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PROGRESS AND UPDATES FOR THE FIRST KUWAITSAT-1

Abstract

KuwaitSat-1 represents the first space mission for Kuwait. The project which has started in January 2020 for a duration of three years is funded by the Kuwait Foundation for the Advancement of Sciences and aims at establishing Kuwait's first foothold in the space domain. The initiative started from Kuwait University, with local, regional and international partners that will cooperate under the coordination of Kuwait University to achieve the project's main objectives. KuwaitSat-1 is a 1U CubeSat project for earth observation purposes with a visible 4-band camera as its main payload. Along side its scientific objective to capture satellite imagery of Kuwait and it surrounding geographical region, the project aims at building human capacity and creating the nucleus for establishing a space program for Kuwait. Young Kuwaiti professionals will be trained at designing space missions, and at the process of building, testing and operating a cubesat in orbit. The project will also aim at establishing the infra-structure necessary to support current and future space missions. Such infra-structure will include establishment of a ground station along with small satellite integration and testing facilities. The captured satellite imagery will be the basis for testing the performance of the attitude control sub-system. Satellite data will also be used to test uplink and downlink operations and correlate the quality of the communications link with the satellite's attitude, power status and health condition. This paper outlines progress throughout the first year of the project . The paper explains significance and impact of the project and the importance of space missions in general to Kuwait. The management structure of the project, the approach methodology for human capacity building along with results from trade-off studies performed to select the Cubesat's components and launching conditions will also be summarized . The paper also describes some details related to the projected operation of the satellite based on astro-dynamic simulations using the FreeFlyer simulator tool.

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