



Los Angeles Air Force Base Media Release



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SMC Update on Next Generation GPS IIF-1 Satellite On-orbit Checkout

LOS ANGELES AIR FORCE BASE, El Segundo, Calif. --- Officials from the Air Force Space Command, Space and Missile Systems Center's Global Positioning Systems Wing announced the "on-orbit checkout" of the first IIF satellite is progressing as scheduled.

Nearing the half way point of its 90-day checkout period, GPS IIF SV-1 also known as SVN 62/PRN 25, is currently broadcasting the same L1 and L2 signals as previous GPS satellites and the new safety of life signal known as L5. All three signals being broadcast from SVN 62 are set unhealthy while experts monitor the quality and characteristics of the signals and the performance of the satellite.

During the initial phase of testing, Germany's national research center for aeronautics and space (Deutschen Zentrums für Luft- und Raumfahrt - DLR) combined L1, L2 and L5 signals in a technique used to characterize a number of known and modeled error sources from the signals. This three-frequency combining technique helps isolate "other" sources of location error, such as multi-path (when more than one path exists for signals to travel before reception), receiver errors, satellite induced errors and unmodeled phenomena. The L1, L2 and L5 signals from SVN-62 are operating nominally but DLR noticed higher residual errors than expected compared to previous somewhat similar measurements from Galileo's GIOVE-A R&D satellite.

The GPS Wing at Los Angeles Air Force Base has corroborated DLR's results and is investigating root cause to share a deeper understanding of this new signal's behavior with the user community. The causes of the phase variation are still being investigated, but they are likely the result of sensitivities to changes in the satellite's thermal environment. SVN 62/PRN 25 is currently experiencing periods of both sunlight and total darkness (known as eclipse season) as the satellite orbits the Earth and traverses through Earth's shadow. Tests to

characterize the satellite's performance during continuous sunlight exposure will continue after the current eclipse season ends later this month.

Typical GPS receivers using stand-alone (single signal – L1, L2 or L5) or combinations of L1, L2 and L5 signals as part of their navigation solution will not be affected by this small phenomenon. The Air Force is committed to maintaining excellence in GPS navigation and timing services and to working with the user community to best use and exploit the new modernized GPS signals.

When tests of this new generation of GPS satellites have been completed and Air Force leadership gives approval, the satellite signals will be set healthy and will operate as specified in the Interface Control Documents (ICDs).

Media representatives can submit questions for response or requests for interviews regarding this topic by sending an email to: smcpa.media@losangeles.af.mil

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