

# Washington Correlator

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## Abstract

This report summarizes the activities of the Washington Correlator for the year 2010. 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 2010 the major programs supported include the IVS-R4, IVS-INT, 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, and the APSG and CRF sessions were processed at WACO. The facility houses a Mark IV Correlator.



Figure 1. Conversion to Mark 5Bs: five Mark 5Bs (left rack and right bottom) share space with three Mark 5As (upper right) on the right side of the correlator. All of these will be Mark 5B by next year.

## 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.
- Prior to April 2010, Intensive observations from Kokee Park Geophysical Observatory (KPGO) were shipped via FedEx to the Washington area. This required station personnel to travel down the road to the local town to meet the FedEx pickup. The shipping to the correlator typically took two days. After April 2010, observations from KPGO were sent directly to the correlator over an Internet 2 connection. This operation saved the two days of shipping time and allowed processing within 24 hours of the observation.
- A Mark 5B playback unit was added to the correlator complement of Mark 5s, which now brings the correlator complement to eight Mark 5As and four Mark 5Bs. An additional Mark 5B+ is used for transfers.
- Intensive observations from Kokee Park, Wettzell, and Ny-Ålesund were routinely transferred via e-VLBI during 2010. 24-hour sessions from both Hobart antennas, Ny-Ålesund, 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 Hobart 12-m antenna.
- Table 1 lists the experiments processed during 2010.

Table 1. Experiments processed during 2010.

51	IVS-R4 sessions
1	IVS-R1 session
4	CRF (Celestial Reference Frame)
4	R&D sessions
211	Intensives
2	Kk-Sv-Wz Intensives
3	Kk-Sv-Ny Intensives
5	TQUAKE (Tigo Earthquake)

## 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.

Table 2. Staff.

<b>Staff</b>	<b>Duties</b>
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

The Washington Correlator plans to upgrade the Mark 5A playbacks to Mark 5B, in coordination with the installation of Mark 5Bs at the Network Stations. e-VLBI operations are expected to expand, and additional transfer capability and disk space will be added. Intensive processing is expected to transfer to a software correlator by the end of 2011.