Svetloe Radio Astronomical Observatory

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Abstract

This report provides information about changes in the Svetloe Radio Astronomy Observatory status in period spanning after the last IVS report. Main improvements made during last time are installation of Mark-3A terminal provided by NASA, replacement of the antenna control unit, installation of new GPS/GLONASS receiver for time synchronization. Participation in IVS observing programs R4, T2 and EURO is scheduled for 2003.

1. Introduction

Svetloe Radio Astronomical Observatory was founded by the Institute of Applied Astronomy (IAA) as the first station of Russian VLBI network QUASAR. Sponsoring organization of the project is Russian Academy of Sciences. The site is located at the Karelian Neck near Svetloe village about 100 km North from St. Petersburg. The basic instruments of the observatory are 32-m radio telescope RTF-32 and technical systems provided realization of VLBI observations. In addition, a permanent GPS receiver was installed at Svetloe in 1996.

During last years Svetloe observatory regularly participates in various radio astronomy programs including VLBI and RL VLBI observations of quasars, Sun, planets, asteroids using recording terminal S2-RT. In particular, several observing sessions were performed on the baseline Svetloe–Zelenchukskaya.

Svetloe observatory participated in several regional and global geodetic projects and is an EUREF permanent station.

2. Radio Telescope

The latest results of measurements of radio telescope parameters carried out in 2002 are presented in Table 1.

Table 1. Parameters of the radio telescope RTF-32 at Svetloe.

Band	Pol	Frequency range, MHz	T_{rec}, K	T_{sys}, K	SEFD
X	R	8180–8880	15	40	250
	L	8180–8680	30	54	325
S	R	2150–2500	42	80	600
	L	2150–2500	18.5	88	400

New antenna control system (ACU) based on micro-PC and software developed at the IAA was put into operation in 2002. With new ACU reliability of telescope operations is substantially improved. Random antenna pointing errors with new ACU are 6–8″.

3. Mark-3A terminal

Mark-3A recording terminal provided by NASA has been installed at Svetloe by Ed Himwich and Brian Corey in December 2002 (Figure 1). Test observations were carried out with good result. This is the main and principal improvement of Svetloe equipment which allows us to participate in regular IVS observing programs.

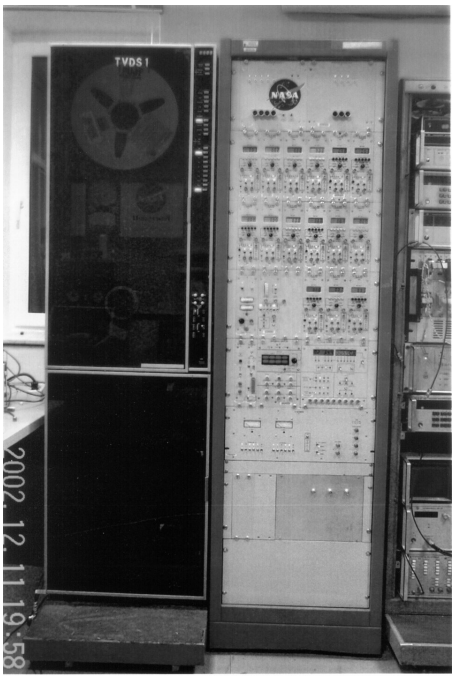

Figure 1. Mark-3A terminal at Svetloe.

4. Station clock

A new GPS/GLONASS receiver on the base of K161B module has been put into operation in 2002. The accuracy of measurement of time scale shift (H-maser – GPS) is 50 ns. The 1 PPS offset (GPS – Formatter) is now acquired in the FS log file.

5. Outlook

Our plans for coming year are the following.

- Participation in 27 IVS R4, T2 and EURO observing sessions has been scheduled for 2003.
- Upgrade of recording terminal to Mark 5 is planned for the fall of 2003.
- Time Interval Counter (TIC) Agilent 53131A will be put into operation in March 2003.