

**EXHIBIT 1**  
**REQUEST FOR SPECIAL TEMPORARY AUTHORITY**

Pursuant to Section 25.120 of the Commission’s rules,<sup>1</sup> DIRECTV Enterprises, LLC (“DIRECTV”) herein requests Special Temporary Authority (“STA”), beginning no later than January 20, 2020 and lasting for a period of 30 days, to conduct emergency operations to de-orbit the Spaceway-1 satellite (Call Sign S2191) from its current location at 138.9° W.L.<sup>2</sup> and to perform telemetry, tracking, and command (“TT&C”) functions with Spaceway-1 during this maneuver.<sup>3</sup> DIRECTV also seeks waiver of Section 25.283(c) of the Commission’s rules to the extent the rule requires DIRECTV to discharge all remaining propellant prior to decommissioning the satellite.<sup>4</sup>

In December, Spaceway-1 suffered a major anomaly that resulted in significant and irreversible thermal damage to its batteries. Boeing, the spacecraft manufacturer, concluded based on all available data that the batteries’ cells cannot be guaranteed to withstand the pressures needed to support safe operation of the spacecraft in eclipse operations; rather, there is a significant risk that these battery cells could burst. As payload operations have been terminated,<sup>5</sup> the spacecraft has had sufficient power margin to avoid use of the batteries during sunlight operations. However, use of the batteries during eclipse is unavoidable and there is no

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<sup>1</sup> 47 C.F.R. § 25.120.

<sup>2</sup> See *Policy Branch Information; Actions Taken*, Report No. SAT-01313, File No. SAT-MOD-20170912-00129 (Apr. 25, 2018) (“*Spaceway-1 Stamp Grant*”).

<sup>3</sup> DIRECTV has filed this STA request, an FCC Form 159 and a filing fee electronically via the International Bureau’s Filing System.

<sup>4</sup> 47 C.F.R. § 25.283(c) (“[A] space station licensee shall ensure, unless prevented by technical failures beyond its control, that stored energy sources on board the satellite are discharged by venting excess propellant, discharging batteries, relieving pressure vessels, or other appropriate measures.”).

<sup>5</sup> Spaceway-1 provides backup Ka-band capacity in Alaska. No customers were affected by the anomaly. DIRECTV is currently exploring plans to relocate on-orbit assets to replace the backup capacity lost by the decommissioning of Spaceway-1.

ability to isolate damaged battery cells. The risk of a catastrophic battery failure makes it urgent that Spaceway-1 be fully de-orbited and decommissioned prior to the February 25th start of eclipse season.

While DIRECTV and Intelsat are still finalizing Spaceway-1's de-orbit plan, the objective is to expedite arrival of the satellite at the disposal orbit and maximize the time available to vent the remaining bipropellant prior to commencement of the spring eclipse season.<sup>6</sup> DIRECTV and Intelsat are exploring feasible alternatives for TT&C ground stations that can maintain ground visibility as the satellite transits from its current orbital position at 138.9 W.L. to the disposal orbit at 300 km above the geostationary arc. In the absence of additional ground station solutions, Spaceway-1 will first need to increase its eastward drift before turning around and completing a near-continuous burn until it reaches its disposal orbit. This sequence will take approximately 21 days, leaving at least seven days for venting operations before the spacecraft is to be decommissioned.

DIRECTV estimates that in the available time for venting operations, it will be able to deplete only a nominal portion of the approximately 73 kg of bipropellant remaining onboard Spaceway-1. To the extent Section 25.283(c) of the Commission's rules requires DIRECTV to discharge Spaceway-1's remaining propellant upon de-orbiting, DIRECTV requests waiver of this rule. Pursuant to Section 1.3 of the Commission's rules, the Commission may grant a waiver of its rules "for good cause shown."<sup>7</sup> Good cause exists if "special circumstances warrant a deviation from the general rule and such deviation will serve the public interest" better than adherence to the general rule.<sup>8</sup> In determining whether waiver is appropriate, the Commission

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<sup>6</sup> See *infra* n.10.

<sup>7</sup> 47 C.F.R. § 1.3; *WAIT Radio v. FCC*, 418 F.2d 1153, 1159 (D.C. Cir. 1969).

<sup>8</sup> *Northeast Cellular Telephone Co. v. FCC*, 897 F.2d 1164, 1166 (D.C. Cir. 1990).

should “take into account considerations of hardship, equity, or more effective implementation of overall policy.”<sup>9</sup> As shown below, there is good cause for the requested waiver.

Waiver is appropriate in this case because grant would not undermine the purpose of the rule, which is to reduce the risk of accidental explosion. Under normal de-orbit procedures, Spaceway-1 would complete its end-of-life maneuvers and then discharge all remaining bipropellant prior to decommissioning the spacecraft.<sup>10</sup> The procedure from the manufacturer limits the effective rate at which bipropellant can be vented to ensure built up momentum is unloaded before subsequent operations occur. Other spacecraft of similar design have required two to three months of continuous operations to fully deplete their bipropellant systems.<sup>11</sup> However, given the anomaly to the battery pack and the impending spring eclipse season, DIRECTV does not have sufficient time to fully deplete the remaining bipropellant reserves before Spaceway-1 reaches its disposal orbit. While DIRECTV is formulating the Spaceway-1 de-orbit maneuver with the intention of discharging as much fuel as possible, the priority remains the complete decommissioning of the satellite prior to commencement of the spring eclipse season to limit the risk of an accidental explosion.

Grant of this waiver is also supported on hardship grounds. DIRECTV must de-orbit the Spaceway-1 satellite prior to commencement of the spring eclipse season. Delayed de-orbit maneuvers or prolonged propellant depletion strategies are not possible given the heightened

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<sup>9</sup> *WAIT Radio*, 418 F.2d at 1159.

<sup>10</sup> Spaceway-1 is a Boeing 702HP model spacecraft that is not designed to vent the pressurant used during orbit raising (xenon and helium), and the pressurant was permanently isolated from the propulsion system soon after launch. As a result of this design specification, and the fact that Spaceway-1 was launched in April 2005 before Section 25.114(d)(14) became effective, the Commission previously granted a waiver of Sections 25.114(d)(14) and 25.283(c) with respect to these two pressurants. *See Spaceway-1 Stamp Grant*.

<sup>11</sup> The Boeing 702HP spacecraft design features a reaction wheel pointing control system. As all venting must occur within the capabilities of this pointing control system, the firing of thrusters for venting and to address momentum buildup must be of more limited duration and additional time is needed for the pointing control system to respond.

likelihood of catastrophic failure of the Spaceway-1 satellite should the damaged battery be recharged.

Furthermore, grant of this STA request is in the public interest. DIRECTV's emergency operations are in response to the extraordinary and unforeseen anomaly on Spaceway-1 and will reduce the potential for harm to other geostationary satellite operators. DIRECTV acted as soon as practicable to determine to de-orbit Spaceway-1 following the anomaly. Authorizing DIRECTV's emergency de-orbit operations will facilitate disposal of Spaceway-1 as safely as possible.

For the reasons set forth herein, DIRECTV respectfully requests that the Commission expeditiously grant this request for special temporary authority to de-orbit the Spaceway-1 satellite and for a waiver of the fuel venting requirement of Section 25.283(c).