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Author: Mr. Alejandro Camanzo-Mariño
Universidad de Vigo, Spain, camanzo.marino.alejandro@uvigo.es

Prof. Fernando Aguado Agelet
University of Vigo, Spain, faguado@uvigo.es

Mr. Alberto González-Muiño
University of Vigo, Spain, alberto.gonzalez@space.uvigo.es

Mr. Franco Pérez-Lissi
University of Vigo, Spain, franco.perez@space.uvigo.es

Mr. Antón Vázquez
University of Vigo, Spain, anton.vazquez@space.uvigo.es

Mr. Pablo Francisco Fernández Fernández
Universidad de Vigo, Spain, pablofernandez@alumnos.uvigo.es

HUMSAT-D REVIVAL: RECOVERY OPERATIONS AND ROOT CAUSE ANALYSIS AFTER 7
YEARS OF NO CONTACT**Abstract**

HUMSAT-D, a 1U CubeSat launched in November 2013, lost its communication during an operational window in a solar storm at the end of 2014, beyond its nominal lifetime. After the event, no further signals were received, and recovery attempts in the ensuing months were unfruitful. The satellite was launched from a Dnepr rocket in November of 2013 to a 650 km SSO, so it remained in orbit since then, which is expected to maintain for at least another decade. Recently, in early 2022, the radio amateur community detected the HUMSAT-D beacon signal again, which had not been detected after the loss of contact, after more than 7 years.

The detection of this renewed transmission prompted the start of recovery procedures, rescuing older ground segment hardware and software, as well as documentation and operation manuals for HUMSAT-D. The objective is to establish communication with the satellite and discover the root cause of the issue, as well as recover the satellite to an operational state. As of February 2022, preliminary contact has been established with the spacecraft, and further investigation is ongoing.

This contribution presents the challenges, process, results, and conclusions of restarting operations after such a long time and dealing with loss of mission specific know-how. With the limited data available from the spacecraft telemetry, we will also try to offer an insight into the events that led to the loss of communications, and posterior recovery.