

Riga SLR station upgrade and status report

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Abstract. This paper discusses currently ongoing upgrades at the station Riga including telescope receiver channel, system calibration, telescope mount model, modernization of time and frequency service and other activities.

SLR system Riga has some important components which are in use for more than 20 years and now are either obsolete or underperforming like the time and frequency system, telescope control system electronics and tracking software. Fortunately now we have the resources to at least partially remedy this situation.

Upgrading schedule

- Installation of the Leica GR25 GNSS receiver with calibrated AR25 antenna before the end of 2013.
- Expected to install of the Spectracom SecureSync frequency standard before the end of 2013.
- Improved telescope mount model - 2014
- Calibration modification to improve its stability and reduce temperature dependency - 2014
- New telescope control system – 2014/2015
- Receiver path modification to improve its efficiency– 2014/2015
- Infrastructure repair: building, power supplies and telescope housing – 2014/2015

Time and frequency reference standard

The old time service equipment, some of the items are older than 25 years, will be replaced by the Spectracom SecureSync GPS/Glonass time and frequency standard with rubidium oscillator.

Telescope control system

The telescope control system will be upgraded by incorporating angular encoders, new control electronics and a new mount model to improve the tracking accuracy.

SLR optical system tests

The optical system alignment is being checked and alignment procedures updated. Tests will be carried out to identify underperforming or failing parts and to determine losses in receiving and transmitting channels.

Receiver channel optimization

Aiming to reduce the number of optical surfaces and to improve the overall efficiency, two alternative approaches are under consideration.

Calibration

A new calibration path using a single mode optical fiber is installed.

GNSS receiver

The new GNSS receiver Leica GR25/AR25 with GPS7Glonass7Galileo/SBAS capability is now operational since December 11, 2013.

Infrastructure renovation

There are plans to renew or rebuild telescope housing, but there are no funding yet allocated.

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