Therefore, it has

94 Patricia W. Birnie & Alan E. Boyle, International Law and the Environment, 95 (1993) (Birnie/Boyle).
95 Philippe Sands & Jacqueline Peel, Principles of International Environmental Law, 201 (2012) (Sands/Peel).
96 Trail Smelter Arbitration (U.S v. Canada) 1941, R.I.A.A. 1905 (Trail Smelter); Lac Lanoux Arbitration (France v. Spain) 1957, R.I.A.A. 281 (Lac Lanoux); Quentin-Baxter, Preliminary Report on International Liability for Injurious Consequences Arising out of Acts not Prohibited by International Law, II YEARBOOK ILC 247 (1980) (Baxter).
97 Iron Rhine Arbitration (Belgium v. Netherlands) 2005, R.I.A.A. 35 (Iron Rhine case).
98 U.N. Doc. A/Conf.48/14/Rev.1 (1973), 11 ILM 1416 (1972) (A/Conf.48/14).
99 De Sadeleer, *The principles of prevention and precaution in international law: two heads of the same coin?*, in RESEARCH HANDBOOK ON INTERNATIONAL ENVIRONMENTAL LAW, 182 (Malgosia Fitzmaurice, David M.Ong & Panos Merkouris eds., 2010) (De Sadeleer); G.A. Res. 2996, U.N. GAOR, 27th Sess., U.N. Doc. A/RES/3049, 112 (1972) (A/RES/3049).
100 Duncan French, *International Guidelines and Principles*, in 1 CONVENTIONS, TREATIES AND OTHER RESPONSES TO GLOBAL ISSUES, 5 (Gabriella Maria Kutting ed., 2009) (French), 5.
101 Legality of the Threat or Use of Nuclear Weapons, Advisory Opinion, 1996 I.C.J. 226, 242 (Legality of Nuclear Weapons); Case concerning the Gabčíkovo-Nagymaros Project (Hungary v. Slovakia) (Judgment) 1997 I.C.J. 7 (Sept. 25) (Gabčíkovo-Nagymaros (Judgment)).
102 Corfu Channel (UK v. Albania) (Merits) 1949 I.C.J. 4 (Apr. 9) (Corfu Channel (Merits)).
103 Ruwantissa Abeyratne, Space Security Law, 62, 63, (2011) (Ruwantissa); Lotta Viikari, the Environmental Element in Space Law, 150 (2008) (Viikari).

evolved so as to forbid States to cause damage to the environment of other States due to their activities.[104]

The aforementioned principle, in conjunction with the principle of prevention, is codified under Principle 21 of the 1972 Stockholm Declaration and has been reiterated in Principle 2 of the 1992 Rio Declaration,[105] reflecting a customary rule of international law.[106] What is more, the obligation not to cause environmental damage is absolute, thus it is valid irrespective of fault.[107] However, even if fault is normally required, it is accepted that an exception is justified once the activity of the State is ultra-hazardous.[108]

In the present case, by applying gravity tractoring on Syd-1, URA damaged the environment of SPIDR. Indeed, it is TYRUS's activity of altering the trajectory of Syd-1, which was under URA control, which caused damage to SPIDR.[109] No appropriate measures were taken by URA in order to minimize the risk of collision; the alternative options for addressing the threat were rapidly discarded, indicating the absence of substantial determination of the risk.

Taking into consideration that outer space activities are *par excellence* ultra-hazardous,[110] URA's gravity tractoring operation does not demand fault for URA to be responsible. Furthermore, given that URA had developed other threat mitigation programs under the auspices of URAC,[111] extreme care was reasonably expected.

On the other hand, substantial damage to the territory of the injured State is a precondition for the no harm principle to be breached.[112] Damage is "substantial" if the injured State can no longer exercise its rights. Accordingly, the injured State is entitled to reparation.[113]

---

104 Shaw, at 851-853; Tim Hilier, Sourcebook on Public International Law, 808 (1998) (Hilier).

105 U.N. Doc. A/Conf.151/26 (vol.II), 31 ILM 874 (1992) (A/Conf.151/26).

106 G. Handl, *Transboundary Impacts,* THE OXFORD HANDBOOK ON INTERNATIONAL ENVIRONMENTAL LAW, 534 (Daniela Bodansky & Jutta Brunnée, Ellen Hey eds., 2007) (Handl); Kathy Leigh, *Liability for Damage to the Global Commons,* 14 AUST. YB. INT'L L., 134, 135 (1992) (Leigh), 134, 135; P. N. Okowa, *Procedural Obligations in International Environmental Law,* 67 BR. YB. INT'L L., 280 (1996) (Okowa), 280.

107 Jan Schneider, World Public Order of the Environment-Towards an International Ecological Law and Organization, 170-174 (1979) (Schneider); MPEPIL, *Liability for Environmental Damage*.

108 SHAW, 887, 888.

109 Compromis, §§25, 26.

110 I. H. P. Diederiks-Verschoor, an Introduction to Space Law, 14 (1993) (Diederiks-Verschoor).

111 Compromis, §3.

112 L. Oppenheim, I International Law-A Treatise, 291 (1905) (Oppenheim), 291.

113 Leigh, 129, 143.

URA caused severe damage to SPIDR's environment during the gravity tractoring. It is due to its conduct that Syd-1's impact moved towards the SPIDR coast of the Cold Ocean and resulted in damages to Dropgum.[114]
Consequently, URA is responsible for the damage to property as well as for the loss of lives in Dropgum.

D. URA Cannot Claim That the Wrongfulness of Its Action Is Precluded

At this point, the Applicant submits that a claim of URA precluding the wrongfulness of its act based on the defense of necessity must be dismissed. The prerequisites for invoking necessity are determined in Article 25 ARSIWA. Said Article states that "[n]ecessity may not be invoked by a State as a ground for precluding the wrongfulness of an act not in conformity with an international obligation of that State unless the act: (a) is the only way for the State to safeguard an essential interest against a grave and imminent peril; and (b) does not seriously impair an essential interest of the State or States towards which the obligation exists, or of the international community as a whole."[115] The conditions for the plea of necessity are considered of customary nature, as reiterated in international jurisprudence.[116] Necessity is accepted only on a strictly exceptional basis, only in case there is an irreconcilable conflict between an essential interest and an international obligation of a State.[117]
Arguments invoking Article 25 are discarded if there were other means available, even if those options cost more or require the State to do more to achieve its goal, or if cooperation with international organizations or other States is needed.[118]
In the present case, URA cannot invoke necessity. In August 2024, URA used TYRUS to speed up Syd-1, in order to ensure that the asteroid would miss the 2028 keyhole.[119] Firstly, there was another possible manner of addressing the Syd-1 threat, since a gravity tractor can equally slow down an NEO "to achieve the same result – no collision" even if that would temporarily include

114 Compromis, §26.
115 Article 25, International Law Commission, Draft Articles on Responsibility of States for Internationally Wrongful Acts, November 2001, Supplement No. 10 (A/56/10), chp.IV.E.1 (ARSIWA).
116 Russian Indemnity Case (Russia v. Turkey) 1912, R.I.A.A. 421 (Russian Indemnity); Société Commerciale de Belgique (Belgium v. Greece) 1939 P.C.I.J. 160 (Ser. A/B) No 78 (Jun. 15) (Société Commerciale); Gabčíkovo-Nagymaros (Judgment).
117 ARSIWA Commentaries, 80.
118 ARSIWA Commentaries, 83; BROWNLIE, 311; Sarah Heathcote, Circumstances Precluding Wrongfulness in the Articles on State Responsibility: Necessity, in THE LAW OF INTERNATIONAL RESPONSIBILITY, 493 (James Crawford, Alain Pellet, Simon Olleson eds., 2010) (Heathcote).
119 Compromis, §19.

a portion of URA territory.[120] Moreover, several dozen human lives were lost and damages to property were sustained to Dropgum. Therefore, the conditions for necessity are not met, making a potential argument on behalf of URA void.

II. URA Is Liable under International Law for the Loss of or Damage to the First KNUD-1 Spacecraft, and the Loss of the KNUD-2 Harvesting Operation on FLOYD-4

SPIDR submits that URA is liable under the LIAB and the OST for the damage to KNUD-1, as well as for the loss of the KNUD-2 harvesting operation on Floyd-4. Additionally, it is SPIDR's submission that URA is also *responsible* for said losses or damages under the provisions of the OST.

A. URA Is Liable for the Loss of or Damage to the First KNUD-1 Spacecraft

1. URA Is Liable under Article III LIAB

According to Article III LIAB, "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 [...]." It is the submission of the Applicant that URA is liable under Article III, since its requirements are fulfilled.

a) The Damage to KNUD-1 Is Covered under the LIAB

As demonstrated above, the term "damage" means, *inter alia,* loss of or damage to property of States.[121] This damage is covered regardless of whether it is direct or indirect.[122]

In the present case, the damage caused to KNUD-1 is direct. KNUD-1 was knocked over in the process of TYRUS' re-launch and lost all of its communications.

b) The Damage Was "Caused by" TYRUS

The damage to KNUD-1 resulted from TYRUS' re-launch. It must be noted that 1) prior to TYRUS' re-launch from Floyd-4 KNUD-1's scientific instruments were in perfect condition and functioned properly[123] 2) KNUD-1 was knocked over in the process of TYRUS' re-launch and 3) KNUD-1's antenna was oriented down toward the surface of the asteroid only after the TYRUS

120 Compromis, footnote 1, §21.

121 See above, I A 1.

122 Anubhav Sinha, Responsibility and Liability – A Requirement to Change our Perceptions, IAC-07-E6.2.01, 2007, at 4, 5 (Sinha); S. Houston Lay & Howard J. Taubenfeld, Liability and Space Activities: Cause, Objectives and Parties, 6 VA. J. INT'L L., 252, 259 (1965-1966) (Houston Lay/Taubenfeld); See above, I A 2.

123 Compromis, §9.

re-launch. This rendered KNUD-1 uncontrollable and resulted in the loss of all its communications.[124] It follows that the damage to KNUD-1 was indeed caused by TYRUS.

c) URA Is at Fault

As far as fault under Article III LIAB is concerned, fault is considered as intent or negligence.[125] Negligence exists when the launching State has not shown the appropriate amount of care or "observant attention", *id est,* a standard of reasonable diligence exercised by a government in attempting to prevent the occurrence of harm.[126] The standard for negligence is due diligence.[127] Due diligence is an obligation which encompasses not only the adoption of appropriate rules and measures, but also a certain level of caution in their enforcement to safeguard the rights of others.[128] The due diligence standard is measured *ad hoc*.[129] This means that in outer space activities, which are considered to be ultra-hazardous, a high level of diligence is demanded.[130]

URA has shown negligence for failing to present due care and attention during its re-launch operation on Floyd-4. This duty of due care required from URA to assess the already known circumstances, namely the complicated topography, the existence of KNUD-1 on the preferred attachment site, as well as the difficulties TYRUS faced during landing. Therefore, it should have shown extra caution when re-launching TYRUS. However, it failed to do so. The lack of this attention is indicative of URA's negligent behavior which establishes its fault.

---

124 Clarification 19.

125 MPEPIL, *Fault,* 2007; Riccardo Pisillo Mazzeschi, *Forms of International Responsibility for Environmental Harm, in* INTERNATIONAL RESPONSIBILITY FOR ENVIRONMENTAL HARM, 16 (Francesco Francioni & Tullio Scovazzi eds., 1991) (Mazzeschi).

126 Diplomatic and Consular Staff (Judgment) 3; BLACK'S 4th edition; Martha Mejía-Kaiser, *Collision Course: 2009 Iridium-Cosmos Crash*, in PROCEEDINGS OF THE 52nd COLLOQUIUM ON THE LAW OF OUTER SPACE, 274 (2009) (Mejía-Kaiser).

127 Horst Blomeyer-Bartenstein, *Due Diligence,* in 10 ENCYCLOPEDIA OF PUBLIC INTERNATIONAL LAW, 138, 141 (R. Dolzer et al. eds., 1981) (Blomeyer-Bartenstein).

128 Pulp Mills case (Argentina v. Uruguay) 2010 I.C.J. 69 (Apr. 20) (Pulp Mills) 69; Robert P. Barnidge, Jr., *The Due Diligence Principle Under International Law,* INTERNATIONAL COMMUNITY LAW REVIEW 81 (2006) (Barnidge).

129 Responsibilities and Obligations of States with respect to activities in the Area, Advisory Opinion, 1 February 2011, ITLOS Reports 2011, 10, 43 (Advisory Opinion 2011 ITLOS); Alabama Claims Arbitration (U.S. v. Gr. Britain) 1872, R.I.A.A. 125 (Alabama Claims).

130 Soucek, 342; Faure/Ying, 328; Donald H. Bunker, Space Opportunity, Risk and Liability: A Banker's Perspective, 74 (1985) (Bunker); Lachs, 115; Viikari, 278; Henri Abraham Wassenbergh, Principles of Outer Space Law in Hindsight, 92 (1991) (Wassenbergh); Marchisio, 176.

Even if it is held by this Court that fault constitutes any act or omission which violates an obligation,[131] URA is at fault for breaching its obligations under Article IX OST. URA violated the principle of due regard to the corresponding interests of all States as well as its duty to undertake appropriate consultations, as shown below.[132]

2. URA Is Liable under Article VII OST

Even in the case it is held by this Court that URA is not at fault, it must still be held liable under Article VII OST. This Article is applicable since according to Article 23 of the Liability Convention, the provisions of this treaty shall not affect other international agreements between the States Parties. In fact, it must be read in conjunction with Article 30 para. 2 of the VCLT, which states that, when a treaty specifies that it is subject to an earlier or later treaty, the provisions of that other treaty prevail.[133] Therefore, Article VII OST, which prescribes, *inter alia,* that each State Party which launches an object into outer space and from whose territory or facility an object is launched, is internationally liable for damage to another State Party by such object in outer space applies. Given that only the prerequisites of damage and causal link are required for this article to be applied, Article VII incorporates the objective nature of international liability and does not require the existence of fault (strict liability).[134] Since the aforementioned prerequisites are met, URA is liable for the damage to KNUD-1 even if it is not at fault.

3. URA Is Responsible under Article VI OST and the General Rules of State Responsibility

It has already been stated that a State bears international responsibility for the violation of a primary rule of international law which is attributable to it.[135] Once such breach is established, secondary rules on State Responsibility are drawn into effect. In the present case, a violation of primary rules has taken place on behalf of URA resulting to the damages to KNUD-1 spacecraft; therefore, Article VI OST, as well as the ARSIWA, are applicable.

---

131 CHENG GENERAL PRINCIPLES, 225; H. Accioly, *Principes Généraux de la Responsabilité Internationale d'après la Doctrine et la Jurisprudence*, 96 COLLECTED COURSES OF THE HAGUE ACADEMY OF INTERNATIONAL LAW, 369, 370 (1959) (Accioly); Russian Indemnity.

132 See below, II A 3.

133 Article 30, VCLT; Jason R. Bonin, Responsibility and Liability in International Space Law as a Matter of Sequence of Sequence and Succession, IAC-09. E8.1.5, 2009 (Bonin).

134 MPEPIL, *Outer Space, Liability for Damage*; Cheng, Liability, 115, 117; BROWNLIE, 423; I.H.P DIEDERIKS-VERSHOOR & V. KOPAL, AN INTRODUCTION TO SPACE LAW 37 (2008) (VERSHOOR/KOPAL); Frans G. von der Dunk, *Liability Versus Responsibility in Space law – Misconception or Misconstruction*?, in PROCEEDINGS OF THE 34th COLLOQUIUM ON THE LAW OF OUTER SPACE 363-365 (1991) (von der Dunk, Responsibility); Kerrest/Smith I, 121, 132; Jochen Pfeifer, *International Liability for Damage Caused by Space Objects*, 30 GER. J. AIR & SPACE L., 221 (1981) (Pfeifer).

135 See above, I B 1.

a) URA Violated Article I OST

According to the first sentence of Article I OST, "[t]he exploration and use of outer space [...] shall be carried out for the benefit and in the interests of all countries." However, this freedom is limited by the OST itself; any activity is allowed in space as long as it is carried out for the benefit and interests of mankind.[136] States are prohibited from disregarding or harming the interests of any other State when conducting space activities.[137]

In the case at hand, URA acted against the benefit and interests of SPIDR by damaging the KNUD-1 spacecraft. When TYRUS knocked KNUD-1 over and caused the loss of all its communications, it also rendered KNUD-1 uncontrollable.[138] Therefore, KNUD-1 could not resume its operation nor be directed from Earth, essentially becoming a piece of space debris.[139] It is clear that the activity of TYRUS hampered the interests of SPIDR served by the KNUD-1 mission. Furthermore, URA also acted against the interests of the international community as a whole by increasing the number of space debris in outer space, and by depriving the scientific community of the further information derived from KNUD-1's scientific research on the asteroid.[140]

b) URA Violated Article IX OST

(1) URA Did Not Act with Due Regard to the Corresponding Interests of SPIDR

Under the first sentence of Article IX, "in the exploration and use of outer space [...] States Parties to the Treaty [...] shall conduct all their activities in outer space with due regard to the corresponding interests of all other States Parties [...]." The obligation which, therefore, derives from the wording of this Article is that of respecting other States' interests when conducting space activities.

---

136 Ram Jakhu, *Legal Issues Relating to the Global Public Interest in Outer Space,* 32 JOURNAL OF INTERNATIONAL LAW, 41 (2006) (Jakhu); Marco G. Marcoff, *Télédiffusion par satellites et droit international*, in BEITRAGE ZUM LUFT- UND WELTRAUMRECHT: FESTSCHRIFT ZU EHREN VON ALEX MEYER, 339 (Manfred Bodenschatz, Karl-Heinz Böckstiegel, Peter Weides eds., 1975) (Marcoff).

137 Edwin W. Paxson, Sharing the Benefits of Outer Space Exploration – Space Law and Economic Development, 4 Mich. J. Int'l L., 494 (1993) Paxson; Ricky J. Lee, Law and Regulation of Commercial Mining of Minerals in Outer Space, 195 (2012) (Lee Mining).

138 Clarification 12.

139 ILA on the Protection of the Environment from Damage Caused by Space Debris, *Final Report to the Sixty-sixth ILA Conference*, 305-325 (1994) (ILA International Instrument Protection of the Environment from Damage Caused by Space Debris); Inter-Agency Space Debris Coordination Committee, *IADC Space Debris Mitigation Guidelines*, 3.1, 1 (2002) (Space Debris Mitigation Guidelines); International Academy of Astronautics, *Position Paper on Orbital Debris*, Prepared by an *ad hoc* Expert Group on Safety, Rescue and Quality, 3 (1993) (IAA Position Paper on Orbital Debris).

140 Compromis, §9.

The principle of due regard is understood as an obligation to take into account, both prior to planned and during ongoing operations, the legal rights of other States.[141] Non-interference with activities of other States is a general rule of international law, applied by this Court in the 1974 *Fisheries Jurisdiction* case.[142] According to that ruling, a State has to take into consideration the legitimate interests of other States when it exercises its freedom of action and conduct itself with due regard to the other States' rights. The failure of a State to demonstrate due regard to the rights of other States may result in the harmful interference with other States' space activities.[143] Accordingly, States should avoid taking any measures aimed at hampering the space activities of other States.[144]
In the case at hand, URA did not demonstrate due regard when re-launching TYRUS. URA attached TYRUS on the same area of the asteroid as KNUD-1, despite SPIDR's warnings about safety risks involved in attaching a second spacecraft on the surface of Floyd-4.[145] URA's failure to show due regard is also proven by the damage to KNUD-1. Therefore, URA failed to show the required due regard, and thus violated Article IX OST.

(2) URA Did Not Undertake Consultations Regarding the Re-Launch of TYRUS
The third sentence of Article IX stipulates that "[i]f a State Party to the Treaty has reason to believe that an activity or experiment planned by it or its nationals in outer space, [...], would cause potentially harmful interference with activities of other States Parties in the peaceful exploration and use of outer space, [...], it shall undertake appropriate international consultations before proceeding with any such activity or experiment." For this provision to be applicable, two conditions must be met: First, there must be a planned activity or experiment in outer space. Second, there must be reason to believe that the activity or experiment would cause potentially harmful interference

141 International Law Commission, Draft Articles on Prevention of Transboundary Harm from Hazardous Activities, U.N. GAOR 56th Session, Supp. No. 10, U.N. Doc. A/56/10 (2001) (Draft Articles on Transboundary Harm); MPEPIL, *Due Diligence*; BLACK'S 4th edition, 590; DICTIONNAIRE DE DROIT INTERNATIONAL PUBLIC 770 (2001) (DICTIONNAIRE).
142 Fisheries Jurisdiction Case (*U.K. v. Ice.*) 1974 I.C.J. 3 (Feb. 2) (Fisheries Jurisdiction 1974).
143 Michael C. Mineiro, Principles of Peaceful Purposes and the Obligation to Undertake Appropriate International Consultations in Accordance with Article IX of the Outer Space Treaty, in 5th E. Galloway Symposium on Critical Issues in Space Law Washington, D.C., 4 (2010) (Mineiro).
144 Marchisio, 175; Cypser, 324.
145 Compromis, §11.

with activities of other States Parties in the peaceful exploration and use of outer space.[146]
URA was under an obligation to undertake consultations before the re-launch of TYRUS from Floyd-4 since all of the above conditions are fulfilled. URA had indeed planned an activity in outer space; that is, TYRUS' re-launch from Floyd-4 to Syd-1.[147] Moreover, taking into account TYRUS' problematic attachment to the asteroid, the alterations on the surface of Floyd-4, and KNUD-1's presence on the same attachment spot it was to be expected that TYRUS' re-launch could cause potentially harmful interference with KNUD-1. Since all conditions are fulfilled, it is clear that URA should have requested consultations before re-launching TYRUS as well.

B. URA Is Liable for the Loss of the KNUD-2 Harvesting Operation on Floyd-4

1. URA Hampered SPIDR's Harvesting Operation on Floyd-4

a) SPIDR Had the Legal Right to Harvest Floyd-4
(1) The Harvesting of the Resources of Celestial Bodies Is Lawful
Article I(2) OST states, *inter alia,* that celestial bodies shall be free for use by all States.[148] The term "use" describes both the economic and non-economic use of celestial bodies. Thus, the use of outer space for economic ends includes exploitation of the celestial bodies for profit.[149] In addition, the "common interest" principle of Article I(1) OST should be interpreted in terms of economic benefits resulting from the exploitation of outer space.[150]

146 George T. Hacket, *Space Debris and the Coprus Juris Spatialis,* in FORUM FOR AIR AND SPACE LAW, 109 (Marietta Benkö & Willem de Graaf eds. 1994) (Hacket).
147 Compromis, §18.
148 Article I, OST.
149 Stephan Hobe, *Article I*, I COLOGNE COMMENTARY ON SPACE LAW, 35 (Stephan Hobe, Bernhard Schmidt-Tedd & Kai-Uwe Schrogl eds. 2009) (Hobe I); David Tan, *Towards a New Regime for the Protection of Outer Space as the "Province of All Mankind"*, 25 YALE J. INT'L. L., 145, 161 (2000) (Tan); Karl-Heinz Böckstiegel & Marietta Benkö, *Weltraumrechts*, in HANDBUCH DER VEREINTEN NATIONEN, 282 (R. Wolfrum ed. 1991) (Böckstiegel/ Benkö); H. L. VAN TRAA-ENGELMANN, COMMERCIAL UTILIZATION OF OUTER SPACE LAW AND PRACTICE, 20 (1993) (VAN TRAA-ENGELMANN, COMMERCIAL); S.B. Rosenfield, *"Use" in Economic Development of Outer Space,* in PROCEEDINGS OF THE 24th COLLOQUIUM ON THE LAW OF OUTER SPACE, 73-77 (1981) (Rosenfield).
150 M. Benkö, W. de Graaff & G. C. M. Reijnen, Space Law in the United Nations, 74 (1985) (Benkö/ Graaff/ Reijnen); Ogunsola Ogunbanwo, International Law and Outer Space Activities, 214 (2013) (Ogunbanwo).

(2) Property Rights Exist on the Harvested Natural Resources of Celestial Bodies

Harvesting natural resources of celestial bodies would not be possible without the granting of property rights on the resources extracted. The non-appropriation principle of Article II OST is unclear on whether the ban of national appropriation applies only to the area of the celestial bodies or also to their natural resources. As distinguished scholars have stated,[151] property rights exist on the extracted mineral resources.[152] Besides, Article II establishes said principle against a *territorial* concept.[153] Extraction of minerals is compatible with Article II OST[154] as the territorial nature of the celestial bodies is not threatened. Additionally, the appropriation of natural resources is considered as part of the object and purpose of this Treaty, namely the "free use" of outer space.[155] The implementation of this purpose leads to the conclusion that property rights must exceptionally be granted on the resources extracted.[156] Such a conclusion is reinforced through interpretation based on the *effet utile*, which takes into account the treaty's object and purpose together with good faith to ensure the effectiveness of the terms of the treaty.[157]

---

151 Kurt Anderson Baca, Property Rights in Outer Space, 59 J. AIR L. & COM., 1069 (1993) (Baca), 1069; J. Benson, *Space Resources: first come first served,* in PROCEEDINGS OF THE 41st COLLOQUIUM ON THE LAW OF OUTER SPACE, 46 (1999) (Benson); P.A. Dasch, M.M. Smith & A. Pierce, CONFERENCE ON SPACE PROPERTY RIGHTS: NEXT STEPS, in PROCEEDINGS OF THE 42nd COLLOQUIUM ON THE LAW ON OUTER SPACE, 174 (2000) (Dasch/Smith/Pierce).

152 Wayne White, *The Legal Regime for Private Activities in Outer Space,* in Space: The Free Market Frontier, 83 (Edward L. Hudgins ed. 2002) (White); Fabio Tronchetti, the Exploitation of Natural Resources of the Moon and Other Celestial Bodies – a Proposal for a Legal Regime, 214 (2009) (Tronchetti); G. Gal, *Acquisition of Property in the Legal Regime of Celestial Bodies*, in Proceedings of the 39th Colloquium on the Law of Outer Space, 47 (1996) (Gal); Ricky J. Lee, *Creating an International Régime for Property Rights under the Moon Agreement*, in Proceedings of the 42nd Colloquium on the Law of Outer Space 409, 413 (1999) (Lee, Property Rights); Christol, The Modern International Law, 262.

153 Bin Cheng, *The Extra-Terrestrial Application of International Law,* 1965 CURRENT LEGAL PROBS. 132, 142 (1965) (Cheng, Extra-Terrestrial); White, 13.

154 D. Goedhuis, Some Recent Trends in the Interpretation and the Implementation of the Rules of International Space Law, 19 COLUMBIA J. OF TRANSNATIONAL L., 219 (1981) (Goedhuis).

155 *Ibid.*; TRONCHETTI, 31.

156 Baca, 1041, 1069; Benson, 46; Dasch/ Smith/ Pierce, 174; White, 83.

157 MARK EUGEN VILLIGER, COMMENTARY ON THE 1969 VIENNA CONVENTION ON THE LAW OF TREATIES 428 (2009) (VILLIGER); Exchange of Greek and Turkish Populations, Advisory Opinion, 1925 P.C.I.J. (Ser. B), No 10 (Feb. 21) (Greek/ Turkish Populations); Lighthouses case between France and Greece (France v. Greece) 1934 P.C.I.J. (Ser. C), Nº 74 (Mar. 17) Anzilotti 'dissenting opinion' (Lighthouses case); Gabčíkovo-Nagymaros (Judgment), D. P. O'CONNELL, INTERNATIONAL LAW, 253 (1970) (O'CONNELL); Chorzów Factory.

Thus, since the right to "free use" could not be exercised without property rights,[158] national property rights do exist over natural resources of the celestial bodies.

b) URA Ignored SPIDR's Priority Rights to Exploit Floyd-4

There can be no commercialization in outer space without the acceptance of the existence of priority rights in commercial exploitation. Regarding the exploitation of mineral resources, priority is justified due to their limited amount and the limited access to them. In addition, the principle "first come, first served" applies to activities of commercial nature in space, once a space object occupies a location.[159] A precedent already exists in international law, with regard to the geostationary orbit. More specifically, the ITU allocates orbital slots in the geostationary orbit on a "first come" basis.[160] The reason is that the GEO constitutes a natural resource that is limited, as the ITU has stated.[161] It follows that, since it is impossible for all States so interested to simultaneously station their satellites in the GEO, only a certain number may be allowed at a time. The same applies to any area in space that is similarly limited in access.[162] The aforementioned assertions apply in the present case. The attachment site of Floyd-4 was limited in area due to its complicated topography.[163] Additionally, KNUD-1 was the first spacecraft to land on Floyd-4. This meant that KNUD-1 would occupy a large part of the preferable attachment site. As such, any other spacecraft landing on the same site would unavoidably find itself in alarming proximity to KNUD-1, compromising both operations. SPIDR's KNUD missions had priority on the asteroid and SPIDR was the only State competent to judge the safety risks involved in attaching a second spacecraft on the asteroid. SPIDR had indicated its priority to URA in time; nonetheless, URA ignored it. For these reasons, SPIDR's priority in harvesting Floyd-4, as well as URA's failure to respect it, should be recognized.

Even if it is claimed by the Respondent that it had the right to 'prior harvesting' in accordance with Article 11(5) MA,[164] it is the Applicant's submission

158 H.G. Darwin, *The Outer Space Treaty*, 42 B.Y.I.L., 278 (1967) (Darwin).
159 Gabriela Catalano Sgrosso, International Space Law, 63 (2011) (Sgrosso); White, 83.
160 W. Henry Lambright & Anna Ya Ni, *The Environmental Frontier of Space,* in HANDBOOK OF GLOBALIZATION AND THE ENVIRONMENT, 106 (Khi V. Thai, Dianne Rahm, Jerrell D. Coggburn eds. 2007) (Lambright/Ya Ni); Rob Frieden, *Balancing Equity and Efficiency Issues in Global Spectrum Management*, in GOVERNING GLOBAL ELECTRONIC NETWORKS-INTERNATIONAL PERSPECTIVES ON POLICY AND POWER, 127 (William J. Drake, Ernest J. Wilson III eds. 2008) (Frieden).
161 ITU Constitution, art. 44.
162 Brendan Cohen, Cleary Gottlieb Steen & Hamilton LLP, *Use Versus Appropriation of Outer Space: The Case for Long-Term Occupancy Rights*, IAC-14-E.07.1.3, 2014 (Cohen/Steen/Hamilton) at 3.
163 Compromis, §9.
164 Article 11 (5), MA.

that the MA has not attained widespread support from States as most are opposed to the "common heritage of mankind" concept. This was also the case concerning Part XI of the 1982 UNCLOS which was after all amended by the 1994 Agreement.[165]
In the present case, SPIDR had every right to prior harvesting of the resources on Floyd-4. However, its activities were unlawfully hindered by URA, which not only demonstrated a disregard for SPIDR's priority, but also prevented SPIDR from exercising its harvesting rights on the asteroid. Due to surface alterations caused by TYRUS on Floyd-4, KNUD-2 was severely damaged during the landing phase. Consequently, KNUD-2 was not able to operate at its full harvesting capacity and had to depart from the asteroid earlier than planned.[166] Hence, KNUD-2 only managed to deliver a fraction of the resources it was supposed to collect.[167] Thus, SPIDR suffered huge consequential damage, in the form of loss of profits from the resources it was unable to gather. Therefore URA prevented SPIDR from fully exercising its lawful rights of exploitation under Article I(2) OST.

2. URA Is Liable under Article III LIAB

a) The Damage to KNUD-2 Is Covered under the LIAB
The damage to the instruments and solar panels of KNUD-2 was caused indirectly by TYRUS. Specifically, the damage was caused by the adverse changes introduced by TYRUS on the surface of Floyd-4.

b) The Damage Was Caused by TYRUS
There is a proximate causal connection between the actions of TYRUS and the damage to KNUD-2. Specifically, TYRUS managed to attach on the regolith of Floyd-4 only after irreversibly altering the NEO's surface.[168] It was TYRUS' impact on the surface of Floyd-4 that caused irreparable damage to the instruments and solar panels of KNUD-2, since the landing of the latter on the altered surface was problematic due to said alteration.

c) Loss of Profits Constitutes Damage under the LIAB
The damage caused to the KNUD-2 spacecraft led to the loss of the harvesting operation on Floyd-4. Loss of profits is covered under indirect damage,[169]

---

165 United Nations Convention on the Law of the Sea, *entered into force* November 16, 1994, 1833 U.N.T.S. 397 (UNCLOS); Natalie Klein, Dispute Settlement in the UN Convention on the Law of the Sea, *in* CAMBRIDGE STUDIES IN INTERNATIONAL AND COMPARATIVE LAW 320 (James Crawford & John S. Bell eds. 2005) (Klein).
166 Compromis, §22.
167 Compromis, §23.
168 Compromis, §22.
169 Kerrest/Smith I, 141. Carpanelli/Cohen, 10; Amco Asia Corporation and Others v. The Republic of Indonesia, Case No. ARB/81/8, ICSID., Final Award (5 June 1990)

when it is shown that the profit would have been expected in the ordinary cause of events.[170]
In the present case, KNUD-2's scientific instruments were damaged irretrievably and its solar panels could operate only at 30% of their intended capacity.[171] Hence, KNUD-2 managed to deliver only 10% of the resources it was supposed to collect and had to depart just four months after docking.[172] The fact that KNUD-2 had already begun the extraction of a fraction of the resources (10%) is indicative of the future resources (90%) it would have collected had it not been damaged. Consequently, because of the damage to KNUD-2, SPIDR suffered huge economic damage in the form of loss of profits from the resources it was unable to gather.

d) URA Is at Fault

As demonstrated above, fault is considered as intent or negligence.[173] URA has shown negligence for failing to present due care and attention during its landing operation on Floyd-4. Specifically, it is stated in the agreed facts that TYRUS required several unsuccessful attempts in order to attach on Floyd-4, and altered the surface in the process. Although it is clarified that URA was not aware of these alterations until KNUD-2's arrival it should have become aware of the conditions of TYRUS' landing, and informed SPIDR accordingly, bearing in mind the upcoming KNUD-2 mission.[174] This negligent behavior of URA establishes its fault.
Even if it is held that fault constitutes any act or omission that violates an obligation,[175] URA is still at fault for the damage to KNUD-2 since it has breached its obligations under Articles IX and XI OST as demonstrated below.[176]

3. URA Is Liable under Article VII OST

As already shown above, URA is liable for the damages to both KNUD spacecraft even if it is not at fault.[177]

(Amco Asia); Libyan American Oil Company (LIAMCO) v. The Government of the Libyan Arab Republic 16, 17, 20, Award (12 April 1977) (LIAMCO);

170 Chorzów Factory; O'CONNELL, 987.

171 Compromis, §22.

172 Compromis, §23.

173 *Supra*, note 121.

174 Clarification 19, Manfred Lachs Moot Court Problem; Report of the ILC 53rd session; Draft Articles on Transboundary Harm; James Crawford & Simon Olleson, *The Nature And Forms of International Responsibility,* in I INTERNATIONAL LAW, 460 (Malcolm D. Evans ed., 2003) (Crawford/Olleson).

175 *Supra*, note 127.

176 See below, II B 4.

177 See above, II A 2.

4. URA Is Responsible under Article VI OST and the General Rules of State Responsibility

a) URA Violated Article I OST[178]

By introducing adverse changes on the surface of Floyd-4, URA hampered SPIDR's interests of harvesting Floyd-4's resources since KNUD-2 was irrecoverably damaged.[179] Therefore, by acting against the interests of SPIDR, URA violated Article I OST.

b) URA Violated Its Duty to Undertake International Consultations under Article IX OST

URA was under the duty of undertaking international consultations before the launch of TYRUS since the conditions mentioned above are met.[180] Firstly, URA had planned the launching of TYRUS to Floyd-4.[181] Secondly, URA had serious reason to believe that its landing might potentially have a harmful interference with SPIDR's mission as SPIDR had already informed the international community of the complicated topography of Floyd-4.[182] Moreover, URA had been promptly informed of the safety risks involved in attaching a second spacecraft on the asteroid. Potential alteration of the surface of the asteroid during TYRUS' attachment would possibly be harmful to any future attachment on the same preferable area. For these reasons, URA was under the obligation to undertake international consultations before launching TYRUS.

c) URA Violated Its Duty to Inform under Article XI OST

According to Article XI OST, States Parties to the Treaty agree to inform the Secretary-General of the United Nations as well as the public and the scientific community, to the greatest extent feasible and practicable, *inter alia,* of the results of such activities. The provisions of this Article incorporate the general concept of international cooperation in space activities.[183]

In the present case, URA was under an obligation to inform SPIDR of the results of TYRUS' landing on Floyd-4, namely the alterations of the asteroid's surface. The fact that URA was not aware of the alteration until KNUD-2's arrival, is of no importance since it should have taken measures to become informed.[184] However, URA breached Article XI OST by failing to

178 See above, II A 3 a.
179 Compromis, §22.
180 See above, II A 3 b 2.
181 Compromis, §7.
182 Compromis, §9.
183 Jean-François Mayence & Thomas Reuter, *in* I COLOGNE COMMENTARY ON SPACE LAW, 191 (Stephan Hobe, Bernhard Schmidt-Tedd, Kai-Uwe Schrogl eds., 2009) (Mayence/Reuter).
184 See above, II A 1 c.

inform the international community and specifically SPIDR whose interests were directly affected, of said results.

C. Even if URA Had the Right to Free Access on Floyd-4 under Article I OST, It Abused This Right

Last but not least, even if it is accepted by the Court that URA had the right to access Floyd-4, regardless of SPIDR's priority rights, the Applicant submits that URA is responsible for abusing its right to free access under Article I of the OST.[185] The concept of "abuse of rights" provides that States are responsible for their acts, which are not unlawful in the sense of being prohibited, however cause injury to other states.[186] The prohibition of abuse of rights is considered a general principle of law[187] and has been widely accepted in international law[188] as the PCIJ has ruled in the case concerning *Certain German Interests in Polish Upper Silesia* case.[189] In the aforementioned case, the Court ruled that a misuse of the right of Germany to dispose of its property would entail the character of a breach of the Treaty.

In the present case, URA misused its right of free access under Article I OST by introducing adverse changes[190] on Floyd-4 and by depriving SPIDR of its right to landing KNUD-2 safely and on the preferred attachment spot. The Respondent exercised this right in a way that prevented the Applicant from exercising its own respective right. Therefore, URA abused its right.

Submissions to the Court

For the foregoing reasons, the government of the Sovereign Peoples Independent Democratic Republic, Applicant, respectfully requests the Court to adjudge and declare that:

i. URA is liable for damages under international law to SPIDR for changing the orbit of Syd-1, which resulted in the loss of life and damage to Dropgum; and

185 Article I, OST; Jakhu, 31, 44. (2006).

186 Hersch Lauterpacht, The Function of Law in the International Community 286 (2011) (Lauterpacht).

187 Michael Byers, *Abuse of Rights: An Old principle, a New Age*, 47 McGill L. J., 390, 391 (2002) (Byers).

188 Fisheries Case (United Kingdom v. Norway) 1951 I.C.J. (Dec. 18) Alvarez 'individual opinion (Fisheries 1951); Free Zones of Upper Savoy and the district of Gex (France v. Switzerland) (Judgment) 1932 P.C.I.J. (June 7) (Free Zones); United States-Import Prohibition of Certain Shrimp and Shrimp Products (Complaint by the United States) (1998), WTO Doc. WT/DS58/AB/R (Appellate Body Report) (Shrimp WTO).

189 Certain German Interests in Polish Upper Silesia (Germany v. Poland) (Merits) 1926 P.C.I.J. (May 25) (Certain German Interests).

190 Article VII, MA.

ii. URA is liable under international law for the loss of or damage to the first KNUD-1 spacecraft, and the loss of the KNUD-2 harvesting operation on Floyd-4;

and to dismiss all claims to the contrary.

Respectfully submitted on behalf of the Applicant,
Agents for the Applicant.

Memorial for the Respondent, the United Republic of Adventura (URA)

University of Mississippi, School of Law, US
Students: Ms. Olivia B. Hoff, Mr. C.J. Robison and Mr. Ian Perry
Faculty Advisor: Prof. Michael Dodge
Faculty Advisor Assistant: Prof. Dr. Michael Mineiro

I. URA Is Not Liable for Damages to SPIDR Caused by Syd-1

A. URA Is Not Liable for Damages Caused by Syd-1 under the Liability Convention

According to the Liability Convention, "[a] launching state shall be absolutely liable to pay compensation for damage caused by its space object on the surface of the Earth or to an aircraft in flight."[1] However, URA is not liable for damages to SPIDR caused by Syd-1 because SPIDR cannot meet the burden of proof to demonstrate causation. Furthermore, the damage resulting from the airburst of Syd-1 is not within the purview of risk established by the Liability Convention.

1. SPIDR Cannot Prove Causation

Though the Liability Convention established a regime of strict liability in which fault need not be proved for damages within the scope of the Convention, causation of damages must still be proved. However, SPIDR cannot prove that URA's actions caused damage to Dropgum. Even when analyzing claims of damage using the Liability Convention, causation remains a factual question. In its most recent discussion of questions of fact, this Court has reaffirmed that "the burden of proof rests in principle on the party which alleges a fact."[2] Given this rule, SPIDR has the burden of proving URA's actions did in fact cause damage. It is stipulated between the parties that both URA and SPIDR were inside the "risk corridor of potential impact points," and

1 Convention on International Liability for Damage Caused by Space Objects art. II, Mar. 29, 1972, 24 U.S.T. 2389, 961 U.N.T.S. 187 [hereinafter Liability Convention].
2 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).

therefore SPIDR was already at risk of impact.[3] This is analogous to the *Pulp Mills* case, in which the fact that an algae bloom was similar to the type of damage that would be expected in increasing nutrient levels in a river was found insufficient to prove causation given the preexisting risk of such a phenomenon.[4]

As a village on the Cold Ocean over which the potential impact points were centered, Dropgum was on the side of SPIDR closer to the center of the uncertainty ellipse. Using a gravity tractor to alter an asteroid's orbit results in risk being shifted east or west, rather than north or south.[5] As a result, the method of operation of gravity tractors and the geographical position of Dropgum imply it was one of the areas of SPIDR already at risk of an impact or airburst. A claim of increased risk to Dropgum fails to take into account the fact that small asteroids present the possibility of a devastating tsunami.[6] Scientific models indicate that an asteroid with a diameter of 100 meters has the potential to create a major tsunami several hundred kilometers from its impact point.[7] In the absence of clear proof that URA's action caused damage to Dropgum, the burden of proof of factual causation cannot be met and URA must be exonerated from liability for the airburst of Syd-1.[8]

2. The Damage Resulting from the Airburst of Syd-1 Is Not within the Purview of Risk Established by the Liability Convention

Further, even if the Court finds that the probability of damage to SPIDR was increased due to URA's deflection efforts, it would still be inappropriate to apply the strict liability standard of the Liability Convention because the Convention was not designed to address pre-existing risks to the entire Earth.

---

3 Compromis §16.

4 Case Concerning Pulp Mills on the River Uruguay (Arg. v. Uru.), 2010 I.C.J. 1, 96-97 (Apr. 20).

5 Alexis Madrigal, *Saving Earth from an Asteroid Will Take Diplomats Not Heroes,* WIRED (Dec. 16, 2009), www.wired.com/2009/12/saving-earth-from-an-asteroid/.

6 J. Kunich, *Planetary Defense: The Legality of Global Survival*, 41 A.F. L. REV. 119, 124 (1997).

7 For one specific scenario, a 100 meter diameter asteroid with a density of 3000 kg/m^3 and 45° angle of impact is predicted, if impacting 1000 meter deep water at 17 meters per second, to create a tsunami with an amplitude of just over a meter at 200 kilometers and about 2 feet at 400 kilometers. See *Earth Impacts Effects Program*, IMPERIAL COLL. LONDON, http://impact.ese.ic.ac.uk/ImpactEffects/ (last visited Mar. 8, 2015), *cited in* by L. F. Castillo Arganaras, *Natural Near Objects and The International Law of Outer Space*, 2008 INT'L INST. SPACE L. 283, 285. Note that amplitude gives the height of the deep water wave which is often several times lower than the run-up height created as the wave encounters the shore. SMS TSUNAMI WARNING, www.sms-tsunami-warning.com (last visited Mar. 3, 2015). The run up-effect poses a particular threat to many coastal population centers because of how the water is channeled by ports. *Id.*

8 See *supra* note 67 and accompanying text.

The Liability Convention stipulates that a state is "absolutely liable" for damages it causes to the ground, yet it has no provision for holding a state liable for only the percentage of risk shifted to an already at-risk country.[9] Holding URA liable for the entire damage in a case like the present would impose an inequitable burden on states taking action to protect the Earth.[10] Such a manifestly absurd and unreasonable application of the Liability Convention fails to account for its "object and purpose."[11] One space law scholar has gone so far as to say:

The provisions of the Convention are, thus, limited in scope to liability cases for damages caused by a space object only. With regards to disaster management issues, this means that these provisions are only applicable if a satellite or another system used for disaster management purposes falls down on Earth and causes damages. As a consequence, all the others [sic] liability cases which may arise in connection with the use of space technologies for disaster management activities are not covered by the terms of the Convention.[12]

This statement conflates the question of causation under the Liability Convention with the question of whether the Liability Convention is applicable at all. However, the scholar references in an exaggerated way the fact that the intended scope of the Liability Convention's strict liability regime encompassed novel risks introduced to the Earth by spaceflight. Damages that occur in the course of disaster prevention are not of this nature.

a) The Text of the Outer Space Agreements Supports the Idea That the Context of the Liability Convention Is Limited to Novel Situations Arising from Human Activity

"The intention, indeed the whole – 'teleological' – context of the Outer Space Treaty was to deal with activities of mankind and man's entry into outer space and to provide a legal context and framework for those."[13] This mindset is clearly reflected in the current text of the outer space agreements. The other major space treaties confirm that the risks of human space activity form the context and circumstances in which the Liability Convention was concluded.[14]

---

9 Liability Convention, *supra* note 64, art II.

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

11 Vienna Convention on the Law of Treaties art. 31-2, May 23, 1969, 1155 U.N.T.S. 331 [hereinafter Vienna Convention].The Vienna Convention is generally accepted as summarizing customary international law and has been cited by this Court often. Maritime Dispute (Peru v. Chile), 2014 I.C.J. 1, 18-19 (Jan. 27).

12 F. Tronchetti, *Space Treaties and Disaster Management*, 2008 INT'L INST. SPACE L. 673, 678-79.

13 Frans G. von der Dunk, Defining Subject Matter Under Space Law: Near-Earth Objects Versus Space Objects, 2008 INT'L INST. SPACE L. 293, 294-95.

14 Vienna Convention, *supra* note 74, arts. 31, 32.

The Outer Space Treaty creates rules for space in the context of humans "launching" objects into space and provides a framework for assigning responsibilities and liabilities based on which state conducted the launching.[15] The Rescue Agreement creates a framework for the international community to give aid to these launching states and calls for return of a "space object" and its "component parts" belonging to the "launching authority."[16] The Registration Convention, a document drafted in close proximity with the Liability Convention, provides instructions regarding how an individual state is to notify others of its placement of a space object in order to assign liability to risks introduced by such activity.[17] The text of the Liability Convention itself shows that it is similar in scope to the aforementioned space agreements. For example, the Convention shows its concern with risk introduced by human activity in its broad definition of space object as including "its component parts, its launch vehicle, and parts thereof."[18]

b) The Intended Scope of the Liability Convention Is Limited to Risks Introduced by Human Activity

Interpreting the scope of the Liability Convention as being tied to increased risks resulting from human activity receives confirmation upon examination of its *travaux préparatoires*:

So far it seemed that no significant damage had been done to any State or person not directly associated with the launching; the risks would increase, however, as the number and size of the objects launched into outer space increased. It was primarily for the protection of the interests of the States and people who occupied the greater part of the land masses of the earth, but who had no substantial direct concern in space activities, that there was an urgent need for an affirmative and satisfactory liability agreement.[19]

Consequently, it can be said that "the intention of all delegations was quite clear: the intention was to refer to [space objects as] objects which had been introduced or were sought to be introduced into outer space by human agency."[20] As they sought to make sure the Convention was broad enough to deal with all of the

15 Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies art. VII, Jan. 27, 1967, 18 U.S.T. 2410, 610 U.N.T.S. 205 [hereinafter Outer Space Treaty].

16 Agreement on the Rescue of Astronauts, the Return of Astronauts, and the Return of Objects Launched into Outer Space art. V, Apr. 22, 1968, 19 U.S.T. 7570, 672 U.N.T.S. 119.

17 Convention on Registration of Objects Launched into Outer Space, Jan. 14 1975, 28 U.S.T. 695, 1023 U.N.T.S. 15.

18 Liability Convention, *supra* note 64, art. I.

19 Comm. on the Peaceful Uses of Outer Space, Legal Subcomm., Draft Agreement on Liability for Damage Caused by Objects Launched into Outer Space, U.N. Doc. A/AC.105/C.2/SR.92 (1968) [hereinafter U.N. Doc. SR.92].

20 Id.

new risks of human spaceflight, several states voiced concern about damage originating from parts "detached from or torn from the space object."[21]

Because the point here is to cover all of the risks introduced by spaceflight, it would be an absurd construction of the Liability Convention to limit its scope to direct impacts of space objects. However, it is likewise absurd and unreasonable to expand its scope to apply to risks to the Earth not introduced by human activity, or to punish states that take action against such pre-existing risks. The application of strict liability to intervention against asteroids would in effect reward states for inaction, allowing them to reap the benefits of deflection if another state conducted it successfully, while reserving them an absolute right to fine the rescuing state upon failure. Such a situation is absurd and unreasonable, and recourse to the preparation documents shows that punishing attempts to mitigate natural disasters was outside the drafters' intention.[22]

Whether or not the damage results from the physical impact of a space object, the logic of the Liability Convention holds states liable for risks their space activities introduce to the Earth. Thus, a mission which brought a celestial body into Earth's orbit would be strictly liable for any damage resulting from the risk it had introduced and unable to exonerate itself even if there was no showing of fault or negligence. By the same logic, a mission which attempts to stop a celestial body that is already on a collision course with Earth is not within the scope of the Liability Convention if it does not increase the aggregate risk to Earth.

Syd-1 was destined to strike Earth unless URA or another state took immediate action. If URA had chosen not to intercept Syd-1, damage would still have been inflicted upon the Earth's surface, possibly upon another populated area through means of direct impact or consequent natural disasters. The compromis provides no indication that the total risk to Earth was increased. Rather, it hints that the "risk corridor did not completely miss the Earth" and that the URA mission had partially shifted the risk corridor in a direction in which the possible path of the asteroid now included a greater area of empty space.[23] The fact that these improved odds did not ultimately result in Syd-1 missing the Earth does not change the fact that the mission, unlike the

---

21 Comm. on the Peaceful Uses of Outer Space, Legal Subcomm., Argentina, Belgium, France: Working Paper, Definition of a Space Object, U.N. Doc. PUOS/C.2/70/WG.1/CRP.16 (1970).

22 During the drafting of the Liability Convention, one delegate "urged the space Powers to ponder the words of Professor Lachs, a Judge of the International Court of Justice, who had stated that the jurists task in shaping the law of outer space involved more than the framing of technical treaty clauses and the analysis of documents" and instead was to "remove threats to survival." Comm. on the Peaceful Uses of Outer Space, Legal Subcomm., Draft Agreement on Liability for Damage Caused by Objects Launched into Outer Space, U.N. Doc. A/AC.105/C.2/SR.128 (1969).

23 See *Compromis* §§20, 25.

situations envisioned by the Liability Convention, decreased the risk to the Earth.[24]

c) International Law Limits the Scope of the Liability Convention

Article III of the Outer Space Treaty affirms that broader international law applies to space, and the principles of international law help to provide context to the treaties and deal with gaps in their explicit provisions.[25] There is precedent for narrowly reading the scope of applicable treaties to limit conflict with established international law. In the Advisory Opinion on Nuclear Weapons, this Court has said, "[It] does not consider that the treaties in question could have intended to deprive a State of the exercise of its right of self-defence under international law because of its obligations to protect the environment."[26]

In the same manner, the space treaties remain in effect during emergencies, but should not be interpreted in such a way as to undermine the right of states to protect themselves. The present situation is outside the scope of the Liability Convention, but is addressed by the broader norms of international law.

B. URA Is Not Liable for Damages to SPIDR Caused by Syd-1 under General International Law or the Outer Space Treaty

First, URA is not liable for damages because it is not at fault as its actions are justified by necessity. Second, URA fulfilled its obligations under the Outer Space Treaty.[27] Lastly, SPIDR is estopped from holding URA liable because of its own actions and failure to make a timely protest against URA's planetary defense activities.

1. URA Is Not at Fault under General International Law

Under general international law, liability cannot be imputed to URA's actions of planetary defense as fault is to be identified with an unlawful act.[28] This principle is illustrated in the *Prats Case* in which a Mexican national, Salvador Prats, claimed that the United States was liable for its failure to prevent Confederate armies from burning a ship containing his property.[29] However, the Commissioner of the arbitral tribunal stated:

---

24 SPIDR's claims about relative risks to territory from deflection make no claim about the amount of population at risk and fail to account for the risk of tsunami. See *Compromis* §20.

25 Outer Space Treaty, *supra* note 78, art. III.

26 Legality of the Threat or Use of Nuclear Weapons, Advisory Opinion, 1996 I.C.J. 226, 242 (July 8).

27 Much of the analysis for Article II of the Liability Convention also applies to Article VII of the Outer Space Treaty and is not duplicated here.

28 Bin Cheng, General Principles of Law as Applied by International Courts and Tribunals 223 (2006) [hereinafter Cheng, General Principles].

29 U.S.-Mex. Mixed Claims Comm'n (Prats v. U.S.), 29 R.I.A.A. 187, 189 (1868).

There is no responsibility with *fault* (*culpa*), and it is too well known that there is no *fault* (*culpa*) in having failed to do what was impossible. The *fault* is essentially dependent upon the will, but as the will completely disappears before the force, whose action cannot be resisted, it is self-evident result that all the acts done before such force, without the possibility of being resisted by another equal or more powerful force, can neither involve a fault nor injury nor responsibility.[30]

In addition to illustrating the general rule of liability on the basis of fault, *Prats* held that an unlawful act is associated with the voluntary character of the act. But more importantly, *Prats* held that fault only "goes as far as permitted by possibility."[31] Therefore, absent a showing of fault, states are not liable for the actions of hostile third parties (or by the same logic, asteroids) which they do not succeed in preventing from doing damage. SPIDR might attempt to differentiate the present case by saying that here, URA didn't merely fail to stop a third party, it intervened in the Syd-1 emergency in a way that was prejudicial to SPIDR. Such an argument can be shown to be incorrect from the principles of international law.

2. URA Has a Right under International Law to Take Necessary Actions to Preserve Itself and Its Population

Self-preservation is a basic premise of international law. Article 51 of the U.N. Charter makes this clear in the qualification it places on its other provisions dealing with conduct between states: "Nothing in the present Charter shall impair the inherent right of individual or collective self-defense."[32] The terminology refers to the classical international law doctrine of self-defense, which was grounded in the more basic right of self-preservation.[33] However, we are not left to infer a modern international law right of self-preservation against natural threats from the right of self-defense against people.[34] The doctrine of necessity, now codified in the Articles on State Responsibility,[35] provides a legal category to deal with, *inter alia*, threats that are similar to

30 *Id.* at 198.
31 *Id.* at 196.
32 U.N. Charter art. 51.
33 See HUGO GROTIUS, ON THE LAW OF WAR AND PEACE 18-41 (A.C. Campbell trans., Batoche Books ed., 2001).
34 *Cf.* Legality of the Threat or Use of Nuclear Weapons, Advisory Opinion, 1996 I.C.J. 226, 242 (July 8).
35 Responsibility of States for Internationally Wrongful Acts art. 25, G.A. Res. 56/83, U.N. Doc. A/RES/56/83 (Jan. 28, 2002) [hereinafter State Responsibility]. The Articles are generally accepted as a summary of customary international law. Gabčíkovo-Nagymaros Project (Hung. v. Slovk.), 1997 I.C.J. 7, 39 (Sept. 25).

self-defense insofar as the nature of the risk, but which do not involve war against another state.[36]

In accordance with the inherent right of self-preservation, a state may invoke necessity in order to preclude the wrongfulness of an act not in conformity with an international obligation.[37] A State may invoke necessity if the act is the "only way for the State to safeguard an essential interest against a grave and imminent peril," and "[the act] does not seriously impair an essential interest of the State or States towards which the obligation exists, or the international community as a whole."[38] TYRUS' interception and subsequent deflection of a near-Earth object was the only way for any State to safeguard against damage to sovereign territory or the loss of human life that would have resulted from impact. The probable point of impact was somewhere in the Cold Ocean, but this was not completely certain. Furthermore, assuming that Syd-1 was to reach this impact point, it is known that an impact of Syd-1's size could create a devastating tsunami affecting URA, SPIDR, or neighboring coastal states.[39]

a) URA's Actions Did Not Seriously Impair the Interests of SPIDR

Claims of necessity may be precluded if they seriously impair the interest of another state. Clearly, SPIDR has an essential interest in not sustaining asteroid impact. However, in the present case, SPIDR was already at risk both directly and indirectly. The science of the more feasible deflection methods means that "[r]isk shifting is an inseparable element of risk elimination in NEO deflection."[40] This Court has recognized that equity is part of the underlying foundation of international law.[41] It would be inequitable to consider the interest of one already-at-risk state in not having risk temporarily increased to be an essential interest which blocks other states from taking action that is necessary to eliminate the risk. This is especially the case given

---

36 Some scholars have analyzed NEO issues using the doctrine of self-defense: "If states are entitled to use force against a perceived attacking state in the defence of a third state, *a fortiori* they would in principle be entitled to use force in defending a third state without such force being applied against any particular state." Frans G. von der Dunk, *Legal Aspects of NEO Threat Response and Related Institutional Issues*, 2010 SECURE WORLD FOUND. 1, 11. The doctrine of necessity is, however, a more apt way to categorize the issues arising from NEO threats than the doctrine of self-defense, given that there is no intentional use of force against human beings involved in NEO deflection.

37 State Responsibility, *supra* note 98, art. 25.

38 Id.

39 See *supra* note 70 and accompanying text.

40 Russell L. Schweickart, *Decision Program on Asteroid Threat Mitigation*, 2008 INT'L INST. SPACE L. 322, 326.

41 See *supra* note 73 and accompanying text.

that URA can show affirmative reasons for all steps of its actions during the use of a gravity tractor in attempting to divert a preexisting risk.

b) URA Was Legally Justified in the Use of Gravity Tractors

First, if SPIDR objects to the legality of gravity tractors more generally, this is not supported by the evidence of the opinion of the international community, which appears to support this method because, *inter alia*, it can move an asteroid without having to be concerned with its composition.[42] Gravity tractors present far fewer legal problems than the most obvious alternative deflection method, nuclear weapons, as gravity tractors can be tested without fear of violating treaties.

Nuclear weapons would likely be legal to use in defense of the planet, however, the Nuclear Test Ban Treaty is written broadly enough as to prevent them from being tested, even for non-military applications.[43] Likewise, the Non-Proliferation Treaty limits the ability of states to access them,[44] and the Outer Space Treaty prohibits stationing them in space.[45] To avoid the issues associated with alternative methods, gravity tractors have been advocated by publicists,[46] and have been under development by the URAC states without record of protest.[47] This evidence of state practice on the part of space powers is relevant, as customary international law rules can apply for a region, like space, or among a group of states, like the space powers.[48]

c) The Direction of Deflection Was Legally and Scientifically Appropriate

Gravity tractor technology is limited to shifting an asteroid's orbit horizontally, which limits the feasibility of deflecting without first passing over populated areas. "'It's going to be slowly dragged across the Earth. You don't have the option of dragging it down through the Antarctic.'"[49] Physics provides further constraints as an examination of Gauss's equations governing the evolution of orbit elements under a low-thrust acceleration tells us the best way to change semi-major axis in a secular way is to apply acceleration along the asteroid's direction of motion (or in the opposing direction).[50]

---

42 See Dealing with the Threat to Earth from Asteroids and Comets 58 (Ivan Bekey ed., 2009) [hereinafter Dealing with Threat].

43 See Treaty Banning Nuclear Weapon Tests in the Atmosphere, in Outer Space, and Under Water art. I, Aug. 5, 1963, 14 U.S.T. 1313, 480 U.N.T.S. 43.

44 Treaty on the Non-Proliferation of Nuclear Weapons, Mar. 5, 1970, 21 U.S.T. 483, 729 U.N.T.S. 161.

45 Outer Space Treaty, *supra* note 78, art. IV.

46 DEALING WITH THREAT, *supra* note 105, at 58.

47 Compromis § 3.

48 Right of Passage Over Indian Territory (Port. v. India), 1960 I.C.J. 6, 39 (Apr. 12).

49 Madrigal, *supra* note 68 (quoting Rusty Schweickart).

50 D.K. Yeomans et al., Near Earth Object (NEO) Analysis of Transponder Tracking and Gravity Tractor Performance, 2008 B612 FOUND. 1, 20.

The position of SPIDR appears to be that TYRUS should have been placed opposite the direction of motion, but an examination of the scientific literature reveals a conspicuous lack of simulations involving a deflection using a gravity tractor behind the asteroid. On the other hand, a detailed study has been done on deflecting an asteroid in which the desired position for the spacecraft was the "center-of-mass along the positive velocity direction of the asteroid."[51] Given the limited time-frame for making a decision, it was reasonable to choose the more studied plan and put the spacecraft in front of the asteroid, which had the effect of speeding it up. Given Syd-1's orbit, this meant that the risk would be redistributed to the East rather than to the West. Claiming that this difficult decision was done for an improper reason both contradicts the principle that bad faith is not presumed[52] and also ignores the scientific evidence which provides affirmative reasons to believe that URA had a good-faith basis for its decisions.

Given the situation, there is little doubt that it was necessary for URA to immediately intercept and deflect Syd-1. The threat was much greater than that posed to Britain in the *Caroline Incident*, in which it was indicated that the presence of a ship which was supporting rebels presented a peril which was "instant, overwhelming, and leaving no choice of means, and no moment of deliberation."[53] In that case, the British deliberately and directly violated American sovereignty in a case where the rebels posed no threat to the United States. Here, URA incidentally increased the risk to SPIDR while attempting to stop a threat to URA, SPIDR, and other countries.

URA was afforded a narrow six-month window in order to move TYRUS into position.[54] Furthermore, there is no evidence that URA had time or available resources to deliberate and create alternative solutions. Once the transponder tracking confirmed the precise location of Syd-1, the risk was, though years in the future, certain and thus imminent. As this Court in the *Gabčíkovo-Nagymaros Project* stated, "[A] 'peril' appearing in the long term might be held to be 'imminent' as soon as it is established, at the relevant point in time, that the realization of that peril, however far off it might be, is not thereby any less certain and inevitable."[55]

3. URA Fulfilled Its Obligations under the Outer Space Treaty

SPIDR might claim that URA's act of planetary-defense was a violation of the Outer Space Treaty. However, such an allegation contradicts the interpretation

51 *Id.* at 27.
52 See, *e.g.*, Lake Lanoux Arbitration (Fr. v. Spain), 12 R.I.A.A. 281 (1957).
53 National Jurisdiction: Its Legal Effects, 2 Moore DIGEST §217, at 412 (quoting correspondence from the *Caroline Incident*).
54 Compromis §17.
55 Gabčíkovo-Nagymaros Project (Hung. v. Slovk.), 1997 I.C.J. 7, 42 (Sept. 25).

of the international community.[56] Article I of the Outer Space Treaty declares that "States shall facilitate and encourage international cooperation" when conducting activities in outer space.[57] In its interpretation, the United Nations has stated that "States are free to determine all aspects of their participation in international cooperation in the exploration and use of outer space on an equitable and mutually acceptable basis."[58] Similarly, space faring powers such as the United States have declared that Article I "does not create legal obligations with respect to the terms of international cooperation on any existing or future space objects."[59] In sum, though mutual cooperation is required when conducting space activities, an individual state may participate in international cooperation in whatever lawful manner it sees fit.

SPIDR might provide a follow up objection that Article XI of the Outer Space Treaty requires that states inform the "the public and the international scientific community, to the greatest extent feasible and practicable, of the nature, conduct, locations and results of [its space] activities."[60] But, with the term "feasible and practicable," this article implies that a state is merely required to publish information "according to its own discretion."[61] Consequently, "there is no obligation to supply such information in advance, or promptly, or in full [...]."[62] Though these standards are minimal, URA went beyond such standards and constantly informed SPIDR and the international community of impending risks associated with Syd-1 as well as its intention to mitigate such risks.[63]

SPIDR might object that there was limited notice provided prior to URA choosing to deflect the asteroid by speeding it up. However, this is a result of technological limitations rather than any dereliction of responsibility on the part of URA. Gravity tractor missions are two stage affairs. In many cases a radio transponder will have to be sent to the asteroid in order to provide adequately accurate and timely information to rationally commit to a deflection. In such instances the GT design can serve the dual role of first determining the precise orbit of the asteroid and therefore the need for deflection, and then, if a deflection is indicated, execute the mission.[64]

---

56 See, *e.g.*, Gerry L. Gilmore, *Navy Missile Likely Hit Fuel Tank on Disabled Satellite,* U.S. DEP'T OF DEF. (Feb. 21, 2008), www.defense.gov/news/newsarticle.aspx?id=49030 (describing an event in which the United States unilaterally destroyed its own defunct satellite).

57 Outer Space Treaty, *supra* note 78, art. I.

58 G.A. Res. 51/122, §2, U.N. Doc. A/RES/51/122 (Dec. 13, 1996).

59 Carl Q. Christol, The Modern International Law of Outer Space 43 (1982).

60 Outer Space Treaty, *supra* note 78, art. XI.

61 Bin Cheng, Studies in International Space Law 253 (1997).

62 Id.

63 *Compromis* §§16, 18-20.

64 Russell Schweickart et al., *Threat Mitigation: The Gravity Tractor*, 2006 B612 FOUND. 1.

Therefore, prior to TYRUS arriving and using its transponder to track the asteroid, URA did not have the data to be certain of what response would be required. Upon confirming that deflection was necessary, URA needed to act quickly because tractoring efficiency is "a function of start time" in which "[l]onger durations [...] provide ever-increasing statistical confidence in the miss."[65]

Furthermore, a failure to notify would likely be insufficient to find liability even in the absence of these facts as this Court has classified notification failures as procedural failures that did not result in a substantive violation. Thus, a declaration of the procedural violations was sufficient, with no other compensation required.[66]

4. SPIDR Is Estopped from Assigning Liability to URA

Even aside from the general and customary principles of law which show the legality of URA's action, SPIDR is barred from asserting a claim in relationship to many of the actions of URA because it has itself engaged in the same activity. International custom indicates that "[a] State is barred from questioning the legality of a claim which it has itself asserted or condoned."[67] For example, in a time of war between Mexico and France, the Queen's Advocate from Great Britain determined that Mexico had the right adjudicate French prizes in neutral ports.[68] Though France objected to this practice, the British advocate stated, "France can have no right to complain if its Enemy pursues the same course which she has Herself thought fit to adopt."[69]

Both URA and SPIDR were both heavily engaged in the Working Group of Near-Earth Objects of UNCOPUOS, and SPIDR has directly engaged in monitoring of dangerous near Earth objects, while combining this activity with commercial projects. It cannot object to URA doing the same. Furthermore, it cannot attack URA by alleging unilateral action given that its own actions, in claiming exclusive right to monitor the risk from Floyd-4,[70] involved less cooperation with other countries than did those of URA. SPIDR's delay in publishing data regarding risks from Floyd-4 indicates that it interprets requirements of notice in the same way as URA.[71] SPIDR never claimed that deflection itself was illegitimate.[72] When SPIDR protested, SPIDR only

---

65 D.K. Yeomans et al., *supra* note 113, at 15.
66 Case Concerning Pulp Mills on the River Uruguay (Arg. v. Uru.), 2010 I.C.J. 1, 106.
67 I.C. MacGibbon, *Estoppel in International Law*, 7 INT'L & COMP. L.Q. 468, 497 (1958).
68 Id.
69 Id.
70 Compromis §8.
71 *Id*. at §6.
72 The conduct of SPIDR's Space Agency may also be considered by the Court. In the *Savarkar Case*, an arbitral tribunal ruled that France had implicitly consented to the arrest through the conduct of its gendarme, who aided the British authorities in the arrest. See The Savarkar Case (U.K. v. Fr.) 11 R.I.A.A. 243, 252-55 (1911). If police

demanded that URA use a method that would have caused Syd-1 to pass over URA territory – it appears that they conceded the appropriateness of deflection as such.

This Court held that the United Kingdom as a sophisticated state on the North Sea should have known that Norway was taking measures prejudicial to its rights and on that basis, the United Kingdom was held to have acquiesced in Norway's fisheries delimitation system by not protesting earlier.[73] SPIDR, a technologically advanced space power involved in NEO mitigation efforts, should have known that gravity tractor deflections involve a binary risk distribution choice and that a deflecting state might have reason to make a decision quickly upon getting a transponder in place. Yet SPIDR was completely silent and did not protest FUSA's deflection efforts from February 2024 to August 2024.[74] During this time, URA constantly informed the international community of its intentions to intercept and alter the orbit of Syd-1.[75] It wasn't until three days before TYRUS was to commence deflection operations that SPIDR chose to protest the efforts of URA.[76] Consequently, SPIDR is estopped from making its claim of wrongfulness through its established acquiescence.

II. URA Is Not Liable for Any Loss of or Damage to the Two KNUD Spacecraft

Under the Liability Convention, liability for damages to other spacecraft is apportioned on the basis of fault.[77] URA is not liable because it had a right to freely access celestial bodies and neither the damage to KNUD-1 nor the damage to KNUD-2 was brought about as a result of fault on the part of URA.

A. URA Is Entitled to Free Access to Celestial Bodies under the Outer Space Treaty and International Law

URA's argument before this Court hinges on the free access provisions of the Outer Space Treaty, which invalidates SPIDR's argument that URA could not land on Floyd-4. The Outer Space Treaty makes this clear via the broad statement that, "Outer space, including the moon and other celestial bodies, shall be free for exploration and use by all States without discrimination of any kind, on a basis of equality and in accordance with international law."[78]

---

forces can indicate the attitude of a State towards apprehending a criminal such that another State is not violating international law by sending police into its territory, its space agency might provide evidence of a State's position on asteroid deflection.

73 Fisheries Case (U.K. v. Nor.), 1951 I.C.J. 116, 138-39 (Dec. 18).

74 See *Compromis* §18-21.

75 *Id.* §18-19.

76 *Id.* §20-21.

77 Liability Convention, *supra* note 65, art. IV.

78 Outer Space Treaty, *supra* note 78, art. I.

The Outer Space Treaty does not limit us to making an inference from the general rule, however, but immediately follows with, "and there shall be free access to all areas of celestial bodies."[79]

As a result, while some areas of space law involve situations not specifically addressed by the treaties, the Outer Space Treaty clearly contemplates the issue of multiple states operating on celestial bodies, and makes it clear that they have the right to do so. Article II makes it clear that this applies to situations in which a state has been on a celestial body, and makes it clear that "use and occupation"[80] does not grant the right to claim sovereignty. In other words, being the first to use or explore does not grant one "priority rights"[81] to use and explore – the free access provisions remain in place regardless.

1. Inaccurate Legal Statements from URA and URAC Do Not Affect the Claims at Bar in the Present Case

It is true that the provisions in Articles I and II of the Outer Space Treaty invalidate many of the assertions made by both SPIDR and URA in the initial exchanges of protest regarding their respective missions to Floyd-4. Firstly, it is conceded that URA and URAC had no authority to put a moratorium on the extraction of Floyd-4's resources or to limit extraction to members of the Moon Agreement or to licensees of URAC.[82] The agreement between the URAC states is valid between themselves, but it does not bind third party states.[83] However, the damages in the present case did not flow from URA and its partners' erroneous attempts to apply elements of the Moon Agreement to non-parties. Rather, the KNUD probes were damaged as a consequence of a combination of SPIDR's refusal to take into account the right of other states to explore Floyd-4 and emergency circumstances beyond the control of any state.

2. The Abuse of Rights Doctrine Cannot Be Applied Proscriptively to Ban Conduct

SPIDR might attempt to avoid the force of the Outer Space Treaty's provisions by acknowledging them and then claiming that there was some abuse of these rights. This is a difficult argument because there is a presumption

---

79 *Id.* During the negotiations, these provisions were described as having "flowed naturally and logically from the prohibition of claims to territorial sovereignty." Comm. on the Peaceful Uses of Outer Space, Legal Subcomm., Conclusion of a Treaty Governing the Exploration of Outer Space, The Moon and Other Celestial Bodies, U.N. Doc. A/AC.105/C.2/SR.58 (1966). So, if SPIDR attempts to justify its interference with free access by claiming that they fall short of a claim of sovereignty, it ignores the intended effects of Article II.

80 Outer Space Treaty, *supra* note 78, art. II.

81 See *Compromis* §8.

82 See *id.* §10.

83 Vienna Convention, *supra* note 74, art. 34.

against abuse of right.[84] Therefore, the rule does not apply here as it is directed at dealing with cases where a freedom is misused in order to accomplish an illegitimate end.[85] It would not justify a ban on exercising freedom of exploration as, according to the generally accepted view, "the doctrine of abuse of rights is of no force, since it does not have the support at international law to be invoked in a general manner and focuses on compensation for, not prevention of, damage."[86] Ultimately, this legal doctrine cannot be used to ban a state from exercising the general right to freedom to navigate and explore celestial bodies, though it could be used to show liability in cases where there was some ill intent in using a freedom which caused harm, rather than a mission with legitimate goals followed by the threat of a natural disaster, as in the present case.

3. Prior Use of an Area Does Not Provide an Ongoing Right to That Location

SPIDR's earlier launch of KNUD-1 gave it no right to demand that TYRUS not land in the location desired for KNUD-2. Moreover, TYRUS was not obligated to move in order to let KNUD-2 land because ownership inheres in the space object, not the surface.[87]

It is true that there is precedent for safety zones around a space object.[88] However, there is no actual state practice for exclusion zones around empty previous landing sites on asteroids, and there is certainly no precedent for one state claiming an exclusive right to visit a celestial body.[89]

Similarly, states are required under the Outer Space Treaty to show "due regard" for the interests of other states.[90] However, the general provision cannot be interpreted so as to require a state to completely surrender their explicitly guaranteed right to visit a celestial body. Even in the law of the high seas which specifically recognizes some states as having "special situations" and rights to

---

84 Cheng, General Principles, *supra* note 91, at 310.

85 See *id.* at 122.

86 Howard A. Baker, Space Debris: Legal and Policy Implications 74 (1989).

87 *Compare* Outer Space Treaty, *supra* note 78, arts. VI, VIII, *with* art II.

88 See F. Kenneth Schwetje, *Protecting Space Assets: A Legal Analysis of "Keep-Out Zones*," 15 J. SPACE L. 131, 132-42 (1987).

89 Though there have been exclusion zones in near-Earth orbit and there are great physical differences between an asteroid and near-earth orbit, customary norms for the one should not automatically narrow the force of the Outer Space Treaty's free access provisions for the other. Maritime Dispute (Peru v. Chile), 2014 I.C.J. 1, 48, 54 (Jan. 27). In this case, the Court indicated that State practice in the form of government actions at distances of up to 60-80 miles from the coast was not sufficient to establish a customary rule for waters 80-200 miles from the coast. This illustrates the caution of the court in narrowing rights to the commons in a case where the physical similarities between the two areas under consideration were greater than between near earth orbit and asteroids.

90 Outer Space Treaty, *supra* note 78, art. IX.

resources,[91] the ICJ has ruled that a state cannot "unilaterally exclude" vessels from access to common resources.[92] Therefore, this is much more the case in outer space, where the relevant treaties do not include such a concept and were intended to exclude it. The Court in *United Kingdom v. Iceland*, with Judge Manfred Lachs presiding, summarized the maritime law as follows:

The concept of preferential rights is not compatible with the exclusion of all fishing activities of other States. A coastal State entitled to preferential rights is not free, unilaterally and according to its own uncontrolled discretion, to determine the extent of those rights. The characterization of the coastal State's rights as preferential implies a certain priority, but cannot imply the extinction of the concurrent rights of other States.[93]

Accordingly, given the Outer Space Treaty's even more absolute protections of free access, SPIDR cannot invoke Article IX to assert that the mere entry of a foreign spacecraft onto a celestial body it was exploring constitutes harmful interference.[94] The present wording of Article IX was framed so as avoid giving states "'a veto'" over the space activities of other states.[95] In the Treaty Preparation materials for the Outer Space Treaty, the purpose of Articles IX and V is framed as requiring "that the same universal respect for life and limb which had been traditional among mariners at sea should also exist among astronauts."[96] There is nothing in the Outer Space Treaty's text or history to indicate that merely landing on a celestial body could violate Article IX. Even if there were some case in which that was possible, there is no evidence for any interference with the operations of KNUD-1 prior to the discovery of an emergency situation which required drastic action.

SPIDR claimed that it alone had the ability to ascertain the safety of landing on the Floyd-4 asteroid. Yet, there is nothing in the facts to indicate a technological gap between the two countries which would have made SPIDR better able to assess the risks of landing on Floyd-4. Indeed, it appears that both countries had the ability to study the surface of that asteroid.[97] The compromis indicates

---

91 Fisheries Jurisdiction Case (U.K. v. Ice.), 1974 I.C.J. 3, 5-6 (July 25).

92 *Id.* at 28.

93 *Id.* at 27-28.

94 The meaning of Article IX is illuminated by the drafters' discussion of similar language in Article XII: "The words 'on a basis of reciprocity' in article XII did not confer any right or power to veto proposed visits to other countries' facilities on a celestial body. A veto was not compatible with reciprocal rights." U.N. GAOR, 21st Sess., 1st comm. mtg. at 428, U.N. Doc. A/C.1/PV.1492 (Dec. 17, 1966) [hereinafter U.N. Doc. PV.1492]. Given the lack of a broad power to exclude in Article XII, it is incongruent to find such a power in Article IX.

95 Michael C. Mineiro, FY-1C and USA-193 ASAT Intercepts: An Assessment of Legal Obligations Under Article IX of The Outer Space Treaty, 34 J. SPACE L. 321, 329 (2008).

96 U.N. Doc. PV.1492, *supra* note 157, at 428.

97 See, e.g., Compromis §9, 12.

that the probable composition of the Floyd-4 was accurately assessed independently by FUSA before this was confirmed by SPIDR's probe.[98] With regard to TYRUS itself, it is stipulated between the parties that the probe is "highly capable,"[99] thus more specifically undermining SPIDR's attempt to claim that only SPIDR had the ability to make a safety determination. The Court indicated in the *Gabčíkovo-Nagymaros* case that uncertain scientific claims by one state are insufficient to allow that state to derogate from the rights and obligations provided for by a treaty.[100] As a consequence, SPIDR's unsupported claims should not override URA's right of free access to celestial bodies.

B. URA Is Not Liable for Damages to KNUD-2

URA is not liable for damages to KNUD-2 which resulted after it failed to dock with the surface. This is true firstly because the Outer Space Treaty allows for use[101] of space and celestial bodies, includes the right to engage in activities which modify the surface of a celestial body.[102] Further, SPIDR itself has engaged in activities intended to modify the surface,[103] and is thus estopped from claiming that modifying the surface violates space law.

A further problem with SPIDR's claim is that in international litigation "the burden of proof falls on the claimant," and in the case of KNUD-2, SPIDR cannot satisfy it with regard to the issue of causation.[104] The compromis records that there were multiple delays as a result of "anomalies" with regard to KNUD-2, but it is not recorded whether these problems were resolved prior to launching.[105] At the same time, the evidence indicates that SPIDR was in a hurry to launch the KNUD-2 spacecraft in order to beat TYRUS to the asteroid.[106] While SPIDR was certainly within its rights to attempt to get to the asteroid first, in doing so it assumed the risk of damages resulting from rushing the mission.

The mutually agreed upon facts with regard to the launch of KNUD-2 do not by themselves show negligence on the part of the SPIDR Space Agency as far as the launch itself. Nonetheless, these facts contextualize the problem KNUD-2 had attaching itself to the asteroid, an activity which was already

98 *Id.* §7.
99 *Id.* §5.
100 Gabčíkovo-Nagymaros Project (Hung. v. Slovk.), 1997 I.C.J. 7, 42 (Sept. 25).
101 *Cf.* Stephen Gorove, Studies in Space Law: Its Challenges and Prospects 217 (1977).
102 Gorove, in assessing the legality of a hypothetical mission to remove one of the moons of Mars from its current orbit stated, "the drafters did not intend to go beyond the textual stipulations and impose on outer space the requirement that it must be used exclusively for peaceful purposes." *Id.* at 89 n. 12.
103 See *Compromis* §8, 9, 23, 24, 28.
104 Cheng, General Principles of Law, *supra* note 91, at 334.
105 See *Compromis* §13.
106 Id.

known to be risky.[107] It is stipulated that the surface had been altered as part of the ordinary operation of the TYRUS spacecraft, though it is not clear that the inability to attach resulted from the alterations.[108] More specifically, this Court has said in cases of inference of fact from indirect evidence, such as would be needed to support the SPIDR claim here, the evidence would need to "leave *no room* for reasonable doubt."[109]

If for some reason the Court does not wish to apply this strict standard to the current facts, it remains a general rule of international law that "[t]he international responsibility of the State is not to be presumed."[110] In the event of lack of clarity regarding causation, the Court should rule to exonerate URA on this issue.

Even assuming this unproven connection, it is important to note that the compromis also indicates that SPIDR knew the URA spacecraft was about to begin use and exploration of Floyd-4. SPIDR had the responsibility to design a craft that could interact with a changing space environment, including changes resulting from the legitimate space activities of other parties.[111]

C. URA Is Not Liable for Damages to KNUD-1

SPIDR may claim that URA's re-launch of TYRUS from the surface of Floyd-4 caused damage to KNUD-1. However, there was a threat to human life on Earth which required urgent action as it is stipulated there was a limited window of time in which TYRUS could be used to redirect Syd-1.[112] Because of humanitarian concerns, TYRUS was only on Floyd-4 for twenty five days and scrapped a possibly commercially viable mission.[113] As an international tribunal put it in the *Naulilaa* case, it is "'necessary to exclude losses unconnected with the initial act, save by an unexpected concatenation of exceptional circumstances.'"[114] Therefore, the damage from relaunch cannot be used to show that TYRUS should not

---

107 The European Space Agency's probe, *Philae*, has similar difficulty in attaching to a comet. See Terrence McCoy, *Why Rosetta's Malfunctioning Anchoring Harpoons are 'Clearly Worrisome,'* WASH. POST (Nov. 13, 2014), www.washingtonpost.com/news/morning-mix/wp/2014/11/13/why-rosettas malfunctioning-anchoring-harpoons-are-clearly-worrisome/.

108 See *Compromis* §22.

109 Corfu Channel Case (U.K. v. Alb.) 1949 I.C.J. 4, 18 (Apr. 9).

110 See CHENG, GENERAL PRINCIPLES, *supra* note 91, at 305 (citing Spanish Zone of Morocco Claims (U.K. v. Spain), 2 R.I.A.A. 615, 619 (1924)).

111 SPIDR claims damages for expected profits to KNUD-2 mission. *Compromis* §28. Note that the there is authority indicating that causation is construed more narrowly in cases like the present where there is no ill intent. U.S.-Venez. Mixed Claims Comm'n (U.S. v. Venez.), 9 R.I.A.A. 115, 121 (1903) ("[International law] denies compensation for remote consequences, in the absence of evidence of deliberate intention to injure.").

112 Compromis §17.

113 *Id.* §12, 19.

114 Cheng, General Principles, *supra* note 91, at 242.

have touched down in the first place. No evidence has been submitted showing TYRUS spacecraft would have hastily relaunched had it not been for the emergency. If, in the absence of the threat from Syd-1, the TYRUS spacecraft would not have relaunched during the lifetime of KNUD-1, this seriously undermines SPIDR's attempt to attach liability on the basis of their claims regarding risks from the initial landing.[115]

Given what the international community has said about the special importance of human life in a variety of instances, it is consistent with international law for URA to apply a similar standard to a danger to a large area of the Earth's surface, and send its spacecraft to attempt to protect human life with all possible speed. While not directly binding on space, the Law of the Sea Convention ("UNCLOS") indicates the practice of states in a similar area of law, and affirmatively requires that vessels "proceed with all possible speed to the rescue of persons in distress, if informed of their need of assistance."[116]

The Outer Space Treaty contains a parallel provision for the protection of astronauts: "[T]he astronauts of one State Party shall render all possible assistance to the astronauts of other States Parties."[117] Paralleling the protections to persons at sea in UNCLOS, the protection in Article V of the Outer Space Treaty is to people, not merely to spacecraft in general. Likewise, the Convention on Rescue and Return of Astronauts applies different levels of protection to human life and property.[118] Therefore, to the extent the international community has considered the issue with regard to space activities, it has continued the international practice of treating human life as of more value.

Examining the *travaux tréparatoires*, we find this straightforward reading of the treaties confirmed. The incorporation of maritime rules for preserving human life was explicitly referenced during the negotiation of the Outer Space Treaty.[119] Likewise one delegate said regarding the issue of reimbursement during the preparation of the Rescue Agreement,

Clearly the same principle should not be applied to expenses arising out of operations conducted to assist or rescue astronauts, whose safe recovery and return would be analogous to air and sea rescue operations. The general rule in such cases was not to claim for the cost of rescue operations in so far as

115 For emergency and foreseeability as reasons for exoneration, See BAKER, *supra* note 149, at 70, 84.

116 United Nations Convention on the Law of the Sea art. 98, Dec. 10, 1982, 1833 U.N.T.S. 397.

117 Outer Space Treaty, *supra* note 78, art. V.

118 See GOROVE, *supra* note 164, at 95-115.

119 U.N. Doc. PV.1492, *supra* note 157, at 428.

they related to assistance and distressed persons. The return of a space vehicle [would] have no humanitarian implications.[120]
Liability Convention delegates specifically referenced the connection between the principles in the treaties and framed both as being driven by humanitarian considerations.[121] So, the preference for human life in the major space treaties is not an illusion created by an overly close reading in the text, but was in fact a distinction that diplomats at the time considered important. Given the coherence of multiple sources of law, it is reasonable to conclude that customary international law supports giving people priority over property.
URA publicly announced that it intended to make the launch four days prior to doing so, thus they gave SPIDR time to take measures to prepare KNUD-1 for the launch. It would be unreasonable to expect URA to limit potentially life-saving activity out of a concern for a robotic probe. Given that URA acted reasonably under the circumstances, it committed no wrongful or negligent act in relaunching, and in a fault-based system, cannot be held liable for damages sustained by KNUD-1.

Submissions to the Court

For the foregoing reasons, the Government of the United Republic of Adventura, Respondent, respectfully requests the Court to adjudge and declare that:
1. URA is not liable under international law for damages to SPIDR caused by Syd-1; and
2. URA is not liable under international law for any loss of or damage to the two KNUD spacecraft.

Report prepared by:

Dr. Martha Mejía-Kaiser
Co-Chair
Manfred Lachs Space Law Moot Court Committee
IISL

120 Comm. on the Peaceful Uses of Outer Space, Legal Subcomm., Draft International Agreement on Assistance to and Return of Astronauts and Space Vehicles, U.N. Doc. A/AC.105/C.2/L.9 (1964).
121 See U.N. Doc. SR.92, *supra* note 82; See *also* Comm. on the Peaceful Uses of Outer Space, Legal Subcomm., Draft Agreement on Liability for Damage Caused by Objects Launched into Outer Space, U.N. Doc. A/AC.105/C.2/SR.52 (1965).