



## **Verification of NASA's Next Generation SLR (NGSLR) System Performance**

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After 2 years of intensive engineering development, NASA's Next Generation Satellite Laser Ranging System (NGSLR) was collocated against the NASA Network standard, MOBLAS-7. Collocation, a method of direct comparison testing developed by NASA and Honeywell in the 1980's, is used to identify laser system ranging anomalies by utilizing geometry to isolate station dependent, systematic ranging errors from other external sources of systematic errors. The completed collocation was the final step for the NGSLR system performance and design validation.

During collocation, the NGSLR and MOBLAS-7 systems operated in good weather simultaneously for 12 hours per day / 5 days a week, day and night, from May 29th through July 5th, 2013. The systems tracked a total of 64 simultaneous passes, including 28 simultaneous LAGEOS passes during the collocation. This comparison test was the first NASA Collocation conducted between a single photon system (NGSLR) and a multi-photon (MOBLAS-7) system, providing a direct comparison of two system configurations that analysts have been theorizing about (using purely theoretical or orbital data analysis methods) for many years. We will provide details of the NGSLR / MOBLAS-7 collocation analysis, how closely the results compare to theory, and the verification of NASA's Next Generation SLR performance.