Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of	)	
	)	
Flexibility for Delivery of Communications by Mobile Satellite Service Providers in the 2 GHz Band, the L-Band, and the 1.6/2.4 GHz Band	)	IB Docket No. 01-185
	)	
Amendment of Section 2.106 of the Commission's Rules to Allocate Spectrum at 2 GHz for Use by the Mobile Satellite Service	)	ET Docket No. 95-18

SKYTOWER, INC.'S COMMENTS

Marvin Rosenberg
Jonathan Epstein
Holland & Knight LLP
2099 Pennsylvania Avenue, N.W.
Suite 100
Washington, D.C. 20006
(202) 955-3000
Counsel for SkyTower, Inc.

October 22, 2001

Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of	)	
	)	
Flexibility for Delivery of Communications by Mobile Satellite Service Providers in the 2 GHz Band, the L-Band, and the 1.6/2.4 GHz Band	)	IB Docket No. 01-185
	)	
Amendment of Section 2.106 of the Commission's Rules to Allocate Spectrum at 2 GHz for Use by the Mobile Satellite Service	)	ET Docket No. 95-18

SKYTOWER, INC.'S COMMENTS

SkyTower, Inc. ("SkyTower"), by its counsel, submits the following comments in response to the above captioned Notice of Proposed Rulemaking (the "*Flexibility NPRM*"). SkyTower supports both the concept of allowing mobile satellite service ("MSS") providers to augment their systems with towers and High Altitude Platforms (HAPS), and the broader Commission initiative to allow flexible delivery of communication services. Through these steps the Commission will encourage new technologies, maximize efficient use of spectrum, and promote technologies that can serve rural and underserved areas.

PRELIMINARY STATEMENT

In this proceeding, the Commission continues to examine how it may permit more flexible use of spectrum. The Commission recognizes that new issues

are raised by cutting across the different licensing regimes established for satellite and terrestrial services.

The Commission initiated this proceeding because of proposals filed by New Ico Global Communications (Holdings) Ltd. ("ICO") And Motient Services, Inc. ("MOTIENT"). Each of the proponents is primarily interested in MSS as ICO has an authorization in the 2 GHz band and MOTIENT has an authorization in the L band. ICO and MOTIENT both contend that, in order for the MSS service to build a customer base in urban areas, it must combine the satellite service with a terrestrial service.

ICO asserts that it could supplement its MSS service with terrestrial base stations placed in areas where satellite only coverage is inadequate and base stations could be located on towers, roof tops or High Altitude Long Endurance (HALE) platforms. However, the Commission raises a number of issues regarding how and by whom terrestrial service could be made available to supplement MSS.

While SkyTower will not comment on many of the questions presented, SkyTower's interest is to inform the Commission that the implementation of the SkyTower technology will enable terrestrial service to be available in connection with MSS systems. SkyTower is a company that intends to launch stratospheric platforms for telecommunications uses. Using technology developed by its parent company, AeroVironment Inc., NASA, and others, SkyTower expects to provide telecommunications companies with a versatile and cost-effective platform for a wide-range of telecommunications services. The SkyTower platform is an

unmanned, solar-electric aircraft that can remain stationary over a region at high-altitudes for up to six-months or longer, carrying a payload for telecommunications services such as direct broadcast, fixed-broadband applications, and third generation mobile applications. The SkyTower platform itself recently set new high-altitude flight records and received substantial press coverage. *See* attached article and letter.

COMMENTS

SkyTower supports the Commission's initiative to promote flexible delivery of communication services by service providers using a variety of delivery platforms and technologies, including HAPS. This policy encourages new technologies, maximizes efficient use of spectrum, and promotes technologies that can serve rural and underserved areas. While recognizing that augmentation of satellite services with terrestrial/HAPS pose technical interference questions that must be addressed,[1] SkyTower supports in concept the proposals of ICO and MOTIENT to enhance their MSS sytems with terrestrial/HAPS platforms.

[1] As discussed below, augmentation of satellite service with HAPS may present fewer interference issues than with towers.

A. The Commission's Policy Reflects the Fading Distinction Between Various Services and Means of Delivery

The Commission's flexible delivery policy continues to grow in importance as technologies and services converge. Digitization and new wireless technologies and processing techniques are already blurring the distinction between services that provide wireless voice telephony, data, and even broadcast services. For example, PCS and other wireless telephone providers are offering internet and e-mail services, and Direct Broadcast Satellite providers are beginning to offer internet, e-mail, and interactive services. With sophisticated networks, operators are using a variety of means for delivery and backhaul of information.

Recently, the Commission has shown considerable flexibility in allowing services to use a variety of platforms. For example, the Commission granted initial approval for Sirius Satellite Radio and XM Radio to augment their signals with terrestrial transmitters.[2] The Commission's recent order waiving certain technical requirements to allow Space Data Corporation ("Space Data") to operate its expendable balloon-based HAPS system in the narrowband PCS service, provides another example where the Commission has accommodated a new delivery platform in an existing service.[3]

---

[2] *See Sirius Satellite Radio, Inc., Application for Special Temporary Authority to Operate Satellite Digital Audio Radio Service Complementary Terrestrial Repeaters*, Order and Authorization, DA 01-2171 (Adopted Sept. 17, 2001); *XM Radio, Application for Special Temporary Authority to Operate Satellite Digital Audio Radio Service Complementary Terrestrial Repeaters*, Order and Authorization, DA 01-2172 (Adopted Sept. 17, 2001).

[3] *See Petition for Declaratory Ruling, a Clarification or, in the Alternative, a Waiver of Certain Narrowband Personal Communications Services (PCS) Rules as they Apply to a High-Altitude*

Allowing MSS systems flexibility in the choice of platforms (methods of delivery) can only serve to enhance MSS and should be encouraged.

2. The Commission's Policy Will Encourage New Technologies and Maximize Effective Use of Spectrum

The Commission's flexibility policy will encourage companies to invest in new technologies that can bring benefits to the public, particularly in rural and underserved areas. Requiring new technologies to be segregated into new separate services has not always served the public interest. Often attempts to create new services fail, delaying the introduction of the technology and sometimes allowing valuable spectrum to lie fallow. Examples of such failures include not only satellite systems, but terrestrial, and even HAPS services.[4]

Allowing satellite service providers such as ICO and MOTIENT to augment their systems, benefits not only the technologies developed by these applicants, but may also foster newer technologies, such as HAPS.

SkyTower believes that new technologies, such as HAPS, can best serve the public interest by augmenting or complementing existing authorized services, with HAPS in particular being viewed as multi-purpose platforms. In the case of HAPS, future deployment may likely take the form of collaborative efforts with existing

---

Balloon-Based Communications System, Memorandum Opinion and Order, DA 01-2132, (Adopted Sept. 11, 2001) (hereinafter "*PCS Waiver Order*").

[4] For example, in the late 1990s Sky Station International, Inc. attempted to establish a separate HAPS service in the 47 GHz band using unmanned, high-altitude, lighter-than-air platforms. *See Amendment to Part 27 of the Commission's Rules to Revise Rules for Services in the 2.3 GHz Band and to include Licensing of Services in the 47 GHz band*, Order, ¶ 2, FCC 00-415 (Released Dec. 8, 2000) (hereinafter *47 GHZ proceeding*).

service providers, such as that proposed by ICO in this proceeding. *See Flexibility NPRM* ¶ 10. Alternatively, a HAPS operator could acquire licenses from an existing operator to deliver services in an already authorized service, such as Space Data proposes for Narrowband PCS. *See PCS Waiver Order*. A third option would be some form of leasing, franchising, or joint operating agreement supported by the Commission's policies on promoting efficient spectrum use.[5]

While use of multiple types of platforms for delivery of service does raise new interference issues, these may be minimized. For example, ICO as the licensee is the primary party concerned with co-channel intereference and presumably will design its system to be integrated with terrestrial/HAPs platforms. Using HAPS also avoids potential interference problems proximate to tower sites and provides flexibility in positioning and repositioning platforms. For example, Space Data was able to adequately address interference issues related to its use of HAPS as a means of delivering Narrowband PCS service.[6]

Hence, the Commission's flexible delivery policy will encourage development and deployment not only of MSS and other satellite systems, but also new technologies such as HAPS, which, individually or together, may provide unique technological solutions for service providers to provide cost-effective service to rural and underserved areas.

---

[5] *See Principles for Promoting the Efficient Use of Spectrum by Encouraging Development of Secondary Markets,* Policy Statement, FCC-00-401, 22 C.R. 791 (Adopted Nov. 9, 200) (hereinafter "*Policy Statement*").

[6] In the *PCS Waiver Order*, the FCC notes that Space Data would not cause co-channel interference because it will presumably be the exclusive licensee on the channels on which it operates; further

CONCLUSION

SkyTower requests the Commission take these comments under advisement in its decision making process in this proceeding.

Respectfully submitted,

/s/ Jonathan Epstein
Marvin Rosenberg
Jonathan Epstein
Holland & Knight LLP
2099 Pennsylvania Avenue, N.W.
Suite 100
Washington, D.C. 20006
(202) 955-3000

Counsel for SkyTower, Inc.

October 22, 2001

---

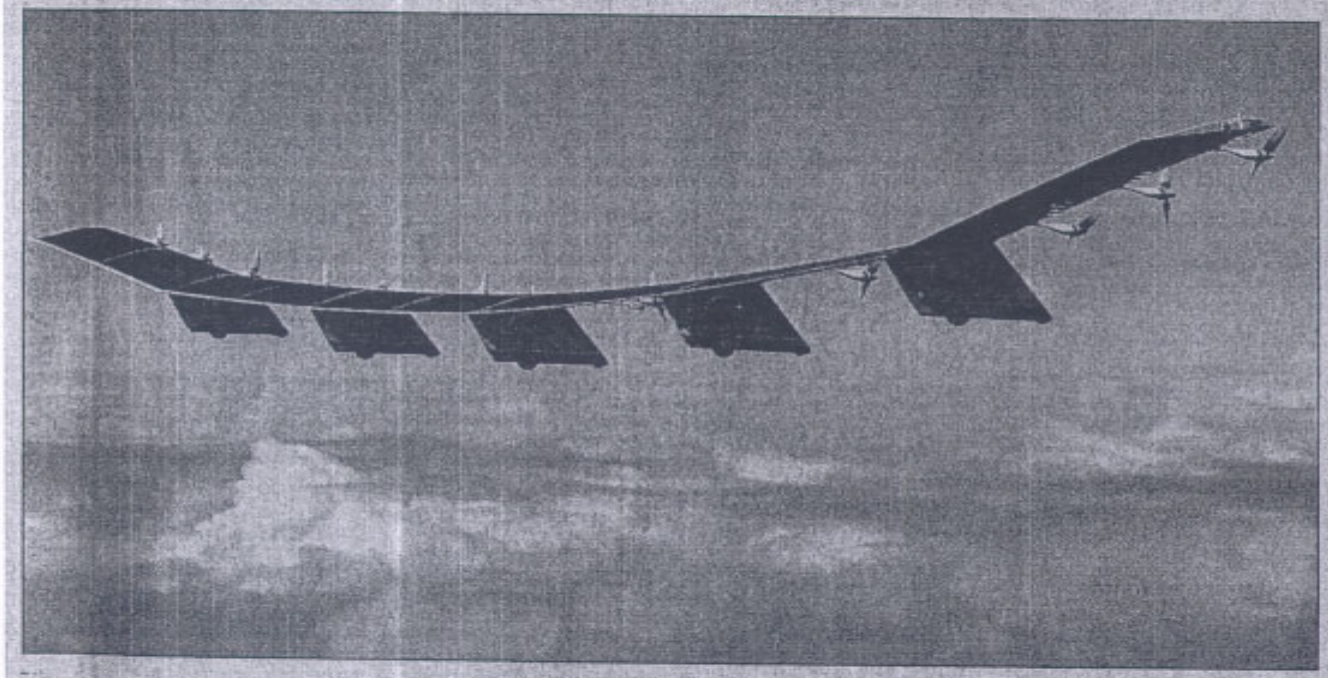
that it had adequately demonstrated that it would not cause interference to PCS providers operating on adjacent channels. *PCS Waiver Order*, ¶ 15, 16.

Los Angeles Times

On The Internet: WWW.LATIMES.COM

TUESDAY, AUGUST 14, 2001

COPYRIGHT 2001/CC/VC/84 P



NASA

Remote-controlled Helios aircraft, developed by Monrovia's AeroVironment, ascended to 96,500 feet Monday in a flight from Hawaii.

Report A Botched of Lee Sp

Inquiry: For years, FBI and Energy Department pursued a flawed case against scientist they suspected of espionage for China, review finds.

By ERIC LICHTBLAU
TIMES STAFF WRITER

WASHINGTON—Federal authorities in the Wen Ho Lee espionage case "investigated the wrong crime" for nearly three years and zeroed in too aggressively on the Los Alamos nuclear scientist as the prime suspect, according to a government report released Monday.

Investigators ignored evidence that might have led them in other directions, mischaracterized their findings and relied on scientific analysts with suspect credentials, the long-awaited Justice Department review found.

The startling collection of gaffes means that investigators may never know how—or even

COLUMN ONE

San Jose Almost Arrives

Israeli Army Invades Town in West Bank

Mideast: Palestinian

in Jenin, in an effort to avoid hurt-

Solar Plane Climbs Into Record Books

By PETER PAE

Solar Plane Climbs Into Record Books

By PETER PAE
TIMES STAFF WRITER

An elongated flying wing, covered with solar panels and powered by 14 propeller motors not much stronger than hair dryers, climbed to 96,500 feet Monday, shattering a flight record that for more than a quarter century seemed unbreakable.

The remote-controlled Helios aircraft took more than seven hours, lumbering at a maximum speed of 23 mph, to reach the height, an aviation feat no jet or propeller airplane has ever accomplished.

The historic flight, rather than aiming only for an entry in a record book, demonstrated technology that could enable solar-powered planes to stay aloft for months. Fleets of such aircraft could carry global communications at lower cost than today's satellites.

Please see HELIOS, A13

'We managed to climb above the cloud coverage. We are so relieved!'

HELIOS: Propeller Plane Sets Record for Altitude

Continued from A1

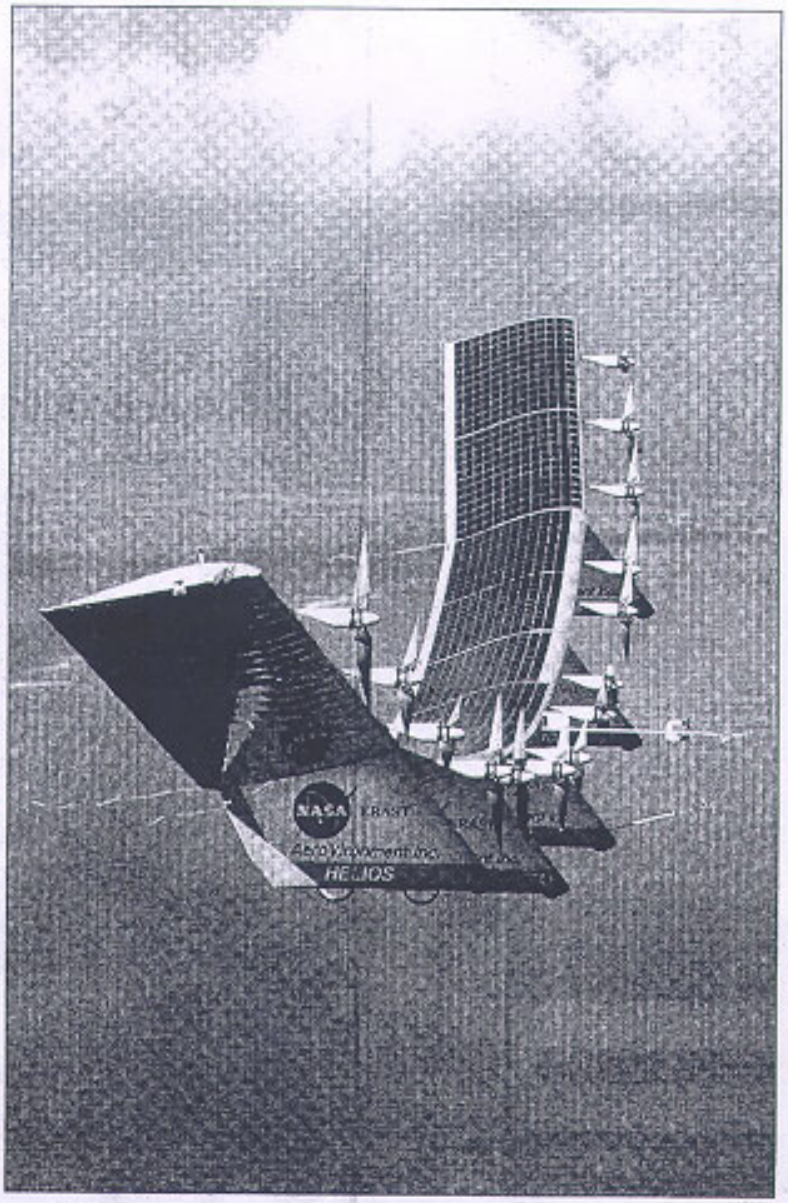
Helios' accomplishment also underscores Southern California's continuing leadership in aircraft design, being only the latest craft built here to achieve a major aviation record.

At an altitude of about 100,000 feet, the sky is black, the curvature of Earth is clearly discernible and the air so thin—only one-hundredth its density at sea level—it is incapable of sustaining the flight of any conventional airplane.

The highest reported altitude by an airplane before Monday was achieved by the jet-powered SR-71 spy plane, the world's fastest jet. The plane, built in Burbank in the 1960s, flew to 85,068 feet in July 1976. Only short-duration rockets have flown higher.

Designed and developed by Monrovia-based AeroVironment Inc. with funding from NASA, the airplane surpassed the previous altitude record at 5:21 p.m. PDT as it flew over the Pacific Ocean west of the Hawaiian islands. It continued to ascend and had reached 96,500 by 7:09 p.m. It then began its gradual descent, and was expected to touch down by morning.

In addition to making aviation history, the aircraft is expected to provide NASA with tantalizing clues about flying in an atmosphere similar to that of Mars. NASA eventually hopes to use flying machines to explore the surface of the planet.



NASA

The 247-foot Helios wing is covered with solar panels, which power the 14 small propellers.

Plane Has Scientific, Commercial Interest

NASA also is interested in seeing how much higher it can take sophisticated science equipment aboard airplanes to study Earth's atmosphere for climate change and ozone depletion. Telecommunications companies are interested in the planes' ability to hover over an area for months at a time, high above the clouds and commercial aircraft traffic, enabling them to relay ultra-fast Internet, television and telephone signals directly to homes.

The aircraft was able to reach the record height thanks to its massive wing, spanning 247 feet—30 feet longer than the wings of the Boeing 747-400, the world's largest commercial airplane—while weighing only 1,577 pounds. The aircraft is mainly constructed of Kevlar, Styrofoam and plastic film to cover the wing. The top of the wing is laden with 62,000 solar panels, which provide power to the electric propeller motors. Five pods under the wing hold the fuel cells and the landing gears.

Monday's flight came as the U.S. Air Force officially squashed decades-long speculation that the SR-71 had reached an altitude of 100,000 feet or more, giving Helios the undisputed record.

Although aviation buffs have maintained for years that an SR-71 secretly has been flown higher than publicly disclosed, an Air Force official said last week that the airplane could not sustain a flight beyond the record set in 1976. Indeed, a flight manual for the SR-71, portions of which recently were declassified, warn pilots not to exceed the maximum altitude of 85,000 feet.

The plane took off from the U.S. Navy's Pacific Missile Range Facility on the Hawaiian island of Kauai at 8:48 a.m. local time, or 11:48 a.m. PDT, after a 38-minute delay as operators waited for clouds to clear. The cloud cover kept the solar cells from developing enough electricity to power the propellers for a takeoff.

Flights Postponed, Then Finally Liftoff

The flight already had been postponed twice—first Saturday when heavy clouds and some technical problems forced NASA to scrub the mission and then Sunday as high-level cirrus clouds lingered over the island. Operators feared that the cirrus clouds, made mostly of ice crystals, would hamper the flight because they would have added weight to the plane and reduced its lift.

Monday morning, the chance for the record flight came as the low-hanging clouds cleared momentarily, providing enough solar power to launch the aircraft. But it was a tense 37 minutes before the airplane broke through the broad cloud layer and into the clear sky, prompting NASA officials to sigh with relief.

"We managed to climb above the cloud coverage," a dispatch from the operator said as the plane climbed to 5,000 feet. "We are so relieved!"

From then on, the Helios climbed steadily, though some turbulence jolted wary NASA operators who had been up all night preparing for the historic flight.

Then at 2:21 p.m. local time, or 5:21 p.m. PDT, Helios climbed past the 25-year-old milestone.

"They've reached the record," said Alan Brown, a NASA spokesman from Kauai, as he relayed the events via telephone.

National Aeronautics and
Space Administration
Office of the Administrator
Washington, DC 20546-0001

SEP 21 2001

TO: Dryden Flight Research Center and AeroVironment Team

FROM: A/Administrator

SUBJECT: Helios

On August 13, 2001, when Helios set the world altitude record at 96,500 feet, the NASA Dryden and AeroVironment Team proved beyond a doubt that extreme altitudes were no longer the province of rocket-powered vehicles and balloons. Combining solar power and lightweight structures, the Helios confronted the challenge of unknown aerodynamics, and demonstrated flight in an environment that no ground test facility could duplicate and that no computer could accurately predict. You have blazed a trail that many will follow.

NASA Dryden's contributions to the success of this campaign were enormous. A few short months ago your team faced substantial technical challenges. The flight vehicle had new propellers and solar cells. The team had not flown in over a year. Each day spent in preparation meant that the next day would be even shorter, with less sunlight and, hence, less solar energy available for the high-altitude attempt.

Yet, the NASA and AeroVironment Team stayed focused on mission safety. Your attention to such diverse factors as crew fatigue, range safety, and accurate weather forecasting played a significant role in the ultimate success of the mission. Finding a low-cost method of supplementing the telemetry system with an additional tracking antenna increased the safety of the system and added thousands of feet to Helios' critical altitude performance. Well done! I commend you on your dedication, discipline, and professionalism.

Please accept my hearty congratulations for your role in accomplishing this truly magnificent milestone in aviation.

Daniel S. Goldin

WAS1 #1018768 v1