MANFRED LACHS SPACE LAW MOOT COURT COMPETITION 2014

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TEAM NO. 3

IN THE INTERNATIONAL COURT OF JUSTICE

AT THE

PEACE PALACE, THE HAGUE

CASE CONCERNING SATELLITE ELECTROMAGNETIC INTERFERENCE

THE AKERAN FEDERATION, APPLICANT

V.

THE COMMONWEALTH OF MHENI, RESPONDENT

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

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QUESTIONS PRESENTED

1. Is Mheni liable under international law for any EMI preventing access to the SEANAV signal?

2. Did Akera violate international law by disabling the X-12A satellite resulting in its destruction?

3. Is Mheni liable to Akera for the loss of the unmanned aerial vehicle, the damage to the military facility, or the deaths of the two Akeran military personnel?

STATEMENT OF FACTS

1. The Commonwealth of Mheni ("Mheni") and the Akeran Federation ("Akera") both allocate significant portions of their budget to civil and military space programs.[1] Mheni, a large mountainous state, and Akera, a federation of nearly 500 islands, are separated by the Botuos Sea.[2] The claimed economic zones of Mheni and Akera overlap in places in the Botuos Sea, including the area of the Langerhans Islands—a small cluster of uninhabited islands with an abandoned airstrip constructed and operated by the State of Mintov during World War II.[3] Mheni and Akera have a long history of competition, diverging political systems, alliances, and disputes.[4]
2. Akera and Mheni both are members of the United Nations ("U.N.") and parties to the Outer Space Treaty,[5] the Rescue and Return Agreement, the Liability Convention,[6] the Registration Convention,[7] the Moon Agreement, and the Constitution and Convention of the International Telecommunications Union[8] and its Radio Regulations.[9] Additionally, Akera is a signatory to

[1] Special Agreement Between the Akeran Federation and the Commonwealth of Mheni para. 1 [hereinafter *Compromis*].
[2] *Id.*
[3] *Id.* para. 4.
[4] *Id.* para. 1.
[5] Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies, Jan. 27, 1967, 610 U.N.T.S. 205 [hereinafter OST].
[6] Convention on International Liability for Damage Caused by Space Objects, Mar. 29, 1972, 961 U.N.T.S. 187 [hereinafter LC].
[7] Convention on the Registration of Objects Launched into Outer Space, Jan. 14, 1975, 1023 U.N.T.S. 15.
[8] Constitution and Convention of the International Telecommunications Union, Dec. 22, 1992, 1825 U.N.T.S. 143 [hereinafter ITU Const. and ITU Conv., respectively].
[9] *Compromis* para. 18. The Radio Regulations of the ITU as Revised and Adopted by the World Radiocommunications Conference in 2012 (WRC-2012) including all Appendices, Resolutions, Recommendations and ITU-R Recommendations Incorporated By Reference, *available at* http://www.itu.int/pub/R-REG-RR-2012 [hereinafter ITU-RR].

the International Telecommunications Union's Optional Protocol on Compulsory Settlement of Disputes.[10]

3. Since the late twentieth century, Akera has been a major global exporter of petroleum.[11] In order to improve its ability to transport the petroleum throughout its waters, Akera exploited the resources it gained in the petroleum trade to establish a precision navigation and timing ("PNT") satellite system known as SEANAV.[12]
4. The SEANAV constellation, which has been operational since 2010, consists of eighteen payloads hosted onboard a variety of commercial satellites.[13] The Akeran military and private users are able to access the SEANAV signal utilizing SEANAV User ("SEA-U") receivers purchased from Akera.[14] The Mhenian military was also able to access the SEANAV signal by constructing its own SEANAV User Equipment ("M-SUE") tuners.[15]
5. It was determined by geologists that substantial oil and gas reserves existed under the waters of the Langerhans Islands.[16] It was then that petro-companies in both Akera and Mheni expressed an interest in the Langerhans Islands.[17] These companies were at varying stages of development, with those in Akera being the more developed.[18]
6. In mid-2014, Akera sailed warships into the overlapping economic zones of Mheni and Akera and into the waters of the Langerhans Islands in an attempt assert control of the

[10] *Compromis* para. 18.
[11] *Id.* para. 2.
[12] *Id.*
[13] *Id.* para. 3.
[14] *Id.*
[15] *Id.*
[16] *Id.* para. 4.
[17] *Id.*
[18] *Id.*

islands, despite Mheni's overlapping claim.[19] Akera also flew several military transports onto the abandoned airstrip on the Langerhans Islands.[20] While there, the Akeran "pilots exited their aircraft, saluted, planted an Akeran flag next to their aircraft, shook hands, climbed back into their planes, and departed."[21] Photos of Akera's military activities were widely publicized by the Akeran media.[22]

7. Sain Communications, a Mhenian corporation, provided oil and gas consulting services to Peabody Enterprises.[23] A portion of Sain Communications' compensation depended on Peabody Enterprises' success in developing the oil and gas reserves in the waters of the Langerhans Islands.[24]
8. In early 2015, Mheni authorized Sain Communications, pursuant to Mheni's Space Licensing Act, to begin development of the X-12 satellite system, consisting of the X-12A and X-12B satellites, for the purpose of "testing of new communication technologies."[25]
9. The X-12A and X-12B were launched at six-month intervals in 2016 from a floating platform in the waters of the Langerhans Islands by an international commercial launch services consortium that included entities incorporated in Akera.[26] The X-12 satellites were placed in highly elliptical orbits, with their apogees located above the territories of Akera and Mheni, and were phased in the same orbital plane to provide 24-hour coverage of the region.[27] Both satellites were properly registered by Mheni with the UN with the listed purpose of "testing

[19] *Id.* para. 6.
[20] *Id.*
[21] *Id.*
[22] *Id.*
[23] *Id.* para. 5.
[24] *Id.*
[25] *Id.* para. 7.
[26] *Id.*
[27] *Id.*

of new communication technologies,"[28] and their frequencies were properly registered with the International Telecommunications Union ("ITU").[29] The two satellites' nominal functions were identical.[30]

10. In mid-2016, Akera's SEA-U receivers began to experience intermittent electromagnetic interference ("EMI"), and as a result had difficulty accessing the SEANAV PNT signal.[31] Although the X-12A and X-12B were identical, the EMI coincided only with X-12A's overflight of Akera, and only those SEA-U receivers within the X-12A's communications footprint were affected.[32] Around the same time that the X-12 satellites became fully functional, other communications and digital systems tied to the SEANAV signal experienced interference.[33]

11. The prestigious investigative journal *Aviation Daily & Space Operations* reported that, as a result of interference with the SEANAV signal, an Akeran unmanned aerial vehicle (UAV) equipped with a SEA-U receiver crashed at a military base; the crash destroyed a military building and killed two military personnel.[34] The *Aviation Daily & Space Operations* article did not, however, state the source of the interference.[35]

12. Akera's President confirmed in a press conference that an Akeran UAV had crashed, and she stated that Akeran analysts believed the X-12A to be the source of the EMI and that loss of

[28] *Id.* para. 7.
[29] Special Agreement Between the Akeran Federation and the Commonwealth of Mheni, Response to Requests for Clarifications para. 9 [hereinafter *Clarifications*].
[30] *Id.* para. 10.
[31] *Compromis* para. 8.
[32] *Id.* para. 8.
[33] *Id.*
[34] *Id.*
[35] *See id.*

access to the SEANAV signal due to EMI had caused the crash of the UAV.[36] She also stated that the Akeran analysts concluded that the EMI had not occurred prior to the X-12 system's being placed on-orbit.[37] The Akeran President further alleged that the X-12A was a "sophisticated weapon" being used against Akera to endanger Akera's territorial integrity and national security.[38] No direct statements or demands were made to Mheni or any other state at that time, and none of the evidence upon which the Akeran analysts based their determination was given.[39]

13. By early-2017, the EMI experienced by Akera had increased to the point of preventing the use of SEA-U receivers throughout Akera and near the Langerhans Islands.[40] Without the use of the SEA-U receivers, large supertankers and container cargo ships had difficulty navigating through Akera's waters; as a result, international shipping and transit through Akera's waters, as well as oil exports and trade, were reduced.[41] Around this time, Mhenian companies, including Peabody Enterprises, had sufficiently developed to the point that they began drilling for oil in the Langerhans Islands.[42]

14. At this time, the Akeran Foreign Ministry issued a demarche to Mheni demanding that it immediately cease transmissions from the X-12 satellites that Akera believed were causing or could cause interference with the SEANAV signal.[43] No further evidence of the EMI's

[36] *Id.*
[37] *Id.*
[38] *Id.*
[39] *See id.*
[40] *Id.* para. 9.
[41] *Id.*
[42] *Id.*
[43] *Id.* para. 10.

source other than that previously stated in the Akeran President's press conference was given.[44]

15. Mheni's foreign minister, Preston Yukon, responded to the Akeran demarche in a news conference stating that Mheni was not at fault for the deterioration of Akera's communications systems.[45]

16. Mr. Yukon emphasized that there was no proof of a direct connection between Akera's malfunctioning devices and systems and the transmissions of the X-12 satellite system, and therefore Mheni would not take responsibility.[46]

17. During the news conference, Mr. Yukon reiterated that Sain Communications had been granted valid authorizations for its space activities in accordance with Mheni's laws and international obligations and that nothing during the authorization process indicated that the X-12A was designed to disrupt any other satellite's signal.[47] Mr. Yukon also revealed the use of M-SUE tuners by the Mhenian military and national space systems and explained that it therefore would be against Mhenian interests to interfere with the SEANAV signal.[48] As further support of this point, Mr. Yukon also disclosed that he was informed the X-12A satellites also used the SEANAV PNT signal for navigation, and thus advised that Akera search for the source of the interference in its own territory.[49]

18. Akera also brought its concerns with the X-12 satellite system before the UN Committee on the Peaceful Uses of Outer Space, as part of its Legal Subcommittee and Scientific and

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[44] *See id.*
[45] *Id.* para. 11.
[46] *Id.*
[47] *Id.*
[48] *Id.*
[49] *Id.*

Technical Subcommittee general exchange of views.[50] The state members of these subcommittees declined to offer comments on the alleged interference from the X-12 satellites.[51] Akera also sought redress for its complaints about the X-12 through the ITU, requesting that Mheni accede to the Optional Protocol on Compulsory Settlement of Disputes—a request which Mheni denied.[52]

19. In addition, Akera sent an official letter to the UN Secretary-General, formally requesting the UN Security Council to take measures to prevent what Akera claimed were attacks against its communication and navigation systems.[53] This request, however, was tabled without a vote.[54]

20. While apparently seeking an international solution, Akera simultaneously developed a second generation of SEANAV PNT satellites, designed to transmit a more powerful signal encoded with information intended to counteract the EMI that Akera believed to derive from the X-12A satellite.[55] This new system ("SEANAV-2") was no longer flown as a series of hosted payloads.[56] Instead, Akera inaugurated the system with the launch of three satellites—Klondike, Hudson, and Simcoe—in orbits close to the original SEANAV hosted payloads.[57]

21. At the time of this launch, Akera's President announced that the SEANAV systems would be used in support of expanded use of Akera's drone program, and to patrol the waters in and around Akera and the Langerhans Islands.[58] She also stated that the SEANAV-2 system would not be as vulnerable to EMI as the original SEANAV system, but that it would take

[50] *Id.* para. 13.
[51] *Id.* para. 12.
[52] *Id.*
[53] *Id.*
[54] *Id.*
[55] *Id.* para. 14.
[56] *Id.*
[57] *Id.*
[58] *Id.*

several years for full deployment.[59] Additionally, Akera's President reiterated her allegation that the X-12A was the source of the EMI and that Akera was being attacked by Mheni, and renewed her demand that Mheni cease the transmission of signal from the X-12A.[60]

22. Mheni responded by reiterating that it was not responsible for the disruption of the SEANAV signal and that there was no direct proof that the X-12A satellite caused interference of any kind.[61]

23. While the Klondike satellite orbited near the X-12A, the Klondike broadcast a new SEANAV signal with information encoded and integrated within its waveform to counteract the interference that Akera believed to emanate from the X-12A.[62]

24. The X-12A's onboard tuner malfunctioned when processing this new signal and began to spin out of control. [63] Automatic on-board systems attempted to correct the X-12A's course by igniting thrusters; however, the impaired tuner gave the control system inaccurate navigation information, and the thruster fire changed the X-12A's orbit, lowering its perigee to 100 km.[64]

25. The X-12A could not be stabilized and within two weeks the satellite was destroyed.[65] At this time, the EMI affecting SEA-U receivers ceased.[66]

26. In order to avoid hostilities and resolve their disputes, Akera and Mheni submitted these issues to the International Court of Justice for binding resolution.[67]

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[59] *Id.*
[60] *Id.*
[61] *Id.* para. 15.
[62] *Id.* para.16.
[63] *Id.*
[64] *Id.*
[65] *Id.*
[66] *Id.*
[67] *Id.* para. 17.

SUMMARY OF ARGUMENT

First, Mheni is not liable for the inaccessibility of Akera's SEANAV signal because Mheni was not the direct cause of the inaccessibility and because Akera's alleged harm is not within the scope of recoverable harm contemplated in international space law. International liability is premised on the existence of an international obligation, a breach of that obligation, and a direct causal link between the breach and recoverable damage. Additionally, the Outer Space Treaty, together with the Liability Convention and the ITU, should be read to cover only physical damage resulting from a collision with a space object. Assuming arguendo that the X-12A was the source of the interference experienced by Akera, Mheni was not the direct cause of the inaccessibility of the SEANAV signal because Akera's breach of its international obligations was the direct cause of the inaccessibility of the SEANAV signal. Moreover, Akera is barred from recovery because it breached its obligations in bad faith; such behavior is consistent with an attempt to vilify Mheni to garner international sympathy and support for its improper claim of the Langerhans Islands. Furthermore, the inaccessibility of the SEANAV signal is neither a physical damage nor the result of a collision with a Mhenian space object and thus is not within the scope of recoverable damage contemplated in the Liability Convention.

Second, Akera's disabling of the X-12A, resulting in its irreparable and nearly immediate destruction, violates international law regardless of Akera's intent. Whether deliberate or not, Akera's actions breached its duty of international cooperation, as well as its obligations regarding harmful interference under the ITU and the Outer Space Treaty. Because Akera's destruction of the X-12A was deliberate, however, Akera also violated the U.N. Charter's prohibition of the use of force and the Outer Space Treaty's requirement to use outer space solely for peaceful purposes. Akera's use of force cannot be justified as self-defense because it was not

in response to an armed attack by Mheni. Even if not considered a use of force, Akera's intentional destruction of the X-12A cannot be justified as a counter-measure or under a defense of necessity as the circumstances necessary for those justifications did not exist.

Finally, Mheni is not liable to Akera for the crash of its UAV and related damage because Mheni was not the direct cause of the crash and because indirect and non-collision damage is not recoverable under international space law. As reported by *Aviation Daily & Space Operations* and confirmed by the President of Akera, the Akeran UAV crash was caused by the loss of access to the SEANAV signal. Mheni was not the direct cause of the inaccessibility of the SEANAV signal, and thus cannot be the direct cause of the UAV crash or any related damage. Additionally, Akera's damage is indirect because it does not flow directly from any alleged wrongdoing by Mheni, but instead is the unforeseeable alleged result of the inaccessibility of the SEANAV signal. Failure of a UAV in the event of EMI or loss of a satellite signal is not foreseeable because industry-standard crash prevention and EMI mitigation and compatibility technology should be in place to prevent such failure. Moreover, Akera's damage, although physical, is indirect and not the result of a collision with a Mhenian space object; in fact, no collision with a Mhenian space object has occurred at all. Finally, even if any damages are awarded, they should be reduced because of Akera's own negligence and because Akera, as a member of the international launching consortium that launched the satellite, is a launching state of the X-12A as defined in the Liability Convention.

ARGUMENT

I. MHENI IS NOT LIABLE UNDER INTERNATIONAL LAW FOR ANY ELECTROMAGNETIC INTERFERENCE PREVENTING ACCESS TO THE SEANAV SIGNAL.

The Outer Space Treaty ("OST") provides that a "State Party to the Treaty that launches…an object into outer space…is internationally liable for damage to another State Party to the Treaty…by such object or its component parts on the Earth, in air space or in outer space…."[68] The Liability Convention ("LC") clarifies this provision of the OST,[69] establishing fault-based liability for damage caused by space objects in outer space[70] and absolute liability for damage caused by space objects to aircraft in flight or collisions on the surface of the Earth.[71] Moreover, as established in *Factory at Chorzów*, international liability is premised upon the breach of an international obligation and a direct causal link between the breach and a recoverable harm.[72] Thus, regardless of which standard of the LC this Court applies, it must find an uninterrupted causal chain between the alleged wrongdoing by Mheni and a recoverable harm to Akera. Because Mheni's actions are not the direct cause of the inaccessibility of the SEANAV signal and because the damage alleged by Akera is not a recoverable harm under international space law, Mheni is not liable.

A. Mheni Is Not Liable for the Inaccessibility of the SEANAV Signal Because Akera's Bad Faith Breach of its International Obligations Was the Direct Cause of the Inaccessibility.

Akera's failure to properly report interference in accordance with the ITU's Radio Regulations ("ITU-RR") led to the inaccessibility of the SEANAV signal. This failure also constitutes a breach of Akera's duty of international cooperation under various treaties and

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[68] OST art. VII.
[69] *See* LC pmbl.
[70] LC art. III.
[71] LC art. II.
[72] *Factory at Chorzów* (Ger. v. Pol.) 1928 P.C.I.J. (ser. A) No. 17 at 37 (Sept. 13); s*ee also* Corfu Channel (U.K. v. Alb.), 1949 I.C.J. at 4 (Apr. 9); *Trail Smelter Arbitration* (U.S. v. Can.), 3 R.I.A.A. 1911 (U.S.-Can. Arb. Trib. 1941).

customary international law.[73] Because Akera's bad faith breach of several international obligations significantly contributed to the inaccessibility of the signal, Mheni is not the direct cause and thus should not be held liable.

1. *Akera's Failure to Properly and Fully Report the Interference It Was Experiencing Breached the ITU's Radio Regulations and Contributed to the Inaccessibility of the Signal.*

Akera breached its ITU-RR obligations by failing to report crucial technical data regarding the interference it experienced to Mheni, electing instead to rely on the uncorroborated and dubious[74] conjecture of its own analysts to brazenly accuse Mheni of perpetrating an attack with a sophisticated, space-based weapon. Without this critical data from Akera, Mheni was unable, and in fact had no duty, to investigate and—assuming arguendo that the X-12A was the source of the EMI—eliminate the interference. Thus, Sain Communications' actions—and thereby Mheni's actions[75]—were not the direct cause of the inaccessibility of the SEANAV signal.

a. *The ITU's Radio Regulations Require Member States Experiencing Interference to Report Full Particulars of the Interference to the Alleged Interfering State.*

Under the ITU-RR, a state is obligated to report "full particulars" of and "all possible information" relating to any interference it experiences to the alleged interfering state.[76] Reporting full particulars of the interference allows the alleged interfering state to appropriately

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[73] Customary international law "derives from the practice of states and is accepted by them as legally binding." BLACK'S LAW DICTIONARY 892 (9th ed. 2009).

[74] Mheni certainly had reason to doubt Akera's unsupported claims—the two states are long-time rivals, *Compromis* para. 1., and Akera had taken military action to improperly lay claim over the Langerhans Islands to exploit its oil and gas resources and bar Mheni from doing the same, *See compromis* paras. 5, 6.

[75] Mheni concedes that it is internationally responsible for the outer space activities of its nationals, i.e. Sain Communications, under Article VI of the Outer Space Treaty. Any argument to the contrary finds little, if any, support in international space law, and Mheni does not wish to waste this Court's time with such frivolous arguments when much more serious issues are present in this case.

[76] *See* ITU-RR arts. 15.27, 15.31, & 15.34.

investigate and, if responsible, correct or eliminate the interference.[77] These full particulars are explicitly laid out in Appendix 10 of the ITU-RR and include—for both the alleged interfering station and the station experiencing interference—but are not limited to, the name or call sign and location of the station, the frequency measured, the class of emission, the measured field strength and power-flux density, and the estimated or measured bandwidth of the signal.[78]

Unilateral conjecture cannot suffice to require a state to shut off its satellite or expend resources to investigate alleged interference. Such a requirement would contravene the ITU's most fundamental purpose of equitable access to the limited radio spectrum, particularly where methods for determining the specific technical data relevant to interference are readily available.[79] Although states are required to cooperate in investigating and eliminating interference[80] with "the utmost goodwill and mutual assistance,"[81] the responsibility for initiating this investigation and seeking cooperation with other states rests upon the party alleging interference.[82] If claims of interference that are not corroborated with empirical data are to be allowed, states may be able to inhibit rival states' right of equitable access to radio spectrum resources simply by making false interference claims, just as Akera attempted to do to Mheni here.

Failure to properly report interference severely restricts the alleged interfering state's ability to appropriately investigate and, if necessary, eliminate the interference because of its various possible

[77] *See* ITU-RR, app. 10 at note & art. 15.34.
[78] ITU-RR app. 10.
[79] *See* ITU-RR art. 16.
[80] ITU-RR art. 15.25 ("Administrations shall cooperate in the detection and elimination of harmful interference, employing where appropriate the facilities described in Article **16** and the procedures detailed in this Section.").
[81] ITU-RR art. 15.22.
[82] *See* ITU-RR art. 15.32.

causes.[83] For example, interference may derive from deep-space or local solar radiation, or could be caused by "out of band" emissions or simultaneous broadcasts on the same frequency.[84] Without the technical information detailed in Appendix 10 of the ITU-RR—even something as simple as the call sign of the interfering signal—the alleged interfering state cannot appropriately investigate the alleged interference[85] or determine how to remedy such interference.[86] If the source of the interference cannot be determined to be one over which the alleged interfering state has jurisdiction and control, no duty—and, in fact, no ability—to take remedial action exists.

b. Akera's Breach of Its Reporting Obligations Under the ITU's Radio Regulations Contributed to the Inaccessibility of the SEANAV Signal.

Akera did not properly report the interference it experienced to Mheni, and thus significantly contributed to the inaccessibility of the SEANAV signal. The compromis does not indicate that Akera provided to Mheni any of the technical data listed in Appendix 10 of the ITU-RR—not even something as simple as the a call sign of the interfering signal—which would have allowed Mheni to appropriately investigate the interference and corroborate Akera's claim.[87] Instead

[83] Although Akera eventually sought redress for its problems through the ITU, *see Compromis* para. 12, this was too little, too late to suffice as notice as the damage had already occurred.

[84] *See* J.J. Engelbrecht, *Methods to Measure and Limit Electromagnetic Interference, with Reference to Power Systems and Satellite Earth Stations* (Nov. 2004) (unpublished thesis, Rand Afrikaans University) *available at* https://ujdigispace.uj.ac.za/handle/10210/2163; Ben Ba, *Harmful Interference and Infringements of the Radio Regulations*, Presentation to the ITU Regional Radiocommunication Seminar for Africa 2013, *available at* http://www.itu.int/en/ITU-R/terrestrial/workshops/RRS-13-Africa/Documents/Harmful%20Interference.pdf.

[85] *See* ITU-RR app. 10 at note ("[S]ufficient information *shall be provided* to the administration receiving the report, *so that an appropriate investigation* can be conducted.") (emphasis added).

[86] For example, if the cause of the interference is out of band emissions, this may be corrected by reducing signal strength, properly placing directional antennas, or a variety of other methods. On the other hand, if the interference is the result of simultaneous broadcasts on the same frequency, the solution may be that of frequency shifting, alternating broadcasts, or a variety of other solutions. There are also many EMI shielding and filtering techniques that may be employed with the proper technical data. *See* Engelbrecht, *supra* note 84.

[87] *See* ITU-RR app. 10.

Akera held a press conference after news broke of the crash of its UAV[88] claiming that the crash was caused by EMI from the X-12A based on Akera's analysts' conclusion that it had not experienced interference prior to the launch of the X-12 system.[89] Akera did not announce that the interference with the SEANAV signal coincided with overflights of the X-12A, that only SEA-U receivers within the communications footprint of the X-12A were affected, or that other systems were affected when the X-12 system came online.[90] Although this circumstantial evidence now available *might* support a conclusion that the X-12A was the source of the EMI, it is not clear from the compromis that Mheni was aware of these coincidences at the time.[91] Moreover, Mheni had no reason to be aware of any interference as it was accessing the SEANAV signal without incident using its own M-SUE tuners,[92] and had properly registered the X-12A's frequency with the ITU without objection from any state.[93] Furthermore, Akera did not directly communicate the interference to Mheni until it had *completely* lost access to the SEANAV signal, at which time it issued a demarche *demanding* that Mheni immediately cease transmissions from the X-12A.[94] This demarche did not, however, provide empirical data or any additional support for Akera's allegations.[95]

Akera's demand that Mheni cease operation of the X-12A based solely on uncorroborated allegations is unreasonable, and requiring such action would contravene two of the most

[88] *See id.* para 8. The time between the incident and the press conference was at least as long as necessary for the magazine article to be researched, written, and published.
[89] *See id.*
[90] *See id.*
[91] *See id.* para. 8.
[92] *See id.* para. 11.
[93] *See clarifications* para. 9.
[94] *Compromis* para. 10.
[95] *See id.*

important goals of the ITU: international cooperation[96] and equitable access to frequencies and orbits.[97] In addition, such a compulsion would violate ITU-RR provisions regarding processes for the resolution of interference through compromise and cooperation.[98] Such a requirement would be particularly troublesome in relationships between neighboring states with a history of rivalry, competition, and continuing disputes over economic zones, such as Akera and Mheni.[99] Permitting Akera's unilateral, uncorroborated conjecture to satisfy its ITU-RR reporting obligations would have at least two negative consequences contradictory to the purposes of the ITU. First, it would allow Akera to avoid its duty of international cooperation and vilify long-time rival Mheni with unsupported allegations of sophisticated, space-based attacks. Second, such a requirement would force Mheni to forfeit its right to equitable access and use of a particular frequency or orbit without concrete evidence.

Assuming arguendo that the X-12A was the source of the EMI, Akera's failure to report critical data related to the interference led Mheni to conclude that there "was no proof of a direct connection between the malfunctioning of the Akeran systems and devices and the transmissions of the X-12 satellites."[100] If the X-12A was indeed the cause of the EMI, proper and timely reporting of the necessary technical data by Akera would have allowed Mheni to conduct an appropriate investigation and remedy the interference, thereby preventing the complete inaccessibility of the SEANAV signal. Because Akera significantly contributed to the ongoing interference it experienced, Mheni's actions were not the direct cause of the inaccessibility of the SEANAV signal.

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[96] ITU Const. pmbl. & art. 1.
[97] ITU Const. art. 44.
[98] ITU-RR art. 15.23 ("In the settlement of these problems, due consideration shall be given to all factors involved, including the relevant technical and operating factors, such as: adjustment of frequencies, characteristics of transmitting and receiving antennas, time sharing, change of channels within multichannel transmissions.").
[99] *Compromis* para. 1.
[100] *Id.* para. 11.

2. Akera's Breach of Its Duty of International Cooperation Contributed to the Inaccessibility of the SEANAV Signal.

Akera's actions also constitute a breach of its duty of international cooperation[101] under various treaties and customary international law. As Judge Manfred Lachs noted, international cooperation is a fundamental principle of international law that necessarily falls within the realm of customary international law because "[t]he very notion of law-making in international relations implies the co-operation of the states."[102] This Court also recognized the importance of international cooperation in *Nuclear Tests*.[103] Akera's duty of international cooperation is even more concrete in the present case as it is a specifically enumerated purpose of the U.N. Charter,[104] the OST,[105] and the ITU.[106]

Akera breached its duty of international cooperation when it failed to properly report the interference and, instead, made unsupported allegations that Mheni had willfully violated international law by means of an attack on Akera. Reporting of full data relating to satellite interference between two states so that potential interference may be jointly and peaceably investigated and corrected certainly falls within the ambit of international cooperation. Akera chose, however, to make demands of Mheni and to internationally denounce Mheni as a bad actor without providing any evidence supporting its allegations. This behavior cannot be considered international cooperation under any meaning of the term and points to bad faith on the part of Akera.

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[101] International cooperation is "the obligation of States to cooperate with each other…." Chukeat Noichim, *International Liability for Damage Caused by Space Objects*, 74 Am. J. Int'l L. 315, 316 (1980).

[102] *See* MANFRED LACHS, THE LAW OF OUTER SPACE 27 (1972).

[103] *See Nuclear Tests* (N.Z. v. Fr.), 1973 I.C.J. 457, para. 46 (Dec. 20) ("One of the basic principles governing the creation and performance of legal obligations, whatever their source, is the principle of good faith. Trust and confidence are inherent in international co-operation, in particular in an age when this co-operation in many fields is becoming increasingly essential.").

[104] U.N. CHARTER, art. 1, para. 3

[105] *See* OST pmbl. & art. IX; *see also* Aldo Armando Cocca, *Prospective Space Law*, 26 J. Space L. 51, 54 (1998) (explaining that international cooperation is an obligation under space law).

[106] ITU Const. pmbl. & art. 1.

3. Akera Acted in Bad Faith Breaching Its International Obligations Thereby Barring It From Recovery.

Akera's bad faith actions bring it before this Court with unclean hands, thus barring Akera from recovery. Breach of international law by a state may act as a bar to recovery, particular where such breach is committed in bad faith.[107] Furthermore, it is well-established in both common law and civil jurisprudence that contribution by victims to the cause of their own alleged harm can act as a bar to recovery,[108] and this principle has been repeatedly recognized by international tribunals.[109] Under the principle of *pacta sunt servanda*, a State Party to any treaty is required to act in good faith to fulfill the obligations of that treaty.[110] Although prescribed in the Vienna Convention on the Law of Treaties, this principle is also recognized as customary international law.[111] This Court may make determinations based on customary international law,[112] and international tribunals have previously recognized the application of these principles to bar recovery.[113]

Akera has acted in bad faith throughout the time period described in the compromis. First, Akera's military improperly and aggressively attempted to claim territory within the overlapping economic zones of Akera and Mheni—the Langerhans Islands—and bar Mheni from sharing in the rich oil and gas resources of the region.[114] Second, if Akera's true purpose was to seek Mheni's cooperation to expediently resolve the interference, it should have promptly reported

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[107] Stephen M. Schwebel, *Clean Hands Principle*, MAX PLANCK ENCYCLOPEDIA OF INTERNATIONAL LAW, http://opil.ouplaw.com.proxy.lib.fsu.edu/view/10.1093/law:epil/9780199231690/law-9780199231690-e18?rskey=zWbTRw&result=1&prd=EPIL (quoting the lectures of Sir Gerald Fitzmaurice to the Hague Academy of International law in 1957).
[108] David J. Bederman, *Contributory Fault and State Responsibility*, 30 Va. J. Int'l L. 335, 337 (1990).
[109] *See, e.g.*, *Diversion of Water from Meuse* (Neth. v. Belg.), 1937 P.C.I.J. (ser. A/B) No. 70 (June 28); *Home Frontier and Foreign Missionary Society of the United Brethren in Christ* (U.S. v. Gr. Brit.), 6 R.I.A.A. 42 (Dec. 18, 1920); *Yukon Lumber Case* (Gr. Brit. V. U.S.), 6 R.I.A.A. 17 (1913).
[110] Vienna Convention on the Law of Treaties, art. 26 (May 23, 1969), 1155 U.N.T.S. 331.
[111] *See Gabčíkovo–Nagymaros Project* (Hung. v. Slovk.), 1997 I.C.J. 7 (Sept. 25).
[112] STATUTE OF THE INTERNATIONAL COURT OF JUSTICE, art. 38(1)(c).
[113] *Diversion of Water from Meuse*, *supra* note 109 at 77 (individual opinion of M. Hudson).
[114] *Compromis* para. 6.

full particulars of the interference directly to Mheni.[115] Instead, Akera did not report the interference it experienced until *after* the information was made public by *Aviation Daily & Space Operations.*[116] At that time, Akera's President publicly accused Mheni of violating Akera's territorial integrity and national security, but did not disclose any evidence in support of this allegation other than its analysts' conclusion that the interference had not occurred prior to the launch of the X-12 system.[117] No direct communication was made with Mheni until later when the interference had increased to the extent that Akera was unable to access the oil and gas in and around the Langerhans Islands.[118] Finally, Akera made its push to vilify Mheni[119] through various international organizations; however, Akera's unsubstantiated allegations based on circumstantial evidence were evidently insufficient to persuade the international community of Mheni's responsibility.[120] Akera then decided to further breach its international obligations by taking matters into its own hands.[121] Thus, Akera comes before this Court with unclean hands because it breached its international obligations in bad faith to vilify Mheni—perhaps to garner support for its invalid claim of the Langerhans Islands in order to bar Mheni from sharing in the oil and gas resources[122]—ultimately contributing to the inaccessibility of the SEANAV signal. Put simply, Akera is a bad actor who sought to improve its territorial reach and economic status while simultaneously hindering those of its long-time rival Mheni. Instead, Akera's bad faith

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[115] *See supra* part I.A.1.a.
[116] *Compromis* para. 8.
[117] *Id.*
[118] *See id.* paras. 9 & 10.
[119] Akera's attempt to portray Mheni as an aggressor with unsupported allegations, perhaps hoping to set back Mheni's efforts to mutually occupy and exploit the Langerhans, is much like Japan's likening of China to "Voldemort" from the children's book series HARRY POTTER in the dispute over the Senkaku Islands. *See "Voldemort in the Region": China, Japan blast each other Harry Potter style*, RT.COM. (Jan. 7, 2014, 4:07 AM), http://rt.com/news/china-japan-harry-potter-voldemort-255.
[120] *Id.* para. 13
[121] *See infra* part II.
[122] *See compromis* paras. 5, 6.

breaches of international law substantially contributed to the harm for which it now seeks relief. For this reason, too, Akera's claim against Mheni should be denied.

B. Mheni Is Not Liable for the Inaccessibility of the SEANAV Signal Because There Is No Basis for Liability Under the Relevant Treaties or Customary International Law.

The LC and the OST provide liability only for physical damage due to a collision with a space object. The LC and the OST do not provide a basis for liability here because there has been no collision with a Mhenian space object and no physical damage to the SEANAV signal or the broadcasting payloads. Additionally, the ITU does not establish a liability scheme, but instead seeks joint resolution of alleged harmful interference through international cooperation and mutual assistance. Therefore, inaccessibility of the SEANAV signal is not a recoverable harm under international law and accordingly Mheni cannot be held liable.

1. There Is No Basis for Liability Under the Outer Space Treaty and Liability Convention Because the Inaccessibility of the SEANAV Signal Was Not Caused by a Collision with a Mhenian Space Object.

The OST and the LC impose liability only for physical damage from direct collisions with space objects. The OST provides that a "State Party to the Treaty that launches…an object into outer space…is internationally liable for damage to another State Party to the Treaty…by such object or its component parts on the Earth, in air space or in outer space…."[123] This provision has been repeatedly recognized as imposing liability only for physical damage from direct collisions with a space object during launch, orbit, or re-entry as those were the only types of damage contemplated by the drafters of the treaty.[124] The LC clarifies Article VII of the OST,[125]

[123] OST art. VII.

[124] *E.g.*, Carl Q. Christol, *International Liability for Damage Caused by Space Objects*, 74 Am. J. Int'l L. 346, 355 (1974)("Although the acceptance in Article 7 of the principle of international liability for damage caused by space objects had wide-ranging legal consequences, its focus was quite narrow. It looked to physical harm of the kind that would result from collisions with space

establishing fault-based liability for collisions occurring in outer space[126] and absolute liability for collisions with aircraft in flight or collisions on the surface of the Earth.[127] The LC should not be read, however, to expand the scope of liability, because there has been no significant change in the language regarding causation from that used in Article VII of the OST.[128] As Stephen Gorove notes, use of the word "by" in these provisions implies "that the damage must be caused directly by the space object in the sense of physical damage or impact."[129] Moreover, the LC defines damage as "loss of life, personal injury [or] loss of or damage to property,"[130] and thus does not cover non-physical damage. Thus, liability should not include non-physical damage or damage that is not the result of a collision with a space object.

The inaccessibility of the SEANAV signal was not the result of a collision with a Mhenian space object. In fact, there was no collision of a Mhenian space object with an Akeran space object,[131] with an Akeran aircraft in flight, or in Akeran territory. Instead Akera alleged that the

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objects or aircraft, or from impacts on individuals or their property on the earth. It focused on nonelectronic and physical injury and did not take into account such possibilities as environmental harm or events producing pollution in outer space."); Stephen Gorove, *Damage and the Liability Convention*, PROCEEDINGS OF THE TWENTY-FIRST COLLOQUIUM ON THE LAW OF OUTER SPACE 97, 98 (1978); SENATE COMM. ON FOREIGN RELATIONS, TREATY ON OUTER SPACE, S. EXEC. REP. NO. 8, 90th Cong., 1st Sess. 5 (1967) (stating that "any reasonable interpretation of [Article VII of the OST] would mean physical damage" and explaining that the OST focuses specifically on "nonelectronic and physical injury" as the result of collisions).

[125] *See* LC pmbl.

[126] LC art. III.

[127] LC art. II.

[128] *Cf.* OST art VII ("[D]amage to another State Party . . . by [its space] object . . . .") *with* LC art. II ("[D]amage caused by its space object….") & art. III ("[D]amage being caused . . . by a space object . . . . ").

[129] *See also* Gorove, *supra* note 124 at 98; *See also* Muhamed Mustaque, *Legal Aspects Relating to Satellite Navigation in Air Traffic Management with Specific Reference to Gagan in India*, IAC Doc., IAC-07-E6.4.04 (2007) (explaining that the LC does not apply to issues resulting from signals between satellites).

[130] LC art. I(a).

[131] Had a collision with a Mhenian space object occurred, there is some doubt that the SEANAV hosted payloads should be considered space objects as they are not necessarily component parts

inaccessibility of the SEANAV signal was due to EMI that it *believed* originated from the X-12A satellite.[132] Furthermore, the inaccessibility of the SEANAV signal is not a physical damage as there is no evidence of loss of or damage to the hosted payloads broadcasting the signal—there was merely an interruption of the signal that no longer exists.

2. The ITU Does Not Establish a Liability Regime.

The ITU Constitution and ITU-RR do not impose liability for harmful interference with the radio signal of another State; in fact, the ITU does not impose liability or sanctions for any alleged infraction of its provisions.[133] Instead, the ITU requires states to remedy interference through a process of proper reporting, investigation, and correction of the interference through international cooperation and mutual assistance.[134] If these processes fail, the ITU aspires to settle these issues through arbitration and other dispute resolution techniques without specifically imposing liability.[135] Thus, Akera's claim for damage does not fall within the scope of recoverable damage contemplated in international space law.

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of the satellites upon which they are carried. *See* Hamid Kazemi et al., *Towards a New International Space Liability Regime Alongside the Liability Convention 1971*, IAC Doc. IAC-12, E7, 2, 13 x14120 (2012).

[132] *See compromis* para. 8.

[133] Maria Buzdugan, *Recent Challenges Facing the Management of Radio Frequencies and Orbital Resources Used by Satellites*, IAC Doc., IAC-10.E7.5.3 at 5 (2010) ("The important aspect to note is that the ITU does not, and has no authority to, impose sanctions or otherwise enforce its Radio Regulations or other applicable rules and cannot exercise any real control over how a member State uses its orbit/spectrum assignment.").

[134] *See* ITU-RR art. 15.

[135] *See* ITU Const. art 41.

II. AKERA VIOLATED INTERNATIONAL LAW BY DISABLING THE X-12A SATELLITE RESULTING IN ITS DESTRUCTION.

Akera's act of disabling and destroying the X-12A violated international law, regardless of intent. Because no justification exists for this act under international law, Akera cannot escape responsibility for its breach of international law.

A. Akera Breached International Law When It Disabled the X-12A Satellite.

Akera's disabling the X-12A resulting in its destruction violates multiple international obligations. This is true regardless of whether or not the disabling and destruction of the X-12A was a deliberate act by Akera.

1. Akera's Deliberate Disabling of the X-12A Resulting in Its Destruction Violated the UN Charter, the ITU Constitution, the Outer Space Treaty, and Customary International Law.

The prohibition on the use of force and the obligation of international cooperation are two of the most fundamental principles of international law; both are enumerated purposes of the U.N. Charter.[136] These principles are even more definite in the context of the operation of satellites in outer space[137]: the OST requires states to use space solely for peaceful purposes,[138] and the ITU Constitution and the OST specifically require international cooperation.[139] Additionally, Akera's deliberate destruction of the X-12A violates the ITU's prohibition on harmful interference.[140]

Akera's act of disabling the X-12A satellite was deliberate in that such a result was its intent or, at the very least, because Akera took action which it had strong reason to believe would disable the X-12A. Akera knew that the X-12A would receive the new SEANAV signal because

[136] U.N. CHARTER art. 1, para. 3 (international cooperation) & art. 2, para. 4 (prohibition on the use of force).
[137] *See supra* part I.A.2
[138] OST, pmbl. & art. IV.
[139] ITU Const. pmbl. & art. 1; OST pmbl. & arts. III and IX.
[140] ITU Const. art. 45 & ITU-RR art. 15.

of Mheni's use of M-SUE tuners.[141] Instead of protesting Mheni's use of M-SUE tuners to access the signal, Akera used this information to its advantage by designing the new SEANAV signal to counteract the signal that Akera believed to originate from the X-12A.[142] Akera then waited until its new Klondike satellite "orbited in near conjunction with the X-12A" to broadcast the new signal, causing the X-12A satellite to malfunction and fall out of orbit.[143] Akera's unsupported claims that the X-12A was a threat to Akeran national security interests and its demand that Mheni cease operation of the X-12A prior to launching the new system[144] further evidences Akera's motive to deliberately disable the X-12A.

Akera's deliberate act constitutes a use of force in violation of the UN Charter,[145] as well as the OST's requirement to use outer space solely for peaceful purposes and the ITU's prohibition on harmful interference.[146] This Court and other international tribunals have also condemned the extraterritorial use of force;[147] and such an intentionally injurious act plainly violates the customary international law duty of states to avoid causing harm to other states as described in *Pulp Mills*.[148] Furthermore, Akera's deliberate disabling of the X-12A breached its obligation of international cooperation. The "[u]nilateral breach of an international obligation in response to

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[141] *Compromis* para. 11.
[142] *See* Tony Capaccio and Jeff Bliss, *Chinese Military Suspected in Hacker Attacks on U.S. Satellites*, BLOOMBERG NEWS (Oct. 27, 2011, 12:01 AM), http://www.bloomberg.com/news/2011-10-27/chinese-military-suspected-in-hacker-attacks-on-u-s-satellites.html.
[143] *Compromis* para. 16.
[144] *Id.* paras. 10, 14.
[145] U.N. CHARTER art. 2, para. 4.
[146] *See* P.J. Blount, *Limits on Space Weapons: Incorporating the Law of War into the* Corpus Juris Spatialis, IAC Doc., IAC-08-E8.3.5 at 1 (2008).
[147] *See Request for Interpretation of the Judgment of 15 June 1962 in the Case Concerning the Temple of Preah Vihear* (Cambodia v. Thai.), Order, 2011 I.C.J. (July 18), *available at* http://www.icj-cij.org/docket/files/151/16564.pdf; *Delimitation of Maritime Boundary between Guyana and Suriname* (Guy. v. Surin.), Award (Perm. Ct. Arb. 2007), *available at* http://www.pca-cpa.org/upload/files/GuyanaSuriname%20Award.pdf.
[148] *Pulp Mills on the River Uruguay*, (Arg. v. Uru.), 2010 I.C.J. 1 (Apr. 20) [hereinafter *Pulp Mills*].

the breach of another international obligation is a crude and unhappy way of responding to unlawful conduct."[149] This is doubly true when the breach of international law is a deliberate attack upon a rival state in response to *perceived* wrongdoing, such as in the present case. That is international retaliation, not cooperation.

2. *Even if Unintentional, Akera's Disabling of the X-12A Satellite Violated Multiple International Obligations.*

In disabling the X-12A, Akera breached its duties in regard to harmful interference as a party to the ITU and the OST. Each of these wrongdoings further constitutes a breach of Akera's duty of international cooperation. Thus, Akera has violated international law in a way that caused the destruction of the X-12A.

a. *Akera's Disabling of the X-12A Resulting in Its Immediate, Irreparable Destruction Breached the ITU's Prohibition of Harmful Interference.*

Akera violated the ITU's prohibition on harmful interference when it disabled the X-12A. Although incidental interference with the satellite signal of another state is not *per se* illegal, that interference becomes illegal if the interfering state's actions render the processes for resolution of interference ineffective.[150] Such is the case here; Akera's new SEANAV signal disabled the X-12A resulting in its irreparable and nearly immediate destruction.[151] Because the damage to Mheni was immediate and irreparable, Akera rendered the ITU processes for resolution of interference useless. Thus, even if unintentional, Akera's disabling of the X-12A constitutes harmful interference in violation of the ITU's Constitution[152] and Radio Regulations.[153]

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[149] James Crawford, *Counter-measures as Interim Measures*, 5 Eur. J. Int'l L. 65, 66 (1994).
[150] *See* ITU-RR art. 15.39; *see also* ITU-RR Recommendation S.735-1 (explaining that, in some circumstances, certain levels of interference are permissible).
[151] *Compromis* para. 16.
[152] ITU Const. art. 45.
[153] ITU-RR art. 15.

b. Akera's Disabling of the X-12A Breached Its Obligation of International Consultation Under Article IX of the Outer Space Treaty.

The OST recognizes a duty of due diligence, much like that articulated in *Pulp Mills*,[154] by requiring its state parties to conduct international consultations before undertaking activities that could foreseeably cause harmful interference with another state's outer space activities.[155] The possibility of harmful interference with the Mhenian space activities was foreseeable—Akera launched satellites to broadcast a stronger signal encoded with information specifically intended to counteract a signal it *believed* to originate from the X-12A. Further, Akera had actual knowledge that the X-12A would receive the new signal,[156] and did not broadcast the new signal until its satellite "orbited in near conjunction with the X-12A . . . ."[157]

Although Akera made an announcement regarding the new SEANAV signal, this was not done in a way that would allow any sort of meaningful consultation with the international community. There is no evidence that Akera consulted directly with Mheni, or any other state, in regard to the new SEANAV signal prior to launching the satellites. Instead Akera announced the new SEANAV-2 signal *at the time* of the launch of the satellites, stating that the signal "would not be as vulnerable to EMI as was the original SEANAV system," but not disclosing that the signal was designed to counteract and neutralize the EMI it believed to emanate from the X-12A.[158] Such an untimely and insufficient disclosure by Akera should not satisfy the substance of its obligation of international consultations because it does not allow for meaningful consultation

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[154] *Pulp Mills*, *supra* note 148.
[155] OST art. IX.
[156] See *compromis* para. 11. Although Mheni's tuners were unauthorized, there is no evidence that use of the M-SUE tuners constitutes a violation of international laws applicable between Akera and Mheni. As noted in the *Lotus Case*, states enjoy "a wide measure of discretion which is only limited...by prohibitive rules." *The Case of the S.S. Lotus* (Fr. v. Turk), 1927 P.C.I.J. (ser. A) No. 10 at 18-19 (Sept. 7).
[157] *Compromis* para. 16.
[158] *See id.* para. 14.

with and between potentially affected states, even if such an announcement is a proper form of international consultations under Article IX of the OST.

c. Akera's Disabling of the X-12A Satellite Breached Its Duty of International Cooperation.

As discussed in depth *supra*, the duty of international cooperation is a foundational principle of all international law, made particularly concrete in the context of operating satellites in outer space.[159] Akera's self-help in disabling the X-12A breaches its duty of international cooperation because it did so without the approval of the international community rather than resolving the alleged interference through proper ITU procedures. Akera also breached this duty by conducting an outer space activity which it had reason to believe would cause harmful interference with Mheni's activities without carrying out appropriate international consultations.

B. Akera's Disabling and Destruction of the X-12A Cannot Be Justified Under International Law.

Although justifications exist for breaches of international law—namely self-defense, countermeasures, and the defense of necessity—none of the necessary circumstances exist in this case. Thus, Akera has no legal justification for its violation of international law.

1. Akera's Destruction of the X-12A Cannot Be Justified as Self-Defense Because It Was Not in Response to an Attack by Mheni.

Akera's use of force in destroying the X-12A must conform to Article 51 of the U.N. Charter to be justifiable as self-defense.[160] Thus, Akera could justify its deliberate destruction of the X-12A only as a response to an "armed attack" by Mheni.[161] However, no armed attack—and, in

[159] *Supra* part I.A.2.
[160] U.N. CHARTER art. 51; *see also* Resolution on Responsibility of States for Internationally Wrongful Acts, art. 21, G.A. Res. 56/83, U.N. Doc. A/RES/56/83 (Jan 28., 2002) [hereinafter Wrongful Acts Resolution].
[161] *See* U.N. CHARTER, art. 51.

fact, no attack whatsoever—has been committed by Mheni.[162] Akera's actions therefore cannot be justified as self-defense.

2. Akera's Destruction of the X-12A Cannot Be Justified as a Countermeasure Because It Was Not in Response to Proven Unlawful Conduct by Mheni.

Akera's deliberate destruction of the X-12A is not a lawful countermeasure. Although this Court has recognized the lawfulness of countermeasures,[163] these are subject to the parameters of the U.N. General Assembly Resolution on Responsibility of States for Internationally Wrongful Acts.[164] A countermeasure, then, is an extraordinary remedy to be used only in the narrowest of circumstances and must be in response to *actual* unlawful conduct—not uncorroborated belief of unlawful conduct.[165] Furthermore, this resolution prohibits the use of force as a countermeasure.[166] Akera's use of force to destroy the X-12A negates the countermeasure justification.[167]

Even if not considered a use of force, however, Akera's deliberate destruction of the X-12A based on its unsubstantiated *belief* that Mheni had breached an international obligation is illegal.[168] Mere belief of wrongdoing is insufficient to justify a countermeasure, no matter how well-founded;

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[162] *See supra* part I.
[163] *Gabčíkovo–Nagymaros Project*, *supra* note 111 (discussing the lawfulness of Czechoslovakia's countermeasure against Hungary).
[164] *See id.*; *see also* David D. Caron, *The ILC Articles on State Responsibility: The Paradoxical Relationship Between Form and Authority*, 96 Am. J. Int'l L. 857, 873 (2002) (Discussing the persuasiveness of the Draft Articles in international courts and stating that "[t]he articles have already affected legal discourse, arbitral decisions, and perhaps also state practice."). For another example of the use of UNGA Resolutions in decisions of international tribunals see *Texaco/Libya Arbitration* (Texaco Overseas Petroleum Co./California Asiatic Oil Co. v. Gov't of Libya), 17 I.L.M. 1 (1978).
[165] Crawford, *supra* note 149 at 66.
[166] Wrongful Acts Resolution, *supra* note 160, art. 50(1)(a).
[167] *Id.*
[168] *See compromis* para. 8.

Akera must have provided actual proof that Mheni had breached an international obligation.[169] For example, Akera should have provided even just one piece of empirical evidence—something as simple as a call sign of the interfering signal—as required by the ITU-RR to support its allegation that the X-12A was the source of the EMI[170] and should have acted in good faith to resolve the interference through cooperation and mutual assistance with Mheni.[171] Instead Akera destroyed the X-12A based upon the uncorroborated conjecture of its own analysts, without making a good faith effort to resolve the interference through cooperation with Mheni.[172] While States Parties to the ITU "reserve the right to cut off . . . private telecommunications which may appear dangerous to the security of the State,"[173] this should not allow the complete destruction of the satellites of other states without conclusive proof of wrongdoing and the inability to resolve the matter through more peaceful means. Because Akera did not conclusively establish breach of international obligations by Mheni prior to taking action, instead acting based solely on its own *belief* of wrongdoing,[174] Akera's destruction of the X-12 was not a lawful countermeasure.

3. *Akera's Destruction of the X-12A Cannot Be Justified Under a Defense of Necessity Because Akera Was Not Facing Grave Peril and Because Akera Contributed to Its Own Harm*

Akera cannot articulate a defense of necessity to justify its destruction of the X-12A that would meet the high standard set out by this Court in *Gabčíkovo–Nagymaros Project.*[175] To justify a

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[169] *See* Crawford, *supra* note 149 at 66 ("Counter-measures can only be taken in response to an actual breach of the law…. It is not sufficient for a State to justify unlawful conduct…by asserting a belief that this is in response to conduct which is unlawful. The conduct must actually be unlawful.").
[170] *See* ITU-RR art. 15 & app. 10.
[171] ITU-RR art. 15.22.
[172] *See supra* part I.A.3.
[173] ITU Const. art. 34(1).
[174] *Supra* part I.B.3.
[175] *Gabčíkovo–Nagymaros Project*, *supra* note 111 at 39-40 (holding that the necessity defense requires that states be faced with "grave and imminent peril," and the responsive conduct must be the "only means of safeguarding [its] interest…").

breach of international law under a defense of necessity, a state must face "grave and imminent peril,"[176] and must not contribute to the situation that the state alleges caused its necessity.[177]

The inaccessibility of the SEANAV signal did not present grave and imminent peril—i.e., the possibility of immediate, widespread death and destruction—at the time Akera destroyed the X-12A. Instead, the danger faced by Akera from the inaccessibility of the SEANAV signal was purely economic in relation to the development and trade of oil and gas resources.[178] Moreover, because Akera contributed to the inaccessibility of the SEANAV signal,[179] it cannot point to the inaccessibility as a situation of necessity.[180]

III. MHENI IS NOT LIABLE TO AKERA FOR THE LOSS OF THE UNMANNED AERIAL VEHICLE, THE DAMAGE TO THE MILITARY FACILITY, OR THE DEATHS OF THE TWO AKERAN MILITARY PERSONNEL.

In order for a state to be internationally liable, there must be a direct causal chain between a breach of an international obligation by that state and a recoverable harm alleged by another state.[181] Mheni cannot be liable for the alleged harm to Akera because Mheni was not the direct cause of the harm to Akera. Further, Akera has not alleged damage that is recoverable under international space law. Moreover, even if the damage alleged by Akera is recoverable and attributable to the X-12A, such damages should be reduced because Akera is a launching state and because Akera's negligence has contributed to the harm for which it seeks relief.

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[176] *See id.; see also* Crawford, *supra* note 149.
[177] Wrongful Acts Resolution, *supra* note 160 art. 25(2)(b).
[178] *See compromis* para. 9.
[179] *Supra* part I.A.
[180] Wrongful Acts Resolution, *supra* note 160 art. 25(2)(b).
[181] *See Factory at Chorzów*, *supra* note 72 at 37.

A. Mheni Was Not the Direct Cause of the Crash Because It Was Not the Direct Cause of the Interference with the SEANAV Signal.

As discussed in depth *supra*, Mheni was not the direct cause of the inaccessibility of the SEANAV signal because Akera failed to properly report the interference it experienced.[182] The crash of Akera's UAV stemmed from this inaccessibility as reported by *Aviation Daily & Space Operations* and verified by the Akeran government.[183] Because Mheni is not the direct cause of the inaccessibility that in turn caused the UAV crash, Mheni cannot be the direct cause of the UAV crash itself, and thus is not liable for the crash or any related damage.

B. Mheni Is Not Liable for the Damage Caused by the Crash of Akera's UAV Because Such Damage Is Not the Direct and Foreseeable Result of the Loss of Satellite Signal.

Indirect damage is generally not recoverable under international law because of its tenuous and unforeseeable nature. The body of space law does not alter this bar on recovery. Therefore, even if EMI from the X-12A was the direct cause of Akera's inability to access the SEANAV, Mheni is not the direct cause of Akera's UAV crash because such a crash is not the direct and foreseeable result of EMI or the loss of satellite signal.

1. Indirect, Unforeseeable Damage Is Not Recoverable Under International Space Law.

Indirect damage "[does] not flow directly and immediately from an injurious act but that result[s] indirectly from the act,"[184] and it is generally not recoverable under international law because of its unforeseeable nature.[185] The decision to award damages should be made by

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[182] *Supra* part I.A.1.
[183] *Compromis* para. 8.
[184] BLACK'S LAW DICTIONARY 46 (9th ed. 2009).
[185] *See* Rep. of the Int'l Law Comm'n, 53rd Sess., April 23-June 1, July 2-Aug. 10, 2001, *Draft Articles on Responsibility of States for Internationally Wrongful Acts*, U.N. Doc. A/56/10; GAOR, 56th Sess., Supp. No. 10, 31, art. 31 cmt. 10 (2001); VALÉRIE KAYSER, LAUNCHING SPACE OBJECTS: ISSUES OF LIABILITY AND FUTURE PROSPECTS, 48-49 (2010) ("[I]ndirect damages are normally not recovered in international law . . . .").

evaluating the reasonable foreseeability[186] of the alleged damage within the full context and circumstances of each case. [187] In fact, this Court has explained that foreseeability of harm should be considered in assessing damages and determining whether a breach of international law has even occurred.[188] International space law does not broaden the scope of recoverable damage to include indirect damage.[189] In clarifying the scope of damage under Article VII of the OST, the drafters of the LC were hesitant to permit recovery of indirect damage because of its attenuated and unforeseeable nature, and left the issue unresolved.[190] Thus, recovery for indirect damage should be barred under the LC because its recovery is generally not permitted in international law, and the parties to the treaty have not explicitly consented to such recovery.[191]

2. The Damage Alleged by Akera Is Indirect Because It Is Not the Foreseeable Consequence of EMI or the Loss of a Satellite Signal.

Akera's damage is indirect because the crash of a UAV is not the direct and foreseeable consequence of EMI or the inaccessibility of a satellite signal. Akera, as a party to the ITU, is required to utilize the latest technological advances to provide necessary services in a satisfactory

[186] *See*, Bin Cheng, GENERAL PRINCIPLES OF LAW AS APPLIED BY INTERNATIONAL COURTS AND TRIBUNALS 244-50 (1987); Christol, *supra* note 124 at 360-62; *see also Al-Jedda v. United Kingdom*, App. No. 27021/08, Eur. Ct. H.R. 114 (2001) (expressing that the guiding principle when determining damages is "equity, which above all involves flexibility and an objective consideration of what is just, fair and reasonable in all the circumstances of the case, including not only the position of the applicant but the overall context in which the breach occurred").

[187] *See* Christol, *supra* note 124 at 360-62; s*ee also North Sea Continental Shelf* (F.R.G. v. Den./F.R.G. v. Neth.), 1969 I.C.J. 3, at 53 (Feb. 20) (recognizing that relief should be granted "in accordance with equitable principles.").

[188] *Military and Paramilitary Activities in and Against Nicaragua* (Nicar. v. U.S.), 1986 I.C.J. 14 (June 27) (barring recovery for unforeseeable damage).

[189] CARL Q. CHRISTOL, THE MODERN INTERNATIONAL LAW OF OUTER SPACE 96 (1982) (stating that unforeseeable damage is not recoverable).

[190] Christol, *supra* note 124 at 362.

[191] *See Corfu Channel*, *supra* note 72 (explaining that states are bound only by consent).

manner.[192] This obligation is particularly important in light of the duty of states to protect their nationals from harm,[193] and even more so when guarding against such a pervasive threat as EMI.[194] EMI has several potential causes—radiation from the sun or deep space gamma ray bursts, unintentional out-of-band emissions, overlapping signals broadcast on the same frequency, or intentional interference, also known as "jamming."[195] Thus, UAVs are constructed with certain industry-standard technology to prevent crashes due to EMI or loss of satellite signal.

Large platform UAVs,[196] such as the Predator drone,[197] utilize inertial navigation systems ("INS"), which comprise a series of accelerometers and gyroscopes to derive position and velocity information.[198] These systems do not rely on satellite service, but rather *periodically incorporate* satellite-based PNT signal to correct errors that accumulate in the systems.[199] In the event that these satellite-based signals are interrupted, technology such as Doppler radar, star sensors, or terrain correlation is used to minimize INS errors.[200] Smaller UAVs, which typically rely almost entirely on satellite-based signal instead of INS for navigation, have built-in failsafes, which direct the autopilot software to initiate a holding pattern in the event of signal

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[192] ITU-RR pmbl. & art. 4. Although this provision specifically speaks to limiting the number of frequencies and the spectrum used, its purpose is to allow equitable access of states to these limited natural resources. *See* ITU pmbl. Industry-standard protection from EMI would allow states to limit their use of particularly frequencies and spectrums to the benefit of other states, and thus should be read to fall within this provision.

[193] *See Barcelona Traction, Light and Power Co., Ltd.* (Belg. v. Spain), 1970 I.C.J. 3 (Feb.5).

[194] In 2013 alone there were forty-five cases of interference reported through ITU procedures. Presentation of Ben Ba, *supra* note 84.

[195] Engelbrecht, *supra* note 84.

[196] Although not clear from the *Compromis*, it is likely that the Akeran UAV was a large platform UAV because of the extent of the damage caused by its crash.

[197] Robert Valdes, *How the Predator UAV Works*, HOWSTUFFWORKS.COM, http://science.howstuffworks.com/predator2.htm (last accessed July 20, 2014).

[198] Oliver J. Woodman, *An Introduction to Inertial Navigation*, Technical Report from University of Cambridge, U-CAM-CL-TR-696, *available at* http://www.cl.cam.ac.uk/techreports/UCAM-CL-TR-696.pdf.

[199] *Id.*

[200] *Id.*

interruption.[201] If the signal is not reacquired after a programmed period of time, a second failsafe in the auto-pilot system commands the UAV to safely auto-land.[202] Similar auto-land procedures have been put in place for large platform UAVs.[203] Additionally, regardless of the UAV's size, many states have adopted standards for EMI shielding and compatibility to protect this critical onboard technology from failure due to EMI.[204]

In light of this industry-standard technology for the safety of UAV flight and Akera's duty to protect its radiocommunication services using the latest technology, it is not foreseeable that inadvertent EMI or the inaccessibility of a satellite signal would cause Akera's UAV to crash. That is to say, it is unforeseeable that Akera, in protecting its own interests, would not use this industry-standard technology which should prevent such a crash. In fact, considering the pervasiveness of EMI, this Court could find that Akera was grossly negligent if it elected to fly the UAV without this technology, thereby absolving Mheni of absolute liability under Article II of the LC.[205] Examining the foreseeability of the alleged damage through a lens of fairness and equity[206] and in light of the

[201] Reed Siefert Christiansen, *Design of an Autopilot for Small Unmanned Aerial Vehicles*, (Aug. 2004) (unpublished thesis, Brigham Young University), *available at* http://www.uadrones.net /academia/research/acrobat/0408.pdf.
[202] *Id.*
[203] Thomas William Wagner, *Digital Autoland System for Unmanned Aerial Vehicles*, (May 2007) (unpublished thesis, Texas Agricultural and Mechanical University), *available at* http://repository.tamu.edu/bitstream/handle/1969.1/5960/etd-tamu-2007A-AERO-Wagner.pdf?sequence=1.
[204] *See, e.g.*, MIL-STD-461, EMCINTEGRITY.COM, http://www.emcintegrity.com/military-and-aerospace/mil-std-461 (explaining MIL-STD-461, the U.S. Military Standard for EMI protection and compatibility for aircraft, including drones); Report on Civil Aircraft and Incorporated Equipment Covering the Technical Specifications and Related Conformity Assessment Procedures, Regional or International, in Relation to Electromagnetic Compatibility, Oct. 5, 2000, *available at* http://ec.europa.eu/enterprise/sectors/electrical/ files/report_en.pdf (explaining European standards for EMI protection and compatibility as of the year 2000).
[205] LC art. VI(1).
[206] *North Sea Case, supra* note **Error! Bookmark not defined.** (demonstrating this Court's practice of awarding damages in accordance with principles of fairness and equity).

rare recoverability of indirect damage, this Court should find that Mheni is not liable for the UAV crash or any related damage.

C. Akera's Damage Is Not Recoverable Because It Is Not the Result of a Collision with a Mhenian Space Object.

As previously discussed, the OST and LC should be construed to allow recovery only for physical damage resulting from a collision with a space object.[207] Because the ITU does not establish a liability regime, it does not expand the realm of recoverable damage in radiocommunications.[208] The damage from the crash of Akera's UAV, although physical, was not caused by a collision with a Mhenian space object. In fact, no Mhenian space object has collided with any Akeran space object in outer space or Akeran aircraft in flight, or crash-landed on any part of Akeran territory. Thus, Mheni is not liable for Akera's damage under international space law.

D. Even if Akera Is Entitled to Damages, These Should Be Reduced.

Even assuming arguendo that Mheni is liable, Akera's negligence contributed to the crash of the UAV. Additionally, Akera is also liable as a joint launching state of the X-12A. Thus, any damages awarded by this Court should be reduced accordingly.

1. Akera's Negligent Construction of Its UAV Contributed to Its Crash.

As previously discussed, Akera may have been negligent in design and construction of its UAV without industry-standard safety technology, thus contributing to its crash.[209] As this Court noted in *Gabčíkovo–Nagymaros Project*, "An injured State which has failed to take the necessary measures to limit the damage sustained [is] not entitled to claim compensation for that damage

[207] *Supra* part I.B.1.
[208] *Supra* part I.B.2.
[209] *Supra* part III.B.2

which could have been avoided."[210] Thus, if this Court determines that Akera's UAV was negligently constructed, any damages awarded should be reduced accordingly.

2. As a Launching State of the X-12A, Akera Is Jointly and Severally Liable for Any Damage Attributable to the X-12A.

A launching state is one "which launches or procures the launch of a space object"[211] or one "from whose territory or facility a space object is launched."[212] This definition applies to all states that participate in a joint launch.[213] Under Article VI of the OST, states are internationally responsible for the space activities of their nationals.[214] Consequently, Akera is a launching state of the X-12A because its corporate nationals are a part of the "international launch services consortium" that launched the satellite.[215] Moreover, the launch took place in the waters of the Langerhans Islands—an area which in Akera's own view is part of its territory.[216] Because Akera is jointly and severally liable for any damage attributable to the X-12A,[217] and because both Akera and Mheni are parties to this case, it is logical for this Court to apportion liability equitably between Akera and Mheni.[218]

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[210] *See Gabčíkovo–Nagymaros Project*, *supra* note 111 para. 80; *accord Yukon Lumber Case*, *supra* note 109 ("[T]he Canadian Government, having been able to avoid the grievance . . . does not seem to be entitled now to hold the United States . . . in any way responsible for it.").
[211] LC art. I(c)(i).
[212] LC art. I(c)(ii).
[213] *See* LC art. V.
[214] OST art. VI; *see also* Bin Cheng, *The Commercial Development of Space: The Need for New Treaties*, 19 J. Space L. 17, 21 (1991).
[215] *Compromis* para. 7.
[216] *See id.* para. 6.
[217] LC art. VI.
[218] Akera and Mheni could then seek recompense from the other states that participated in the launch of the X-12A as part of the "international launch services consortium."

3. As a Launching State, Akera Is Specifically Prohibited from Recovery for the Deaths of Its Two Military Personnel Under the Liability Convention if Attributable to the X-12A.

Even if the deaths of the Akeran military personnel can be attributed to the X-12A, Akera is barred from recovery for such damage under the LC as a launching state. Article VII of the LC states that the convention does not apply to "damage caused by a space object of a launching State" to that launching state's nationals.[219] Thus, Akera should be barred from recovering for the deaths of its military personnel.

[219] LC art. VII(a).

SUBMISSIONS TO THE COURT

For the foregoing reasons, the Government of the Commonwealth of Mheni, Respondent, respectfully requests this Court to adjudge and declare that:

1. Mheni is not liable under international law for any EMI preventing access to the SEANAV signal.

2. Akera violated international law by disabling the X-12A satellite resulting in its destruction.

3. Mheni is not liable to Akera for the loss of the unmanned aerial vehicle, the damage to the military facility, or the deaths of the two Akeran military personnel.