

M E M O R A N D U M

on the Agreement between the Space Research Institute of the USSR Academy of Sciences and the European Consortium for Very-Long-Baseline Interferometry, on a joint Space VLBI experiment

The Space Research Institute of the USSR Academy of Sciences (hereafter referred to as IKI) and the European Consortium for Very-Long-Baseline Interferometry (hereafter referred to as the Consortium) have entered into their mutual interest in cooperation

- Taking into account their mutual interest in cooperation on the peaceful uses of outer space;
- Considering the agreement achieved by Soviet and European scientists at meetings held during 1985 and 1986, have agreed upon the following:

Article 1

IKI and the Consortium intend to carry out a Space VLBI experiment on a Soviet spacecraft during the period 1991-1994.

Article 2

- 1) The Consortium will make every effort to manufacture, and to deliver at an agreed time to IKI, one engineering model (also to be used as a flight spare), two flight models, and one mechanical and one thermal muckup, of a 2-channel 5 GHz receiver for the Soviet spacecraft. This receiver will consist of a coolable low noise amplifier, a mixer, an IF section and a total power detector. The dates of delivery will be agreed upon jointly by IKI and the Consortium.
- 2) The Consortium will make every effort to deliver at an agreed time, test equipment, where it is not available in IKI, to check-out the functioning of the scientific payload during the preparation period. After the launch of the spacecraft the equipment, which is not installed on the spacecraft and not required for spacecraft operations will be returned to the Consortium. The remainder will be returned after the completion of the spacecraft operations.
- 3) A listing and time schedule of the delivery of technical documentation by both sides will be worked out by the specialists of both

sides. Joint documentation will be written in English by the Consortium and in Russian or English by IKI.

4) The European VLBI Consortium will provide observing time on appropriate member telescopes, at a level to be agreed, for observations at 1.35, 6, 18 and 92 cm wavelength together with the RADIOASTRON spacecraft, on the basis of a) refereed proposals for observing time, and

b) availability of the member telescopes in VLBI configuration at the time requested.

5) The European VLBI Consortium will provide time on the European VLBI correlation facilities (if constructed) for the reduction of RADIOASTRON and ground VLBI network data, on a basis to be agreed.

Article 3

1) IKI will make every effort to install the 5 GHz low noise amplifier and mixer/IF section on the spacecraft, check-out its functioning, and carry out observations with the 5 GHz receiver.

2) IKI and the European Consortium for VLBI agree that IKI and Consortium proposals for observations with the RADIOASTRON spacecraft in conjunction with the European VLBI Network and other networks, be evaluated by an international Programme Committee with members which include representatives from the European Consortium for VLBI.

The parties shall agree upon a minimum percentage of the available observing time to be allocated to Consortium proposals.

3) IKI undertakes to provide appropriate data on the performance of the RADIOASTRON spacecraft and USSR radio astronomy antennas to the Consortium in order to allow correlation of raw data tapes for Consortium proposals. Time of delivery of the performance data and the data tapes will be agreed upon between IKI and the Consortium.

4) IKI agrees that, when appropriate, Consortium originated observations will be reduced on the VLBI correlation facilities of IKI, on a basis to be agree.

Article 4

1) Both sides will make every effort to provide a timely information exchange regarding joint work.

- 2) Meetings between IKI and Consortium representatives will be held on a regular basis of necessity. These meetings will be held in the Soviet Union and in Western Europe alternately.
- 3) The results of joint experiments will be at the disposal of the scientists of both IKI and the Consortium. Scientific publications on experiments and authorship will be the subject of consultation by scientists of both sides.

Article 5

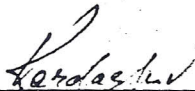
- 1) Both sides will have no financial obligations with respect to each other. Each side will pay its part of the project including travelling for their staff, as well as transport expenses for the equipment delivery. The host side will provide subsistence (and internal travel) for the other side.
- 2) Realization of the joint experiments described in this memorandum will not result in other financial obligations or in legal liability of one side to the other.

Article 6

This memorandum will come into effect on the day of signing. Its actions can be temporarily stopped, or stopped completely, by either side with six months notification.

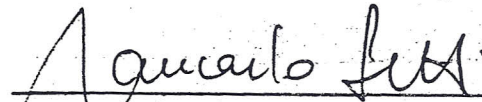
Moscow, 16 April, 1987

On behalf of the Space
Research Institute
Academy of Sciences, U.S.S.R.



Prof. N. Kardashev
Deputy Director

On behalf of the European
Consortium for Very-Long-
Baseline Interferometry



Prof. G. Setti
Chairman, Board of Directors