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STATUS ANALYSIS ON THE MISSION PLANNING FOR MULTIPLE GEOSTATIONARY SATELLITE OPERATIONS

Abstract

Korea Aerospace Research Institute (KARI) is currently operating 6 satellites including four LEO (Low-Earth Orbit) satellites and two geostationary satellites, COMS (Communication, Ocean and Meteorological Satellite) and GK-2A (Geo-KOMPSAT-2A). The latest satellite GK-2A was successfully launched on 5th December 2018 from Kourou Space Center, the satellite is currently operating without any problems within the normal operational phase. Advanced Meteorological Imager (AMI), which is loaded on GK-2A satellite, has a mission for monitoring the meteorological phenomena over East-Asia region. In the near future, for ocean and environmental mission, GK-2B (Geo-KOMPSAT-2B), which is the twin satellite with GK-2A, will be launched in 2020. As a result, KARI has to operate three different geostationary satellites and plan their own missions simultaneously. Therefore, understanding individual missions is absolutely important to operate multi-satellite in safe. Ground control center for operating satellites is composed of various subsystems. MPS (Mission Planning Subsystem) is the main subsystem for planning the observational schedule of each satellite mission. Moreover, the satellite maneuver plan delivered from FDS (Flight Dynamics Subsystem) is also applied to the daily mission scheduling. Considering that information and complicated mission constraints, a daily mission schedule of each satellite is able to be set up for processing satellite image data. Depending on the satellite, there are different mission constraints between not only the Earth observation missions, but also a mission and satellite maneuver plan. In order to avoid mission conflicts perfectly, the operator has to understand deeply the relationship between mission types and these constraints. Therefore, we investigate the status of mission planning for currently operating geostationary satellites, and we figure out the difference of the characteristics of mission planning for each satellite.