

# Nanshan VLBI Station Report for 2005

*Aili Yusup, Na Wang*

## Abstract

The Nanshan 25-meter radio telescope is operated by Urumqi Observatory. This report describes the activities and status of Nanshan VLBI station as an IVS network station in 2005.

## 1. Introduction

The station is located 70 km south of Urumqi, the capital city of Xinjiang Uygur Autonomous Region of China. The station is affiliated to Urumqi Observatory of National Astronomical Observatories, CAS. We contribute to IVS in geodetic VLBI observations. Urumqi also participated in domestic VLBI experiments between Urumqi and Shanghai, and successfully completed several test e-VLBI observations with Shanghai and Kashima, respectively. Urumqi Observatory is willing to continue the collaboration in international e-VLBI activities.

## 2. Telescope Status

### 2.1. Antenna

- Diameter: 25 meter
- Antenna type: Cassegrain beam wave-guide
- Seat-rack type: Azimuth-pitching ring
- Main surface precision: 0.40mm (rms)
- Pointing precision: 15" (rms)
- Rolling range: Azimuth:  $-270^{\circ}$  to  $270^{\circ}$ ; Elevation:  $5^{\circ}$  to  $88^{\circ}$
- Maximum rolling speed: Azimuth:  $1.0^{\circ}/\text{sec}$ ; Elevation:  $0.5^{\circ}/\text{sec}$

The control system of the telescope was upgraded in September 2005. The main surface of the antenna was adjusted and the precision of the main surface is 0.4mm (rms). We also finished painting the whole antenna.

### 2.2. Receiver

The basic specifications of the receivers are given in Table 1. New S/X band cryogenic receivers were installed in November 2005.

### 2.3. Recording System

Mark IV, Mark 5 and Mark II recording systems are available now at Nanshan VLBI station. The performance of the observing system has been improved over the last year. New FS computer is in use at Nanshan and the Field System has been upgraded to version 9.7.7 and it works well.

Table 1. Specifications of receivers

<b>Parameters</b>				<b>Freq. Range</b>
1.3cm	LCP	T <sub>sys</sub> =190K	DPFU=0.057	22100-24000
3.6cm	RCP	T <sub>sys</sub> =110K	DPFU=0.093	8100-8900
6cm	dual	T <sub>sys</sub> =22K	DPFU=0.105	4700-5110
13cm	RCP	T <sub>sys</sub> =75K	DPFU=0.096	2150-2320
18cm	dual	T <sub>sys</sub> =21K	DPFU=0.088	1400-1720
30cm	LCP	T <sub>sys</sub> =160K	DPFU=0.06	800-1200

A data sampling station for weather monitoring purposes was installed in September. The p-cal control system has been updated and the parameters of S/X band receivers are sampled from FS softwares.

#### 2.4. Time and Frequency Sytem

A new time and frequency system was established at Nanshan station. A new Hydrogen Maser MHM2010 has been used since October 2005 and it works well. We also upgraded the GPS time receiver.

### 3. Nanshan VLBI Observations During 2005

Table 2. Geodetic VLBI experiments observed by Urumqi Observatory during 2005.

<b>Experiment</b>	<b>Date</b>	<b>Remarks(problems)</b>
T2037	02.05	ok
T2038	04.05	ok
RDV50	04.27	canceled
APSG16	10.11	No fringes with IF error connect
T2040	10.18	ok
T2041	11.29	ok
APSG17	12.06	ok
T2043	12.20	ok

#### 4. Personnel

Table 3. The main staffs in Nanshan VLBI Station

<b>staff</b>	<b>position</b>	<b>Working area</b>	<b>e-mail</b>
Wang Na	Professor	Station chief	na.wang@ms.xjb.ac.cn
Aili Yusup	Professor	Chief engineer	aliyu@ms.xjb.ac.cn
Sun ZhengWen	Senior engineer	Microwave, Receiver	sunzw@ms.xjb.ac.cn
Liu Xiang	VLBI scientist	VLBI friend	liux@ms.xjb.ac.cn
Chen Maoheng	Senior engineer	Microwave, Receiver	mzchen@ms.xjb.ac.cn
Wang Weixia	Senior engineer	Microwave, Receiver	wangwx@ms.xjb.ac.cn
Shao Minghui	Senior engineer	Time and Freq., Terminal	shaomh@ms.xjb.ac.cn
Yang Wenjun	Engineer	Terminal	yangwj@ms.xjb.ac.cn
Wang Shiqiang	Engineer	Antenna	Wangshq@ms.xjb.ac.cn
Zhang Hua	Engineer	Terminal, Time and Freq.	zhangh@ms.xjb.ac.cn
Li Guanghui	Engineer	Network, Computer	ligh@ms.xjb.ac.cn
Ma Jun	Engineer	Microwave, Receiver	majun@ms.xjb.ac.cn
Chen Chenyu	Engineer	Antenna	chency@ms.xjb.ac.cn

#### 5. Future Plan

A new 1.3-cm dual polarization cryogenic receiver will be built in 2006. A new feed for both 92 cm and 49 cm band is also planned. We will increase to Mark IV VC for additional 1-MHz filter in 2006.