Operational Report of the Mission Analysis and Planning System for the KOMPSAT-I

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Since its launching on 21 December 1999, the KOrea Multi-Purpose SATellite-I (KOMPSAT-I) has been successfully operated by the Mission Control Element (MCE), which was developed by the Electronics and Telecommunications Research Institute (ETRI). Most of the major functions of the MCE have been successfully demonstrated and verified during the three years of the mission life of the satellite. The Mission Analysis and Planning Subsystem (MAPS), which is one of the four subsystems in the MCE, played a key role in the Launch and Early Orbit Phase (LEOP) operations as well as the on-orbit mission operations. This paper presents the operational performances of the various functions in MAPS. We show the performance and analysis of orbit determinations using ground-based tracking data and GPS navigation solutions. We present four instances of the orbit maneuvers that guided the spacecraft from injection orbit into the nominal on-orbit. We include the ground-based attitude determination using telemetry data and the attitude maneuvers for imaging mission. The event prediction, mission scheduling, and command planning functions in MAPS subsequently generate the spacecraft mission operations and command plan. The fuel accounting and the realtime ground track display also support the spacecraft mission operations. We also present the orbital evolutions during the three years of the mission life of the KOMPSAT-I.