

## **MINUTES**

### **of the RadioAstron Teleconference on August 25, 2010**

N. Kardashev chaired the teleconference.

The agenda of the teleconference and the list of participants are attached to the Minutes.

#### **N. Kardashev informed the participants on the progress in mission development.**

He said that the Russian Space Agency (RSA) has returned to the original policy to launch first the Electro-L mission followed by the RadioAstron mission with a three months delay. November-December 2010 was appointed for the Electro-L start, and the RadioAstron launch can happen in March - May 2011, depending on the results of IOC of Electro-L bus. There were some clarifications given by Y.Y. Kovalev relating minimum and maximum possible time delay between two mentioned missions.

#### **N. Babakin presented new information about tests at LA.**

During past 3 months tests of the Flight Payload were continued in Lavochkin.

- All electric tests of the Science Payload are over with good results.
- Some problems with the service bus "Navigator" were found, and necessary corrections to the hardware are being introduced.
- Thermal and vacuum tests of the payload are going successfully.
- Vibration tests were stopped for a short period of time in favor of thermal tests.
- Now, science payload is preparing to renew the vibration tests.

#### **Brief review of Pushchino TS verifications with Venus Express: current status and outlook (L.Gurvits).**

- L. Gurvits informed the participants on the experiments coordinated by JIVE on the receiving at the Pushchino TS a tone signal at 8.4 GHz transmitted by the Venus Explorer satellite. Data were recorded in 4-MHz band using K5 recording terminal. Data were processed by the modified routine in Jive, which makes a compensation of a regular frequency drift caused by the spacecraft movement, leaving phase variations due to scattering on the interplanetary plasma and intrinsic phase variation. It was shown that residual phase variations of the 8.4 GHz tone signal recorded in Pushchino are within the specifications for the TS, while there are some extra instabilities in comparison with other TS stations such as Yebis or Metsakhovi. Leonid also indicated that combined data reduction of recorded data (Pushchino, Yebis, Metsakhovi) provides good possibility to determine accurate coordinates of Pushchino TS. There was short discussion on the accuracy of the technique.
- Gurvits expressed his opinion on the importance to install at the Pushchino TS a standard recording Mk5 terminal, which will simplify data exchange between TS and correlators outside Russia.

#### **Current status and activities related to TS in South Africa and New Zealand:**

**S.Likhachev** provided the following information. According to the intergovernmental agreement on space collaboration between Russian Federation and South Africa there were two meetings of the working group (WG) in May and in August. The protocols of the both meetings include the possibility to use TS in South Africa to support RadioAstron mission. It was decided to organize a technical meeting in October - November 2010 for discussion of the specifications on the tracking station. Answering questions Likhachev clarified that existing antenna will be used for the TS (diameter from 9 to 19 meters). Usage of the Laser station existing in the South Africa Tracking Center was also included as a possibility of collaboration in RadioAstron mission.

**S.Gulyaev** informed the participants on technical specifications of 12-m antenna which may be used for RadioAstron tracking. He also informed the participants on some successful VLBI observations in L-band with this 12-m radio telescope of the Auckland University. He mentioned as well some attempts to receive tone signal at 8.4 GHz from Venus Explorer and Mars Explorer. A good news was given about successful data transmission from the site to the Metsahovi observatory at 622 Mbit/s rate.

A draft of the MOU between the Auckland University and the ASC is under consideration at the ASC to be signed soon.

#### **Review of action items**

- 1) To provide more drawings of the feed cabin  
It was done. S.Gulyaev
- 2) To make request on the possibility of radio transmission at 7.2 GHz  
To be done to the next teleconference. S.Gulyaev
- 3) To organize discussions of “the time-line of activities”  
To be done later on. Y.Y.Kovalev
- 4) To investigate the advantage of close loop against open loop communication at TS on  
the accuracy of the reconstructed orbit ASC, ballistic team  
To be done later on.
- 5) To provide description of the formats of reconstructed orbit  
To be done later on. ASC-correlator
- 6) To provide description of the RDR data format  
It was done. ASC-correlator
- 7) To provide description of the “time-corrections file” format  
To be done later on. ASC-correlator
- 8) To present detailed report on results of correlation of the VLBI observations Effelsberg-  
Pushchino-Noto-Medicina.  
It was done.

#### **New action items**

No new AIs were formulated, but there are those that were not done from the previous teleconference.

**Next teleconference to be held in January 2011.**

**Agenda of the RadioAstron teleconference  
August 25, 2010**

	Corrections to the Agenda	N. Kardashev
1	Project status	N. Kardashev
2	Present status of tests of science payload in LA	N. Babakin
3	Brief review of Pushchino TS verifications with Venus Express: current status and outlook	L.Gurvits
4	Current status and activities related to TS in South Africa and in New Zealand	S.Likhachev S.Gulyaev
5	Action items	M.Popov

Chairman: N.Kardashev

**List of participants:**

Babakin N.	ASC, Russia
Bartel N.	York Univ., Canada
Fomalont E.	NRAO USA
Gulyaev S.	Oukland Univ., New Zeland
Gurvits L.	JIVE, The Netherlands
Kanevsky B.	ASC, Russia
Kardashev N.	ASC, Russia
Kellermann K.	NRAO, USA
Kogan L.	NRAO, USA
Kostenko V.	ASC, Russia
Kovalev Y.Y.	ASC, Russia
Langston G.	NRAO, USA
Likhachev S.	ASC, Russia
Lobanov A.	MPIfR, Germany
Popov M.	ASC, Russia
Preston R.	JPL, USA
Romney J.	NRAO, USA
Smirnov A.	ASC, Russia