Status of the TIGO VLBI Station in Concepción

Hayo Hase, Cristian Herrera, Felipe Pedreros, Octavio Zapata, Pedro Pino

Abstract

The main activities at the TIGO VLBI station during 2012 have been 120 successful VLBI sessions and the investigation of an alternate site for TIGO for future operation.

1. General Information

Since 2002, TIGO has been located in the terrain of the Universidad de Concepción (longitude 73.025 degrees West, latitude 36.843 degrees South), in Concepción, Chile.

The TIGO project is carried out on the basis of governmental decree 489, which considers four Chilean institutions as project partners for the German Federal Agency of Cartography and Geodesy (BKG). Two Chilean partners had left in 2004 and 2007, and by the end of 2011 the Universidad de Concepción, as the main partner, had to recall its commitment to the TIGO project. Hence with the beginning of 2012 only one Chilean partner remained for the German BKG: the Instituto Geográfico Militar. The TIGO project lacks management to achieve financial support by the Chilean government. A temporary financial aid from BKG allowed for continuous operation in 2012 and 2013. Without full Chilean support, Germany is obliged to find new partners elsewhere and to look for an alternate site for its future operation. The candidate site is the Instituto Argentino de Radioastronomía (IAR) near La Plata in Argentina.

2. Component Description

The IVS Network Station TIGOCONC constitutes the VLBI part of the Geodetic Observatory TIGO, which was designed to be a fundamental station for geodesy. Hence, the VLBI radio telescope is co-located to an SLR telescope (ILRS site), a GPS/Glonass permanent receiver (IGS site), and other instruments such as a seismometer, a superconducting gravimeter, and an absolute gravity meter.

The atomic clock ensemble of TIGO consists of three hydrogen masers, three cesium clocks, and four GPS time receivers realizing the Chilean contribution to the Universal Time scale (Circular T, BIPM).

The technical parameters of the TIGO radio telescope as published in [1] have not been changed.

3. Staff

The 2012 VLBI staff consisted of four persons, as listed in Table 1. Felipe Pedreros left TIGO in July to work for one year at the South Pole station. He was replaced by Pedro Pino. Octavio Zapata reduced his obligations from full-time to half-time for the second part of the year.

Figure 1. 2012 VLBI Staff: Herrera, Zapata (until December), Pedreros (until July), and Hase. Not shown in the photo is Pedro Pino, who replaced Felipe Pedreros.

Table 1. TIGO-VLBI support staff in 2012.

Staff	Function	Email	Remark
Hayo Hase	Head	hayo.hase@tigo.cl	
Cristian Herrera	Informatic Engineer	cristian.herrera@tigo.cl	
Felipe Pedreros	Telecommunications Engineer	felipe.pedreros@tigo.cl	until July 2012
Octavio Zapata	Telecommunications Engineer	octavio.zapata@tigo.cl	until December 2012
Pedro Pino	Electronic Engineer	pedro.pino@tigo.cl	since August 2012
all VLBI operators		vlbistaff@tigo.cl	

4. Current Status and Activities

4.1. IVS Operation

During 2012, TIGO was scheduled to participate in 120 regular IVS sessions. Three 24-hour additional participations had been carried out within the TANAMI-project [2]. Table 2 gives an overview about the participation of TIGOCONC in 2012. Out of 123 requested observation days, 120 could be observed successfully, reaching an efficiency of 97%. The main reasons for data loss have been related to technical problems in the refrigerating system of the receiver, recording problems on bad data carriers, and unexpected delays in the customs clearance procedure of data carriers.

Table 2. TIGO's IVS observation statistics for 2012.

Name	R1xxx	R4xxx	OHIGxx	T2	RD	TANAMI	Total IVS
# of Exp.	52	52	6	2	8	3	**123**
Correlated	50	52	5	2	8	3	**120**
No result	2	0	1	0	0	0	**3**

4.2. Search for New Site for TIGO

Some conversations between Germany and Argentina concerning a future cooperation for the operation of a Geodetic Observatory have been fruitful. A potential site for TIGO was identified at the Instituto Argentino de Radioastronomía (IAR) near La Plata in Argentina. From July to October 2012 investigations into the radio frequency situation at IAR were carried out. From the data of one month of continuous monitoring, it was concluded that the proposed site is suitable for future VLBI observations [3]. During November 2012 three engineers from IAR visited TIGO in order to become familiar with the necessities of this observatory (Figure 2).

Figure 2. Visit of technical staff from IAR in November 2012: Guillermo Gancio, Augusto Cassino, and Daniel Perilli.

5. Future Plans

The VLBI activities in 2013 will be focused on:

- Execution of the IVS observing program for 2013, and
- Preparation and disassembling of TIGO for its transportation to a new site.

References

[1] Vandenberg, N.R.: International VLBI Service for Geodesy and Astrometry 1999 Annual Report, NASA/TP–1999-209243, 1999.

[2] M. Kadler, R. Ojha, S. Tingay, and J. Lovell, *The TANAMI Program: Southern-Hemisphere VLBI Monitoring of Relativistic Jets in Active Galaxies*, American Astronomical Society, AAS Meeting #211, #04.13; Bulletin of the American Astronomical Society, Vol. 39, p.732.

[3] Gancio, G., Perilli, D., Hase, H., Larrarte, J.J.: BKG RFI Month Report, OBS-RFI-00126-RP, Instituto Argentino de Radioastronomía, 2012 (internal report).