Maintaining the WAAS Constellation

The role of geostationary earth orbit (GEO) satellites within the Wide Area Augmentation System (WAAS) is critically important. GEO satellites are the vehicle by which the Federal Aviation Administration (FAA) is able to broadcast WAAS signals over the GEO footprint, which includes WAAS service volumes - contiguous United States (CONUS), Alaska, and the marine regions surrounding CONUS. While Canada and Mexico are outside the WAAS service volume, they also receive and use the WAAS broadcast signal. Currently, the WAAS uses three GEO satellites to serve the WAAS coverage volume.

GEO satellites are selected based on the ability of their orbital locations to provide optimal coverage and sufficient overlap. If one GEO satellite fails, the coverage of the others will provide sufficient continuity of service for WAAS users. The lead time for launching a GEO satellite in a desired orbit location is about four to five years. This is why the FAA is already planning for the next generation of WAAS GEO satellite leases.

The FAA is currently working with industry to identify GEO satellites that can host a WAAS payload. To spread the costs associated with the launch, operation, and maintenance of a GEO satellite, there are often several tenants that share the service of one GEO. Also, the WAAS payload must be developed to ensure compatibility with the host satellite. These considerations reveal why advanced planning and timing is so important.

The FAA awarded a “WAAS GEO 5/6” contract in September 2012. Since that time, the FAA has been working with Raytheon to develop and integrate the GEO 5 satellite payload and associated GEO Uplink Subsystem (GUS) pair into WAAS. GEO 5 is expected to be operational in October 2017. On March 27, 2015, FAA authorized Raytheon to proceed with the procurement of GEO 6 satellite payload and its associated GUS pair. GEO 6 is expected to be operational in 2019. GEO 5 and 6 will replace current operational satellites nearing the end of their lease terms.

In January 2015, the FAA issued a market survey to industry to assess what other GEO satellite opportunities will be available starting in the time frame from 2017 to 2022. The market survey also specified the desired GEO satellite orbital locations to ensure coverage over the WAAS service volume. Using the information gathered from the survey, the FAA can develop next steps. FAA will use the market survey responses to shape its GEO replacement strategy. For more details on the recent market survey that was conducted, please visit https://faaco.faa.gov/index.cfm/announcement/view/19198

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