

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of)	
)	
Amendment of the Commission’s Rules to Promote Aviation Safety)	WT Docket No. 19-140
)	
WiMAX Forum Petition to Adopt Service Rules for the Aeronautical Mobile Airport Communications System (AeroMACS))	RM-11793
)	
Petition of Sierra Nevada Corporation for Amendment of the Commission’s Rules to Allow for Enhanced Flight Vision System Radar under Part 87)	RM-11799
)	
Petition of Aviation Spectrum Resources, Inc. for Amendment of Sections 87.173(b) and 87.263(a) of the FCC’s Rules to Allow Use of the Lower 136 MHz Band by Aeronautical Enroute Stations)	RM-11818
)	
Petition of Airports Council International-North America Regarding Aeronautical Utility Mobile Stations)	RM-11832
)	

COMMENTS OF AIREON LLC

I. INTRODUCTION

Aireon LLC (“Aireon”) files these comments in response to the Federal Communications Commission’s (“Commission’s” or “FCC’s”) Notice of Proposed Rulemaking (“NPRM”) on promoting aviation safety.¹ With this NPRM, the Commission has taken the important step of recognizing the potential for space-based Automatic Dependent Surveillance Broadcast (“ADS-B”)

¹ *Amendment of the Commission’s Rules to Promote Aviation Safety; WiMAX Forum Petition to Adopt Service Rules for the Aeronautical Mobile Airport Communications System (AeroMACS); Petition of Sierra Nevada Corporation for Amendment of the Commission’s Rules to Allow for Enhanced Flight Vision System Radar under Part 87; Petition of Aviation Spectrum Resources, Inc. for Amendment of Sections 87.173(b) and 87.263(a) of the FCC’s Rules to Allow Use of the Lower 136 MHz Band by Aeronautical Enroute Stations; Petition of Airports Council International-North America Regarding Aeronautical Utility Mobile Stations, Notice of Proposed Rulemaking, FCC 19-53 (rel. Jun. 7, 2019) (“NPRM”).*

to contribute to aviation safety. Aireon operates a global air traffic surveillance system utilizing ADS-B receivers on satellites, and files these comments to supplement the record with information about space-based ADS-B and the services that Aireon provides today.

II. SPACE-BASED ADS-B IS REVOLUTIONIZING AVIATION

Space-based ADS-B is revolutionizing aviation by providing air traffic controllers with an unparalleled level of timely and accurate location data for ADS-B equipped aircraft anywhere in the world. ADS-B is an air traffic surveillance technology that relies on the aircraft broadcasting their identity, a precise Global Positioning System (“GPS”) position, and other information derived from onboard systems.² The data is broadcast automatically every half-second from the aircraft to ADS-B receivers in the 1090 MHz frequency.³ This precise and up-to-date data enhances surveillance accuracy and is used by air traffic controllers to identify and separate aircraft in near real time.⁴ As the Federal Aviation Administration (“FAA”) recognizes, ADS-B “improves safety and efficiency in the air and on runways, reduces costs, and lessens harmful effects on the environment,”⁵ and the Commission rightly describes ADS-B as “a key component of NextGen,” the FAA’s effort to modernize U.S. air transportation.⁶ As of January 1, 2020, virtually all U.S. aircraft must be capable of transmitting ADS-B information to fly in most controlled airspace, and other countries have similar mandates going into force in the coming years.⁷

While ADS-B itself offers many benefits to modern aviation, these benefits are greatly

² See *It’s Just ADS-B*, AIREON, <https://aireon.com/resources/overview-materials/its-just-ads-b/> (last visited Sept. 3, 2019).

³ *Id.*

⁴ See *Global Air Traffic Surveillance*, AIREON, <https://aireon.com/services/global-air-traffic-surveillance/> (last visited Sept. 3, 2019).

⁵ See *Automatic Dependent Surveillance-Broadcast (ADS-B)*, FAA, <https://www.faa.gov/nextgen/programs/adsb/> (last visited Sept. 3, 2019)

⁶ NPRM ¶ 22.

⁷ See 14 CFR § 91.225; see also *Airspace*, FAA, <https://www.faa.gov/nextgen/equipadsb/research/airspace/> (last visited Sept. 3, 2019).

enhanced by space-based ADS-B. Space-based ADS-B utilizes the same basic premise as standard ADS-B, by receiving GPS data automatically broadcast from aircraft in the 1090 MHz frequency. However, rather than utilizing ground-based receivers, space-based ADS-B receivers are located on satellites in low-earth orbit. The ADS-B transmissions received by the satellites are relayed to ground stations and then on to air traffic controllers. The greatest advantage of space-based ADS-B is that it bypasses the geographic limitations of ground-based ADS-B receivers, and provides for an operational space-based air traffic surveillance solution to aviation stakeholders anywhere in the world. As the Commission rightly notes, “[s]pace-based ADS-B can extend air traffic visibility over the ocean and other areas of the planet where traditional radio receivers are not feasible.”⁸ Space-based ADS-B fills the substantial global gaps in ground-based radar surveillance, thereby improving air traffic management safety, efficiency, predictability, and capacity compared to ground-based ADS-B, while reducing overall infrastructure costs.

III. AIREON PROVIDES SPACE-BASED ADS-B SERVICE TODAY

The many benefits of space-based ADS-B described above are already available from Aireon, which provides the first-ever, global air traffic surveillance system using a space-based ADS-B network that meets the strict Air Traffic Service (“ATS”) surveillance requirements for air traffic separation services, anywhere in the world. Aireon was founded in 2011 by Iridium Communications Inc. (“Iridium”), a leading provider of voice and data communications services via satellite and the only commercial satellite communications provider capable of true global coverage today,⁹ but has since grown, by also having investors from the air navigation service providers (“ANSPs”) of Canada, Italy, Denmark, Ireland, and the United Kingdom.¹⁰ From its inception

⁸ NPRM ¶ 24.

⁹ See *Iridium Global Network*, IRIDIUM, <https://www.iridium.com/network/globalnetwork/> (last visited Sept. 3, 2019).

¹⁰ See *Partners*, AIREON, <https://aireon.com/partners/> (last visited Sept. 3, 2019).

Aireon was planned to leverage the unique opportunity presented by Iridium’s planned upgrade of its constellation of low-earth orbit satellites by including ADS-B receivers as “hosted payloads.” Each Iridium NEXT® satellite is equipped with an ADS-B 1090 MHz extended squitter receiver to receive the ADS-B signals broadcast from aircraft, thereby providing a global ADS-B receiver network in space. ADS-B data received by the Iridium satellites is then transmitted to air traffic controllers or airline operations centers in seconds. Aireon’s service is authorized through Iridium’s FCC’s license for the Iridium NEXT constellation.¹¹

Following the completion of the Iridium NEXT constellation in early 2019, the Aireon system became fully operational in April of 2019, and the company commenced trial use over the North Atlantic Ocean.¹² While traditional ground-based aircraft surveillance covered just 30 percent of the globe and relied on position updates from aircraft every 10-14 minutes for tracking outside of radar coverage, Aireon provides full, near real-time, continuous air traffic surveillance of ADS-B equipped aircraft to 100 percent of the planet. This capability offers many benefits to aviation, such as improving situational awareness for air traffic controllers, allowing for reduced aircraft separation distances without compromising on safety, and expanding global aviation capacity.¹³ Additionally, the enhanced separation capabilities enabled by Aireon’s space-based ADS-B can significantly improve operational efficiency over oceanic and remote airspace, thereby reducing fuel burn, decreasing CO₂ emissions, and reducing the environmental impact of commercial aviation.¹⁴

¹¹ See *Iridium Constellation LLC; Application for Modification of License to Authorize a Second-Generation NGSO MSS Constellation*, Order and Authorization, 31 FCC Rcd 8675 (2016).

¹² Press Release, Aireon, Aireon System Goes Live – Trial Operations Begin Over the North Atlantic Marking New Chapter in Aviation History (Apr. 2, 2019), <https://aireon.com/2019/04/02/aireon-system-goes-live-trial-operations-begin-north-atlantic-marking-new-chapter-aviation-history/>.

¹³ See *Benefits*, AIREON, <https://aireon.com/benefits/> (last visited Sept. 3, 2019).

¹⁴ See Karen Marais, ENVIRONMENTAL BENEFITS OF SPACE-BASED ADS-B (Dec. 2016), <https://aireon.com/resources/brochures-guides/environmental-benefits-space-based-ads-b-study/>.

In addition to its air traffic surveillance service, Aireon provides other services utilizing space-based ADS-B. In collaboration with FlightAware, Aireon offers a product called “GlobalBeaconSM,” which provides a cost-effective and easy-to-deploy solution for aircraft operators to track their fleet anywhere in the world.¹⁵ With GlobalBeacon, airlines and aircraft operators are able to exceed the International Civil Aviation Organization (“ICAO”) Global Aeronautical Distress Safety System (“GADSS”) standards and recommended practices for flight tracking. Aireon also offers a free, global service known as Aireon Aircraft Locating and Emergency Response Tracking (“Aireon ALERT”).¹⁶ The Aireon ALERT service provides registered ANSPs, aircraft operators, regulators, and search and rescue organizations with the last known position of aircraft equipped with ADS-B that are in apparent distress or experiencing a loss of communication.

The benefits of Aireon’s service are available globally. Today, Aireon has contracted to provide service to more than twelve ANSPs representing 28 countries, most recently with the Airports Authority of India,¹⁷ and continues to expand its global customer base. In 2020, the FAA will conduct a one-year operational evaluation of space-based ADS-B utilizing the Aireon system in the Caribbean to evaluate the potential benefits of space-based ADS-B.¹⁸

¹⁵ See *GlobalBeacon*, AIREON, <https://aireon.com/services/globalbeacon/> (last visited Sept. 3, 2019).

¹⁶ See *Aireon Alert*, AIREON, <https://aireon.com/services/aireonalert/> (last visited Sept. 3, 2019).

¹⁷ See Press Release, Aireon, Airports Authority India Announces New Contract with Aireon (Jul. 29, 2019), <https://aireon.com/2019/07/29/airports-authority-india-announces-new-contract-aireon/>. Aireon has also contracted with ANSPs representing Iceland, Canada, the United Kingdom, Curacao, Singapore, Seychelles, Italy, Denmark, Ireland, South Africa, Benin, Burkina Faso, Cameroon, Congo, Central Africa Republic, Ivory Coast, Gabon, Guinea Bissau, Equatorial Guinea, Madagascar, Mali, Mauritania, Niger, Senegal, Chad, Togo, and the Union of the Comoros.

¹⁸ See Bill Carey, *FAA Plans Evaluation Of Space-Based ADS-B*, Aviation Week (Oct. 9, 2018), <https://aviationweek.com/awincommercial/faa-plans-evaluation-space-based-ads-b>.

IV. CONCLUSION

With this NPRM, the Commission has taken the important step of recognizing the critical role that space-based ADS-B can play in improving aviation safety in the United States and around the world. Aireon appreciates the Commission's efforts in this area and encourages the Commission to continue to explore ways to leverage space-based ADS-B to improve aviation, both in the U.S. and around the world.

Respectfully submitted,

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