Washington Correlator

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Abstract

This report summarizes the activities of the Washington Correlator for the year 2011. The Washington Correlator provides up to 80 hours of attended processing per week plus up to 40 hours of unattended operation, primarily supporting Earth Orientation and astrometric observations. In 2011 the major programs supported include the IVS-R4, IVS-INT, CONT11, APSG, and CRF observing sessions.

1. Introduction

The Washington Correlator (WACO) is located at and staffed by the U.S. Naval Observatory (USNO) in Washington, DC, USA. The correlator is sponsored and funded by the National Earth Orientation Service (NEOS), which is a joint effort of the USNO and NASA. Dedicated to processing geodetic and astrometric VLBI observations, the facility spent 100 percent of its time on these sessions. All of the weekly IVS-R4 sessions, all of the IVS-INT01 Intensives, the entire CONT11, and the APSG and CRF sessions were processed at WACO. The facility houses a Mark IV Correlator.

Figure 1. The e-transfer corner. A Storage Area Network (large unit) and three Mark 5B+s (far left) collect data over the high-speed networks and write the data out to Mark 5 diskpacks.

2. Correlator Operations

- The Washington Correlator continues to operate 80 hours per week with an operator on duty. The correlator has continued to function well unattended, allowing another 40 hours per week, on average, of extra processing. This has also decreased the time it takes to process an R4 or other 24-hour sessions by one day.
- The correlator staff continues the testing and repair of Mark 5 modules. Not only were failed disks replaced, but some modules were upgraded by the replacement of lower capacity disks with higher capacity disks.
- A combination of three new Mark 5B playback units and conversions of existing Mark 5A units to Mark 5B now brings the correlator complement to ten Mark 5Bs and five Mark 5As. Additional Mark 5B+s are used for transfers. The 15 available Mark 5 units allowed processing of CONT11 in a single pass.
- The correlator processed the entire CONT11 session. In addition to the increase in the playback complement, a Storage Area Network (SAN) was added to assist in handling the large volume of electronically transferred observations.
- Intensive observations from Kokee Park and Wettzell were routinely transferred via e-VLBI during 2011. 24-hour sessions from both Hobart antennas, Warkworth, Ny-Ålesund, Fortaleza, Tsukuba, Aira, Kashima, Chichijima, and Sintotu were also transferred by high-speed networks.
- Correlator time was also spent processing test observations connected with the commissioning of the 12-m antennas at Katherine, Yarragadee, and Warkworth.
- Table 1 lists the experiments processed during 2011.

Table 1. Experiments processed during 2011.

49	IVS-R4 sessions
6	CRF (Celestial Reference Frame)
3	APSG
230	Intensives
15	CONT11

3. Staff

The Washington Correlator is under the management and scientific direction of the Earth Orientation Department of the U.S. Naval Observatory. USNO personnel continue to be responsible for overseeing scheduling and processing. During the period covered by this report, a private contractor, NVI, Inc., supplied a contract manager and correlator operators. Table 2 lists staff and their duties.

It is with sadness that we report the death of long-time operator Kenneth Potts on December 27, 2011.

Table 2. Staff.

Staff	**Duties**
Dr. Kerry Kingham (USNO)	Chief VLBI Operations Division and Correlator Project Scientist
David Hall (USNO)	VLBI Correlator Project Manager
Bruce Thornton (NVI)	Operations Manager
Harvis Macon (NVI)	Lead Correlator Operator
Roxanne Inniss (NVI)	Media Librarian
Kenneth Potts (NVI)	Correlator Operator

4. Outlook

Due to a change in policy by the U.S. Navy, the NVI contract was ended. We are presently trying to move the contracted jobs to Naval Observatory positions. By the end of 2011, the correlator staff had been reduced to three positions, and the backlog of processing and analyis was growing. We hope to eventually add three more people to bring the staffing up to the original level.

During 2012, the processing load should be transferred from the present Mark IV hardware correlator to a DiFX software correlator.