

INTERNATIONAL INSTITUTE OF SPACE LAW
OF THE INTERNATIONAL ASTRONAUTICAL FEDERATION

INSTITUT INTERNATIONAL DE DROIT SPATIAL
DE LA FEDERATION ASTRONAUTIQUE INTERNATIONALE

THE 2005 MANFRED LACHS SPACE LAW MOOT COURT COMPETITION

INTERNATIONAL COURT OF JUSTICE

SPECIAL AGREEMENT

BETWEEN

DELTASTAN
(APPLICANT)

AND

GAMMALAND
(RESPONDENT)

JOINTLY NOTIFIED TO THE COURT ON 22 NOVEMBER 2004

COUR INTERNATIONALE DE JUSTICE

COMPROMIS

ENTRE

DELTASTAN
(REQUÉRANT)

ET

GAMMALAND
(RÉPONDANT)

NOTIFIÉ CONJOINTEMENT À LA COUR LE 22 NOVEMBRE 2004

CASE CONCERNING INTERNATIONAL LIABILITY

Deltastan v Gammaland

STATEMENT OF FACTS

1. The National Agency of Space (“NAS”) and the Ministry of Defense (“MOD”) of Deltastan funded the development of the “Space Elevator” project. The basic concept of the Space Elevator project was to develop sufficiently long nanotubes of pure carbon to create a lightweight carbon tether of sufficient length and strength to allow a space station to be anchored to the earth’s surface. A crawler (known as the “Golden Orb” for its actual, not virtual, web crawling abilities) was developed to climb the tether and reinforce the tether by creating a very narrow (only a few nanotubes thick) but fairly wide (several millimeters) ribbon (the “Super String”). NAS also developed the crawler power system, communications system and the space and earth anchors.
2. Deployment of the Space Elevator components was initiated soon after funding was secured and commercial operations were turned over to a government-chartered company, the Space Elevator Corporation.
3. Construction of the Space Elevator began with the launch of the Alpha Station: a space station with propulsion communications and a payload consisting of a reel of Super String attached to a drogue. Alpha station was launched by a conventional expendable launch vehicle from Deltastan into a geostationary orbital location over the middle of the Maric Ocean. Alpha Station deployed a very large solar array that provided electrical power. Alpha Station then reeled out the Super String attached to a drogue that had its own propulsion system to decelerate as it was lowered. As the drogue was reeled out on the Super String, the increased forces of attraction from Earth’s gravity on the decelerating drogue were balanced by increasing the altitude and velocity of Alpha Station. Careful balance of these forces maintained the geostationary location and the center of mass in the geostationary orbit of the entire structure.
4. The drogue was captured and attached to the Sea Anchor: a semi-submersible self-propelled oil-drilling platform that was stationed in the middle of the Maric Ocean at approximately the same latitude and longitude of the Alpha Station, some 10,000 kilometers west of Deltastan. Sea Anchor was temporally anchored to the ocean floor (but is movable).
5. The Golden Orb traversed up and down the Super String to reinforce and strengthen the tether. Power for the Golden Orb was provided by laser systems on both Alpha Station (with a solar generator) and from Sea Anchor (using conventional electrical generating system). Additional Super Strings then were connected between Sea Anchor and Alpha Station to improve its strength.
6. Space Elevator then began providing commercial transportation services for civilian customers and for the Deltastan MOD. Artificial Earth Satellites were transported by Golden Orbs to various altitudes and released into low earth orbits, medium earth orbits and geostationary orbits.
7. Simultaneously with the commercial development of Space Elevator, Alpha Station was replaced by Drachen Station. Drachen Station was transported up the Super String a piece at a time and when assembled at the end of the Super String was a human-rated station with ‘return to Earth capabilities’. When Drachen Station was completed, Alpha Station was untethered and was sent on trajectory toward the sun.
8. Drachen Station was then manned by civilian employees of the Space Elevator Corporation who were reserve officers of Deltastan’s armed forces. Drachen Station’s laser power system was then secretly upgraded to double as a laser weapons system and as a power source for the Golden Orbs that were crawling up and down the Super Strings. Powerful radar tracking and targeting systems also were added to Drachen Station. Drachen Station became a fully capable mid-course interceptor system for missile defense.

9. Gammaland is a new space faring nation and is not an ally of Deltastan. Both countries are located on the equator but are separated by more than 10,000 kilometers by the Maric Ocean. Gammaland opposed the development of Space Elevator on the grounds that Space Elevator would harm its domestic launch services industry and because it feared that the Space Elevator could be used as an element of a missile defense system that could reduce the deterrence effectiveness of Gammaland's small but growing intercontinental ballistic missile system.
10. Gammaland devoted significant intelligence resources to monitor the development of Space Elevator. Although Deltastan declared a 200-kilometer defensive zone around Sea Anchor, Gammaland vessels and aircraft regularly made incursions into the defensive zone.
11. Gammaland also initiated a secret program for the development and launch of a stealthy "Inspector" satellite that could be used to monitor payloads being transported by Space Elevator. The Inspector was secretly launched as a dual payload with a communications satellite (GammaSat II) and placed into geostationary orbit over Gammaland. Inspector was stationed at a location near where the Space Elevator Super Strings passed through the geostationary orbital arc. Inspector relayed data by a new line of sight intersatellite laser link to GammaSat II.
12. Drachen Station detected the movement of Inspector soon after its deployment from its launch vehicle and tracked Inspector to its position near the Super Strings. Visual inspection of the GammaSat II and Inspector from Earth confirmed the existence of laser "antennas" that appeared to be designed and pointed for an intersatellite link between Inspector and GammaSat II.
13. The close proximity of Inspector to the Space Elevator was considered by Deltastan to be threatening and a cause of concern for the safety of Space Elevator and her personnel. However, the Deltastan Ministry of Defense decided that they would like to have a closer look at Inspector before confronting Gammaland because the Inspector was a significant leap in technology development for Gammaland of which Deltastan had not been aware.
14. Space Elevator then suffered a series of operational accidents that caused Deltastan to convene an Investigation Board to ensure that it was safe for continued manned operation. All activities except supply of Drachen Station were suspended during the investigation.
15. During the investigation, Deltastan constructed a special payload to gather intelligence about Inspector. As the investigation drew to a close, the press reported that the first payload to be transported by Space Elevator after clearance by the Investigation Board would be super-secret black nanosatellite program that would operate in a new artificial intelligence network. Mike Frighton, a famous Science Fiction author with numerous books dealing with nanotechnology, was interviewed by the press for comments on the nanosatellites. Deltastan's MOD vigorously denied the existence of any such program.
16. Gammaland Ministry of Defense decided that a close look at Deltastan's newest payload was warranted. While a closer proximity of Inspector to the Super String might increase the possibility of detection of Inspector, the potential intelligence reward appeared to justify that risk. Inspector was moved to within several kilometers of the Super String and waited for the payload to pass through the geostationary arc where it could be observed in some detail.
17. Upon resumption of service, the Golden Orb ascended with its payload slowly making its way to Drachen. However, at the point closest to the Inspector it stopped. Deltastan announced that there had been a failure of the Golden Orb and that efforts were underway to effect repairs. A Golden Orb with a repair module was dispatched for rescue.
18. In the meantime, sensors were collecting data about Inspector. Photographic evidence of Inspector was obtained as well as other data. Deltastan confronted Gammaland with evidence of the Inspector and its proximity to the Space Elevator and demanded that Inspector be moved at least 1,000 kilometers away from Space Elevator.

19. After vigorous protests, threats and counter-threats, Gammaland informed Deltastan that Inspector would be moved to a position not less than 1,000 kilometers from the Space Elevator. The Inspector was then commanded to reposition. The propulsion system was fully engaged to reposition quickly, all the while being monitored by Deltastan. The spectrographic analysis of the propulsion ignition revealed a new means of propulsion.
20. After the repositioning of Inspector, a storm developed in the Maric Ocean. Forecasts indicated high winds and large swells would develop at the location of Sea Anchor. The repositioning of Sea Anchor and Drachen was initiated and Drachen Station was put on defensive alert as a precaution.
21. In the midst of the maneuver a cascade failure of the Super Strings occurred that resulted in the severance of the Super Strings. On Drachen Station those events were interpreted as an attack on the Space Elevator. The laser weapons system executed a series of preprogrammed firings on all spacecraft that had been identified by the weapon systems as potential foes. Inspector was the first spacecraft destroyed followed by GammaSat II, another geostationary satellite located over Gammaland, and four LEO earth observation satellites (two military spy satellites and two civilian weather satellites) in near polar orbits, (two of which were in orbits that passed over Deltastan but two of which were in orbits which did not pass over Deltastan or come within 10,000 kilometers of the Space Elevator). All of the destroyed spacecraft belonged to Gammaland.
22. Drachen Station then began an emergency crew rescue sequence. Within seconds, Drachen Station was reduced to a crew return vehicle, and began a series of maneuvers to decelerate, reenter the Earth's atmosphere and return to the Earth's surface. However, Drachen Station was unable to execute the vehicle return sequence. A landing in Deltastan or in any other country friendly to Deltastan could not be accomplished and that the only choice was an emergency landing in Gammaland. Drachen was immediately seized by the armed forces of Gammaland and the crew was arrested and incarcerated. Gammaland then began a systematic disassembly and analysis of Drachen and its equipment.
23. Deltastan fighter aircraft then forced all Gammaland aircraft in the area of Sea Anchor to land immediately on territory of a country allied with Deltastan or be shot down. Three aircraft were grounded, the aircraft seized and the crews put under arrest.
24. Twenty-three thousand miles of Super String then began to reenter the atmosphere. Some larger segments fell harmlessly into the sea, other segments began an acceleration through space towards earth and burned up on reentry into the atmosphere. Other segments of Super String disintegrated into various lengths of nano-fiber and floated to the earth, primarily in Gammaland but some in the territorial waters of Deltastan.
25. While both countries were immediately on a war footing, cool heads prevailed and no further actions were initiated. Deltastan demanded that Gammaland return Drachen and her crew. Gammaland refused to return the Drachen crew because they were criminals who had destroyed Gammaland property and had landed in Gammaland without authorization. Gammaland also demanded that Deltastan compensate Gammaland for the destroyed satellites. Finally, Gammaland demanded that Deltastan return Gammaland aircraft and their crews. Deltastan responded that the Gammaland aircraft and crews were being held as prisoners of war and that Gammaland had attacked and destroyed Space Elevator without warning. Deltastan accused Gammaland of violating the UN Charter by waging aggressive war against Gammaland and demanded that Gammaland reimburse Deltastan for the damage of the Space Elevator. Gammaland responded that Deltastan was guilty of aggression against Gammaland in violation of the United Nations charter and that Deltastan should reimburse Gammaland for the environmental and health damage caused by the pollution of Gammaland with carbon nano-fibers. Deltastan countered with demands for environmental damage to Deltastan fisheries.
26. After protracted negotiations, Deltastan and Gammaland agreed that an independent investigative Commission would be chosen to investigate what had happened and that the Commission's results

would be accepted by both countries. If there were any remaining legal issues that could not be resolved by negotiation after the results of the Commission were released, those issues would be submitted to the International Court of Justice for resolution. The Drachen crew was returned to Deltastan but Gammaland refused to return the Drachen on the basis that it was an aggressive weapons system and Gammaland had no obligation to return it. The Gammaland aircraft and their crews were returned to Gammaland unharmed.

27. In a unanimous opinion, the Commission determined that the most likely failure of the Super Strings that initiated the incident was a decomposition of the carbon nanotubes and the decomposition of ribbon adhesive connecting the nanotubes, both caused by the propulsion exhaust of the Inspector spacecraft. Inspector used a newly invented bipropellant that left a highly reactive stream of molecules in orbit whenever the Inspector was maneuvered. When maneuvering quickly away from the Space Elevator, the trajectory chosen by Inspector resulted in a stream of propulsion molecules that collided with the Super String. Laboratory analysis demonstrated that the propellant had a corrosive effect on both the nanotube carbon lattice and the adhesive quality of the material that was used to connect the nanotube fibers. The largest amount of damage was caused within a few minutes of the maneuver of Inspector but additional damage was caused each time a stream of propulsion molecules completed another orbit and collided with Super String.
28. Following the issuance of the findings of the Commission, Deltastan demanded full compensation from Gammaland for damage to the Space Elevator caused by the Inspector propulsion exhaust, for environmental damage to the geostationary orbit caused by the Inspector propulsion exhaust, and for return of Drachen. Gammaland counter demanded for a declaration that the stationing of the laser weapons system on Drachen was in violation of international law and requested full compensation from Deltastan for damage to its satellites and for environmental damage caused by the carbon nanotube fibers.
29. Deltastan and Gammaland have agreed that the issues of the legality of the weapons system on Drachen and the contamination of the geostationary orbit shall not be issues considered in this proceeding. Both Parties also have agreed that issues related to the forced landing of Gammaland aircraft return of the crews (both the crew of Gammaland aircraft the crew of Drachen Station) and have been resolved and shall not be adjudicated.
30. Both Parties have agreed to refer the case to the International Court of Justice ("ICJ") and have jointly stipulated the facts published in this Special Agreement.
31. Both Deltastan and Gammaland have ratified the Outer Space Treaty, the Agreement on the Rescue and Return of Astronauts, the Liability Convention, and the Registration Convention. Neither Deltastan nor Gammaland have signed or ratified the Moon Agreement and Deltastan does not recognize the Moon Agreement as being part of international law.
32. Alpha Station was registered by Deltastan in accordance with the Registration Convention and lists Deltastan as the State of Registry.
33. Neither Drachen Station nor any other part of Space Elevator was registered by Deltastan in accordance with the Registration Convention.
34. Inspector was not registered by Gammaland in accordance with the Registration Convention.

ISSUES

The ICJ has determined that any issues of the amount of damage shall be deferred until after the Court decides the liability issues. Briefs and arguments should not speculate nor comment on the amount of damages.

The following issues are reserved for briefing and argument to the Court under the agreed Special Agreement. There are no issues of jurisdiction or standing, and briefs and arguments with regard to the issues or remedies are to be confined solely to legal issues, not issues of fact.

1. Whether Gammaland is liable under international law for:
 - (a) damage to the Space Elevator, and
 - (b) to return the Drachen spacecraft and for damages to the Drachen caused by Gammaland;
 - (c) for damage to Deltastan fisheries.
2. Whether Deltastan is liable under international law for:
 - (a) damage to the Gammaland satellites, and
 - (b) the cost of Gammaland clean-up and environmental damage to Gammaland.

ADDITIONAL FACTS

35. The Sea Anchor and its “defensive zone” is located in the Maric Ocean entirely in international waters and Gammaland is located 10,000km southwest of Deltastan, about 5,000km south of the Sea Anchor. The defensive zone declared by Deltastan around the Sea Anchor included both sea space and airspace.
36. Deltastan was aware that the molecules from the exhaust of the Inspector propulsion system could have impacted the Super String. During the events described in Paragraphs 21 and 22, Drachen Station destroyed the Inspector, GammaSat II and the following satellites:
 - (a) GammaEOS II, a military spy satellite in a near polar orbit that does not pass over Deltastan or come within 10,000km of the Space Elevator;
 - (b) GammaEOS IV, a military spy satellite in a near polar orbit that pass over Deltastan;
 - (c) GamMetSat I, a civilian weather satellite in a near polar orbit that does not pass over Deltastan or come within 10,000km of the Space Elevator; and
 - (d) GamMetSat III, a civilian weather satellite in a near polar orbit that pass over Deltastan.
37. The laser weapon system was destroyed by the crew during the descent but remained aboard the crew return vehicle.
38. The Commission referred to in Paragraph 27 considered the possible effect of the repositioning of the Sea Anchor and Drachen Station before rendering its opinion.
39. Both States agree that, while the legality of the weapon system is not to be questioned, the legal effects of its automatic operation as referred to in Paragraph 21 are not excluded.
40. The five satellites (other than Inspector) of Gammaland that were destroyed by Drachen Station were all launched by Gammaland and registered with accordance with the Registration Convention.
41. Both States are members of the United Nations, are parties to the Convention on the Law of the Sea and the Vienna Convention on the Law of Treaties and are members of the International Telecommunication Union.