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RESCUING AND REPURPOSING GEO SATELLITES FROM HIGHLY INCLINED INCORRECT TRANSFER ORBIT

Abstract

On Christmas night of 1997, Asiasat-3 on board of Proton K with Block DM3 upper stage failed to reach the intended geostationary transfer orbit. The failure occurred due to the second burn of the fourth stage Block DM engine failed to achieve the required conditions during the start sequence. Later, the effort to rescue the satellite became a headline after it experienced an epic journey and became the first commercial mission that using lunar flyby maneuver. It was able to deliver commercial services for about 4 years.

More than 10 years later on March 15, 2008, another Proton upper stage failure left the AMC-14 satellite in a useless orbit. This time the Proton M with Briz M upper stage prematurely shut down during the second burn. It should have been able to use the same maneuver with Asiasat-3, but it prevented by U.S. Patent that describing the maneuver. However, it destined to be rescued somehow and being repurposed by U.S. DoD until now.

Since 1990, Proton family that launched from Baikonur has been involved in at least 14 GEO launch failures. It includes Telkom-3 and Express MD-2 atop of Proton M/Briz M launched on August 6, 2012. The big question is could it be rescued or repurposed? This paper will discuss the possibility to perform maneuvers to place the satellite into a usable orbit. The application and operation that might suitable will be investigated.