

APPLICATION FOR SPECIAL TEMPORARY AUTHORITY

Iridium Constellation LLC (“Iridium”) hereby requests special temporary authority (“STA”) for thirty (30) days,¹ commencing May 19, 2023, to position newly-launched spare satellites associated with its “Big LEO” band non-geostationary satellite orbit (“NGSO”) Mobile-Satellite Service constellation (Call Sign S2110) within a wider range of altitudes than currently authorized.² Specifically, Iridium seeks an STA to launch and maintain five (5) spares in a storage orbit at altitudes outside the currently authorized 700-750 km storage altitude range.³

On May 19, 2023, Iridium is scheduled to launch five of the remaining second-generation ground spares for the Iridium NEXT constellation. Once launched, Iridium plans initially to place four spares in storage orbit at altitudes between approximately 615 km and 650 km and one spare in a storage orbit at approximately 760 km, pending their redeployment to mission status on an as-needed basis.⁴ These storage orbits have been selected based on present conditions, and Iridium may reposition the five spares in storage orbits at altitudes between 615 km and 760 km in response to operational considerations or space traffic conditions.⁵

Maintaining these second-generation satellites in the requested storage orbits will serve the public interest by increasing the number of readily deployable in-orbit spares, conserving

¹ See 47 C.F.R. § 25.120(b)(4).

² See *Iridium Constellation LLC, Application for Modification of License to Authorize a Second-Generation NGSO MSS Constellation*, Order and Authorization, 31 FCC Rcd. 8675 (Aug. 1, 2016) (“Iridium NEXT Order”).

³ See Engineering Statement, File No. SAT-MOD-20131227-00148, at 37 (filed Dec. 27, 2013) (“Iridium NEXT Engineering Statement”).

⁴ Iridium will notify the Commission of the exact storage orbit altitudes once the spares have arrived on-orbit.

⁵ Iridium plans to file a modification application seeking permanent authority to operate the five spares at the altitudes discussed herein.

fuel, and optimizing spare satellite configuration, thereby ensuring continuity of service for Iridium’s end users and enabling the replacement process in a manner that coordinates satellite movements safely and efficiently.

I. REQUEST FOR SPECIAL TEMPORARY AUTHORITY

On August 1, 2016, the Commission authorized Iridium to construct, deploy and operate its second-generation satellite constellation, commonly known as Iridium NEXT, with 66 space stations and up to 15 “second-generation in-orbit satellites.”⁶ Between 2017 and 2019, Iridium successfully replaced all 66 first-generation satellites with Iridium NEXT second-generation satellites. Iridium also launched nine second-generation on-orbit spares and retained six ground spares, all of which could serve as replacements on an as-needed basis. On May 19, 2023, in a mission known as Launch 9, Iridium plans to launch five of the remaining ground spares (collectively, the “Launch 9 Spares”) and initially place four of them in storage orbits at altitudes between approximately 615 km and 650 km and one at approximately 760 km. Iridium may reposition the spare satellites at storage orbit altitudes between 615 km and 760 km as circumstances warrant. Iridium is currently authorized to store second-generation spares at an altitude range of 700-750 km.⁷

Accordingly, this STA seeks authority to launch five spare satellites and maintain them at altitudes between approximately 615 km and 760 km. There, these second-generation satellites can serve as spares on an as-needed basis for Iridium’s NEXT constellation. While positioned in

⁶ See generally Iridium Next Order ¶¶ 45-47.

⁷ Iridium NEXT Engineering Statement at 37.

storage orbit, these second-generation satellites will not operate as part of Iridium's mission constellation.⁸

II. PUBLIC INTEREST STATEMENT

Grant of this STA request will serve the public interest. As the Commission has acknowledged, Iridium NEXT "provide[s] mobile voice and data services to end users on a network with improved voice quality and enhanced data transmission speeds."⁹ Granting Iridium flexibility to place second-generation on-orbit spares at additional altitudes will enable Iridium to maintain a robust supply of readily deployable replacement satellites and will ensure continuity of service for Iridium's customers.

Positioning the storage orbits initially at or slightly above insertion altitude, anticipated to be no lower than approximately 615 km and another orbit at approximately 760 km will enable the second-generation satellites to conserve fuel that may be needed to deploy them as replacements in the future. The Iridium NEXT constellation is arranged in six orbital planes, each of which require varying amounts of fuel to reach during drift from insertion.

The rocket that launches the spares will dispense the satellites at 615 km. Iridium will then move the satellites to 625 km to perform on-orbit checkout. Once checkout is completed, Iridium will drift four satellites down plane at 625 km, stopping two satellites under plane 4, one satellite under plane 3, and one satellite under plane 2. The fifth satellite is going up a plane, with an expected final altitude of 760 km. Iridium may reposition these spare satellites at storage

⁸ Cf. Iridium Constellation LLC, Application to Modify Authorization, Call Sign S2110, File No. SAT-MOD-20120813-00128 (filed Aug. 13, 2012).

⁹ Iridium NEXT Order ¶ 1.

orbit altitudes between 615 km and 760 km in response to operational considerations or space traffic conditions.

By maintaining some spares at the proposed altitude, Iridium will be able to consume less fuel when deploying replacements among these six planes. Similarly, use of these storage orbits will facilitate the availability of engineering resources needed to coordinate the safe movement of multiple satellites.

In selecting altitudes for the Launch 9 Spares, Iridium has taken orbital debris considerations into account. The proposed orbital altitudes of the Launch 9 Spares pose a low conjunction risk because they are not populated with other large commercial NGSO systems. Iridium, moreover, will continue to take all practicable steps to ensure safe operation of its spacecraft and maintain space situational awareness. Iridium will coordinate with and provide operational information to other operators and the 19th Space Defense Squadron to further ensure space safety.

III. CONCLUSION

Iridium respectfully requests that the Commission grant this STA request to permit Iridium to launch and maintain four second-generation spares in a storage orbit altitude range of approximately 615-650 km and one spare at approximately 760 km, and to permit it to reposition the spare satellites at altitudes between 615 km and 760 km as circumstances warrant.

Respectfully submitted,

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May 16, 2023