

IN THE MATTER OF
THE CASE CONCERNING
ATMOSPHERIC RE-ENTRY EMISSIONS

THE REPUBLIC OF ARKANIA

v.

THE STATE OF NOVARIS

INSTRUMENT OF DISPUTE

Special Agreement referring the dispute to the International Court of Justice.

The dispute ultimately requires the Court to confront a question arising from a rapidly changing technological environment:

Where a State-authorized private space activity produces measurable atmospheric effects, but the scientific chain connecting those effects to environmental damage on Earth remains uncertain, does international law place the risk of that uncertainty upon the injured State, upon the launching State, or upon neither State until a sufficiently precise causal relationship can be established?

The Court is respectfully requested to determine the dispute in accordance with international law.

STATEMENTS OF FACTS

I. The Parties and their Space Activities

The Republic of Arkania, a developing State of roughly 94 million people, underwent rapid industrialization over the preceding two decades, concentrated along the eastern corridor housing thermal power plants, metal-processing and chemical industries, and large agricultural estates, alongside freshwater ecosystems and culturally significant limestone structures.

The State of Novaris is a technologically advanced, leading spacefaring State with a substantial commercial space sector spanning telecommunications, Earth observation, navigation, and space-based data services.

Both States are parties to the Outer Space Treaty (1967), the Liability Convention (1972) and the Registration Convention (1975), but neither is bound by any bilateral instrument specifically regulating atmospheric emissions from spacecraft re-entry. Novaris's domestic space legislation requires governmental authorization and continuing supervision of private space activities.

II. Astera Orbital Technologies Ltd.

Astera, a Novarisian company incorporated in 2025 and publicly traded, operates telecommunications and Earth-observation satellites. A Novarisian sovereign investment vehicle held approximately 15 per cent of its shares, and the Government retained a "golden share" carrying limited veto rights over national-security matters, though it did not participate in Astera's ordinary commercial management, which was conducted independently by the company's Board. Novarisian law nonetheless empowered the Government to demand technical information and impose safety, security, environmental and disposal conditions on licensees. Astera's principal programme, ORION-7, comprised 74 low-Earth-orbit satellites launched between 2026 and 2029, of which twenty-two reached the end of their commercial lives by early 2032. All twenty-two had been launched from or through Novaris, were registered in its national registry with Astera as owner/operator, and Novaris accepted its status as "launching State" under the Liability Convention for each.

III. The ORION-7 Disposal System

Each satellite, built from aluminium, lithium, copper, iron, titanium and composite materials, was designed for substantially complete atmospheric burn-up on controlled re-entry, leaving at most negligible surviving fragments. Astera's licence required compliance with internationally recognized debris-mitigation practices covering collision avoidance, disposal, orbital lifetime and surviving-fragment probability, but prescribed no numerical limits on re-entry emissions, and Novarisian law did not require a separate atmospheric impact assessment for controlled re-entry. No internationally accepted standard capped the number of spacecrafts permitted to re-enter within a given period.

IV. Emerging Scientific Knowledge

Peer-reviewed studies between 2028 and 2031 established that spacecraft demise introduces metallic particles and combustion products into the upper atmosphere, and some suggested that clusters of re-entries within short periods could alter atmospheric chemistry and affect ozone, though no accepted methodology existed for predicting identifiable regional surface effects. By early 2032 there was broad agreement that re-entry could produce measurable atmospheric deposition, but there was no consensus on magnitude, persistence or geographic significance. In February 2032, an unpublished, cross-institutional technical memorandum concluded that campaigns exceeding fifteen re-entries within fourteen days could, under certain meteorological conditions, cause measurable regional atmospheric perturbations while expressly noting its model was unvalidated and that the link between upper-atmospheric deposition and surface harm remained uncertain and recommended additional monitoring for unusually concentrated campaigns.

V. Knowledge of Astera and Novaris

Astera's Chief Scientific Officer received the February 2032 memorandum, and on 18 March 2032 its Environmental Compliance Officer circulated an internal memorandum describing a "non-zero possibility of cumulative regional atmospheric effects" and recommending a preliminary atmospheric-impact assessment before any concentrated re-entry campaign; the management,

judging the science immature, did not implement this recommendation. Separately, Novaris's Ministry of Space Activities received a similar literature summary in March 2032, which its Directorate of Space Operations judged too preliminary to require a separate regulatory assessment, while its Directorate of Environmental Affairs recommended obtaining further scientific information before approving any concentrated campaign; a recommendation that was likewise not adopted.

VI. The De-Orbit Campaign

In April 2032, Astera's Board weighed two disposal schedules: Option A (all twenty-two satellites de-orbited over roughly thirteen days) against Option B (a gradual six-month disposal costing an additional USD 18 million). Two satellites had degraded attitude-control systems, one carrying an elevated risk of becoming uncontrolled if disposal were delayed, and retaining the fleet longer would increase aggregate collision risk and require continued maneuvering considerations that led engineers to recommend Option A on orbital-safety and efficiency grounds. A director raised the atmospheric literature, to which the CEO characterized the risk as theoretical and unvalidated. The CEO also noted the absence of any international emissions standard, and affirmed compliance with applicable debris-mitigation rules. The Board approved Option A, recording that its decision reflected "orbital safety, mission economics and the presently available scientific evidence."

VII. Novarisian Authorisation

Referring to the February 2032 literature, Astera's application to Novaris's competent authority described a controlled re-entry campaign was designed to minimise surviving fragments, but noted the absence of an accepted methodology for quantifying regional effects. The regulator approved the programme after considering orbital debris, collision risk, uncontrolled re-entry and applicable international standards. There was no separate atmospheric assessment, concluding that the evidence did not establish a sufficiently defined atmospheric risk under then-applicable law. Novaris told Arkania that the satellites would undergo controlled decay during June 2032, without specifying that all twenty-two would re-enter within thirteen days. There was also no disclosure on the February memorandum and Astera's internal environmental memorandum.

VIII. The Re-Entry Campaign

Between 5 and 17 June 2032, all twenty-two satellites re-entered substantially in accordance with approved flight plans, passing over or near Arkanian territory and adjacent waters, with each undergoing substantially complete burn-up and no fragments were recovered. Post-campaign atmospheric modelling confirmed the entry of metallic particles and combustion products into the upper atmosphere, and Arkania's monitoring agency recorded aluminum, lithium, copper, iron and nitrogen-oxide concentrations materially above seasonal baselines over eastern Arkania (with lesser elevations offshore), while meteorological records later showed unusual upper-atmospheric winds carrying material toward eastern Arkania.

IX. Rainfall and Environmental Damage

Roughly forty-eight hours after the final re-entry, eastern Arkania experienced abnormally acidic rainfall affecting agricultural districts, freshwater ecosystems and three municipalities with protected limestone structures, causing damage to tea and vegetable production, declining freshwater fish stocks, and accelerated limestone corrosion. Several of these areas were previously classified as environmentally vulnerable due to pre-existing industrial pollution. No evidence established the re-entries as the sole cause of the acidity, nor that industrial pollution alone would necessarily have produced the observed levels. Arkania estimated USD 127 million in immediate losses, USD 240 million in restoration/monitoring costs, USD 90 million in heritage damage, and USD 65 million in agricultural/fisheries losses.

X. Pre-Existing Industrial Pollution

Eastern Arkania has long suffered elevated sulphur-dioxide and nitrogen-oxide levels from power generation and metal processing, with regional reports repeatedly flagging susceptibility to monsoon-season acid deposition; several major facilities exceeded Arkania's own emissions standards over the preceding fifteen years, and an announced pollution-control upgrade programme remained incomplete by June 2032. Novaris relied on this history to argue that the atmospheric conditions were substantially pre-existing, while Arkania countered that pre-existing pollution did not exclude the ORION-7 emissions from materially increasing the resulting harm.

XI. Scientific Investigations

Arkania's Independent Scientific Assessment Committee, drawing on multidisciplinary experts from Arkania and four foreign universities, concluded that the campaign released measurable metallic and combustion byproducts capable of chemically interacting with existing industrial pollutants. The atmospheric composition departed materially from seasonal norms, and the spatial and temporal correspondence between campaign, deposition and rainfall ORION-7 was, on balance, a material contributing factor to the acidification, while candidly acknowledging Arkania's inability to quantify the precise contribution or to discount the significant concurrent role of industrial pollution. Novaris's own international panel of aerospace engineers, atmospheric scientists, chemists and meteorologists from six states agreed that measurable metallic and combustion products entered the upper atmosphere but concluded that the material dispersed rapidly at altitude. No accepted methodology permitted attributing localized surface acidification to ORION-7 and the rainfall was consistent with long-standing industrial trends, and any ORION-7 contribution was likely negligible in relation to terrestrial sources. Both panels agreed that the pre-2032 literature identified a theoretical, empirically unquantified risk, differing chiefly on the magnitude, persistence, and regional significance of the effects.

XII. The Missing Telemetry

When Arkania sought Astera's detailed telemetry, composition records, atmospheric modelling and internal assessments, Astera withheld some materials as proprietary and stated that telemetry for five satellites was lost in a May 2032 cyberattack of unestablished origin. Novaris maintained this third-party conduct could not itself establish State responsibility, while Arkania argued that Novaris, as the authorizing and supervising State, should have ensured adequate monitoring, preservation and disclosure for a campaign carrying potential environmental risk. Novaris responded that privately held, commercially sensitive data could not automatically evidence State responsibility.

XIII. Corporate Risk Allocation

Astera's space-operations insurance covered physical damage from space objects but excluded claims for "gradual pollution, atmospheric contamination or environmental alteration" absent from direct physical impact. The operating agreement with Novaris required its indemnification for

specified claims without limiting any liability that Novaris might bear under international law. Arkania argued this risk allocation showed the atmospheric effects were sufficiently foreseeable to warrant consideration by both operator and the licensing State. Novaris responded that private contractual arrangements cannot define the content of international obligations.

XIV. Article IX and Environmental Concerns

Arkania contended Article IX of the Outer Space Treaty obliged Novaris to act with due regard to Arkania's interests and to avoid adverse changes to Earth's environment from introduced extraterrestrial matter. This obligation was engaged by the possibility of atmospheric effects from mass-controlled destruction of space objects. Novaris accepted that Article IX addresses harmful contamination and adverse environmental change but disputed its scope in this context, arguing it cannot impose an unlimited duty to investigate every theoretical consequence. Arkania replied that the technologically neutral drafting of Article IX was intended to evolve with space activity.

XV. Environmental Impact Assessment

Arkania argued customary international law required an environmental impact assessment given the foreseeable risk of significant transboundary harm. Novaris disputed this, contending that the environmental impact assessment jurisprudence developed around industrial projects and identifiable transboundary resources cannot be automatically transposed onto novel atmospheric consequences of re-entry. The precise assessment cannot be demanded as an accepted methodology and amid preliminary science. Arkania maintained that the absence of established methodology does not eliminate the underlying due-diligence obligation. Both parties agreed no instrument in force between them in June 2032 expressly required such an assessment.

XVI. The Choice between Competing Risks

Novaris maintained that the thirteen-day schedule reflected genuine orbital-safety concerns particularly the two satellites' degraded attitude control not merely economics, since prolonging disposal by six months would heighten collision, fragmentation and uncontrolled re-entry risk. Arkania did not dispute the orbital risk but argued it could not justify disregarding a separate foreseeable environmental risk without assessing the cumulative consequences, and that the USD 18 million cost differential alone could not justify selecting the atmospherically riskier option.

Novaris responded that international law demands reasonable, proportionate measures, not elimination of all risks.

XVII. Notification and Consultation

Arkania argued Novaris should have disclosed the campaign's scale and timing and consulted on possible environmental effects, invoking cooperation, prevention, due diligence and Article IX. Novaris maintained that it gave reasonable notice of expected orbital decay and that the Treaty imposes no general duty to consult every State beneath a re-entry trajectory in the absence of an established risk of significant transboundary harm. Arkania responded that consultation exists precisely to address such uncertainty.

XVIII. Subsequent Regulatory Amendment

In November 2032, Novaris amended its space legislation to require atmospheric assessment for campaigns exceeding ten re-entries within thirty days, preservation of modelling and telemetry, enhanced monitoring, and notification of potentially affected States facing material transboundary risk changes. Novaris attributed this amendment to technological development and the lessons learnt. Arkania argued the amendment proved the risks were foreseeable and regulable already in 2032. Novaris responded that a later domestic amendment cannot retrospectively create an international obligation that did not then exist.

XIX. Cultural and Environmental Damage

Among the affected structures were three nationally protected limestone monuments, two forming a part of a culturally significant landscape. Novaris disputed the extent of ORION-7's contribution to their corrosion, pointing to decades of prior exposure to acid deposition and industrial pollutants, while Arkania maintained that the additional environmental stress from the campaign constituted compensable damage. Arkania also claimed compensation for ecological impairment, including fish-stock loss and reduced agricultural productivity. Novaris resisted this argument on the ground that the Liability Convention concerns legally cognizable loss of or damage to property and does not automatically render all environmental alteration compensable.

XX. Diplomatic Negotiations

On 4 October 2032, Arkania formally notified Novaris that it held Novaris responsible and liable for damage arising from the ORION-7 campaign. Arkania's position rested on a primary and an alternative theory- principally, that the damage to crops, fisheries, structures and other property occurred on the surface of the Earth and thus fell within Article II of the Liability Convention. The satellites' failure to survive re-entry did not prevent their emissions from constituting damage caused by a space object; alternatively, that the Liability Convention did not exhaust Novaris's obligations, such that Articles VI, VII and IX of the Outer Space Treaty and customary international law continued to apply. On that footing, Arkania contended that Novaris had failed to exercise due diligence, had failed to undertake an adequate environmental assessment, and had failed to provide adequate notice and an opportunity for consultation. Further, the ORION-7 campaign had materially contributed to the environmental damage and the scientific uncertainty could not excuse a failure to take reasonable preventive measures. Arkania was accordingly entitled to compensation and other appropriate reparation.

Novaris rejected these contentions in their entirety. It characterized the Liability Convention as a specialized regime governing liability for damage caused by space objects, and argued that Article II did not apply because the satellites themselves caused no physical damage on the surface and no component survived re-entry. While Article III offered no alternative basis since the dispute did not concern damage elsewhere than on the surface to another space object or to persons or property aboard it and the Convention imposed no absolute liability for the atmospheric process Arkania alleged, and any responsibility would have to be founded instead on the Outer Space Treaty or general international law. Novaris further maintained that Astera's operational decisions were not automatically attributable to it. Novaris further maintained that it had exercised reasonable authorization and supervision, and no accepted international standard required the atmospheric assessment Arkania proposed. It disputed that the scientific evidence established a sufficiently direct and certain causal nexus between ORION-7 and the damage, pointed to Arkania's own industrial pollution as a substantial concurrent cause, and argued that the amount of damage attributable to ORION-7 could not be established with sufficient certainty. Diplomatic negotiations between the Parties subsequently failed to resolve the dispute.

XXI. The Special Agreement

Having failed to reach a negotiated resolution, Arkania and Novaris concluded a Special Agreement on 18 January 2033, jointly submitting their dispute to the International Court of Justice pursuant to Article 40(1) of the Court's Statute. The Agreement's structure reflects the Parties' shared recognition that the controversy could not be resolved through any single treaty regime in isolation, and that the Court would need to navigate the interaction between a specialised liability instrument, a foundational framework treaty, the Registration Convention, insofar as relevant to the factual identification of the launching State, and the residual body of general international law.

Article 1 frames the dispute broadly, as one "concerning the legal consequences arising from the controlled re-entry of the ORION-7 satellites and the atmospheric, environmental and terrestrial effects alleged by the Republic of Arkania." This formulation is deliberately capacious: it does not confine the Court to a single cause of action, and it does not itself characterize the alleged effects as "damage" within the meaning of any particular instrument, leaving that characterization and its legal consequences for the Court to determine. The reference to "atmospheric, environmental and terrestrial effects" tracks the layered causal chain at the heart of the case, emissions in the upper atmosphere, chemical interaction with pre-existing pollutants, and alleged harm at the Earth's surface.

Article 2 poses the central question the Court is asked to resolve: whether Novaris bears international "responsibility and/or liability" for the damage Arkania alleges. The disjunctive phrasing is significant, since it preserves both of Arkania's pleaded theories liability under the *lex specialis* of the Liability Convention, and responsibility under the general law of State responsibility for breach of obligations arising under the Outer Space Treaty and customary international law without prejudging which, if either, applies on the facts.

Article 3 instructs the Court to determine the legal consequences arising, "to the extent necessary," under four distinct bodies of law- the Liability Convention, the Outer Space Treaty, and the general law of State responsibility together with applicable rules of international environmental law. The inclusion of the Registration Convention is notable, since registration provides relevant factual and documentary context concerning the space objects and the identity of the launching State, even though Novaris does not dispute that status in this case. The qualifying phrase "to the extent

necessary" signals that the Parties anticipated the Court might resolve the dispute primarily under one regime without needing to reach findings under the others, while nonetheless preserving the full range of applicable law for the Court's consideration.

Article 4 is a standard non-prejudice clause, providing that nothing in the Special Agreement constitutes an admission by either Party as to the existence, extent, attribution or causation of the alleged environmental damage. This provision ensures that the Parties' mutual consent to jurisdiction, and their joint characterization of the dispute in Articles 1 through 3, cannot be read back against either side on the contested factual and scientific questions that remain squarely before the Court including, centrally, whether the ORION-7 campaign caused or materially contributed to the rainfall acidification and its downstream consequences.

Article 5 similarly reserves the Parties' rights concerning the interpretation and application of the treaty provisions identified in Article 3, together with the applicable rules of customary international law. Read together with Article 4, this confirms that the Special Agreement is purely jurisdictional and procedural in character: it establishes the Court's competence and delimits the scope of the questions referred but takes no position express or implied on the substantive merits of either Party's case.

XXII. Submissions of the Republic of Arkania

Arkania's final submissions proceed from a foundational contention that the atmospheric and terrestrial consequences of the ORION-7 campaign constitute cognizable "damage" within the meaning of the Liability Convention, and that such damage is properly characterized as having occurred on the surface of the Earth for purposes of Article II notwithstanding the satellites' substantially complete atmospheric incineration. On this construction, Arkania submits that Novaris incurs absolute liability under Article II; in the alternative, and without prejudice to the foregoing, it submits that the Liability Convention is not a self-contained or exhaustive regime, such that Novaris remains subject to concurrent obligations under the Outer Space Treaty and general customary international law.

Building on this alternative footing, Arkania contends that Novaris contravened Article VI of the Outer Space Treaty by failing to discharge its duties of authorization and continuing supervision over Astera's national activities and correspondingly failed to exhibit due regard for Arkania's

corresponding interests or to adopt appropriate measures against adverse changes to the terrestrial environment. Arkania characterizes this as a broader failure of due diligence, manifested in Novaris's omission to conduct an environmental assessment of the cumulative atmospheric consequences of a concentrated re-entry campaign and in its failure to notify or consult with Arkania beforehand. It maintains, further, that prevailing scientific indeterminacy did not extinguish Novaris's antecedent obligation to investigate and to adopt reasonably precautionary measures.

On causation, Arkania submits that the ORION-7 campaign constituted a material contributing factor to the atmospheric and terrestrial harm sustained, and that the pre-existing burden of industrial pollution in eastern Arkania does not sever or dilute the causal nexus attaching to the incremental harm occasioned by the campaign. It contends that the evidentiary record, though incapable of yielding a scientifically precise apportionment of contribution, is nonetheless sufficient to establish a legally cognizable causal connection, and that environmental damage together with the impairment of environmental goods and ecosystem services is properly compensable as a matter of international law. On this basis, Arkania requests the Court to adjudge that it is entitled to appropriate compensation and to such further or other relief as the Court considers just.

XXIII. Submissions of the State of Novaris

Novaris's submissions rest principally on a restrictive construction of the Liability Convention's scope. It submits that the Convention cannot be read to impose absolute liability for indirect atmospheric effects that manifest only after the substantially complete combustion of a space object, and that Article II cannot properly be extended to atmospheric-chemical processes merely because their downstream consequences subsequently materialize as surface damage. It further submits that Article III affords no alternative basis of liability on the facts of the present case, though it accepts that the Convention does not itself preclude the Court's consideration of other applicable rules of international law while maintaining that those rules, properly applied to the evidence adduced, do not establish liability. Novaris additionally submits that Astera's independent corporate conduct cannot be automatically attributed to the State, and that it duly fulfilled its obligations of authorization and continuing supervision under Article VI of the Outer Space Treaty.

Novaris further contends that it exercised due regard for the interests of other States and adopted measures that were reasonable in light of the scientific and operational information reasonably available in June 2032, and that no sufficiently crystallized rule of customary international law obliged it to undertake the particular atmospheric environmental assessment Arkania proposes. It submits, moreover, that a precautionary approach cannot operate as a substitute for proof of an antecedent legal obligation or of an established causal connection, and that the thirteen-day disposal schedule represented a reasonable and proportionate accommodation of competing orbital-safety and environmental considerations.

On causation and quantum, Novaris submits that Arkania has failed to establish a sufficiently direct and certain causal nexus between the ORION-7 campaign and the alleged surface-level damage, and that Arkania's own longstanding industrial pollution constituted a substantial concurrent if not predominant cause of the observed acidification. It contends that the available scientific evidence does not permit the Court to determine ORION-7's contribution with the requisite degree of certainty, and that the environmental, agricultural, fisheries and cultural losses Arkania attributes to the campaign have not been substantiated to the requisite evidentiary standard. Novaris accordingly requests that the Court dismiss Arkania's claims for compensation and all other relief sought.

XXIV – ISSUES FOR ADJUDICATION

1. Issue I - Liability under the Liability Convention

Whether the atmospheric contamination, acidification, and consequent property and environmental harm alleged by Arkania, despite no physical component of ORION-7 reaching the Earth's surface, constitutes "damage" caused by a "space object" under Articles I and II of the Liability Convention, read in light of Article VII of the Outer Space Treaty and Article VI of the Liability Convention.

2. Issue II - State Responsibility for Private Space Activity

Whether Novaris discharged its obligation under Article VI of the Outer Space Treaty to authorize and continuously supervise the activities of Astera Orbital Technologies Ltd., such that Astera's conduct or Novaris's own regulatory approval and omissions, gives rise to international responsibility, and whether Article III of the Outer Space Treaty operates to engage the applicable rules of general international law.

3. Issue III - Environmental Due Diligence

Whether, in light of the scientific information reasonably available before June 2032, Novaris was required to undertake or mandate an environmental impact assessment or other preventive measures for the concentrated ORION-7 campaign — assessed against the applicability of Article IX of the Outer Space Treaty (including the significance of its reference to "extraterrestrial matter") to the alleged atmospheric effects, and against the customary obligations of prevention, due diligence, precaution, notification, and consultation that were thereby engaged.

4. Issue IV - Causation and Reparation

Whether the evidence establishes a legally sufficient causal connection between ORION-7 and the alleged acidified rainfall and resulting damage, notwithstanding pre-existing industrial pollution, scientific uncertainty and gaps in telemetry; and, if Novaris is found responsible or liable, what form and extent of reparation is appropriate, including compensation, restoration, monitoring and remediation.

XXV. CLARIFICATIONS

- Arkania and Novaris are fictional States created solely for the purposes of this Competition.
- Astera Orbital Technologies Ltd. is a fictional corporation.
- All scientific reports, technical memoranda, and governmental documents expressly created for the purposes of this Proposition shall be treated as authentic.
- The scientific conclusions stated in the Annexes constitute the evidentiary record before the Court. Teams may contest the legal significance, weight, and interpretation of the evidence but shall not introduce scientific facts inconsistent with the Proposition.
- The Parties shall assume that the Outer Space Treaty, Liability Convention and Registration Convention were binding upon both Parties throughout the material period.
- The Parties shall assume that no other treaty specifically governing atmospheric emissions from spacecraft re-entry was applicable between them during the relevant period.
- The Parties may rely upon customary international law and the general law of State responsibility insofar as such rules are applicable and consistent with the Special Agreement.

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- The Parties may rely upon decisions of the International Court of Justice and other international courts and tribunals as subsidiary means for the determination of rules of international law, subject to the Competition Rules.
- The Parties may rely upon relevant academic writings, United Nations materials, international space-law instruments and scientific literature, subject to the Competition Rules.
- The subsequent amendment to Novarian law shall not by itself determine the content of international law applicable in June 2032.
- Nothing in this Proposition shall be interpreted as indicating the position of the International Court of Justice on any question of fact or law.
- Unless otherwise provided by the Competition Rules, the Court shall determine both the applicable law and the legal consequences arising from its application.

