

THE INTERNATIONAL TIME SERVICE OF THE NATIONAL GEOGRAPHIC INSTITUTE (IGNA LABORATORY), ARGENTINA

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RESUMEN

El denominado Servicio Internacional de la Hora (SIH) del Instituto Geográfico Nacional Argentino (IGNA, antes Instituto Geográfico Militar Argentino IGMA), ha cumplido funciones de aporte al mantenimiento del Tiempo Internacional desde su creación en el año 1931. A partir del año 2010, el IGNA comenzó un proceso de modernización de este laboratorio con el objetivo de mejorar las contribuciones que éste realiza para el cálculo de las escalas de tiempo internacionales por parte del Buró Internacional de Pesas y Medidas (BIPM).

ABSTRACT

The “International Time Service” (Servicio Internacional de la Hora, SIH) at the Instituto Geográfico National Argentino (IGNA, formerly Instituto Geográfico Militar Argentino IGMA), has contributed to the maintenance of the international time scale since its creation in 1931. In 2010 the IGNA started a process of upgrading its time laboratory with the objective of improving its contribution to the computation of the international reference time scales at the International Bureau of Weights and Measures (BIPM).

Key Words: standards — time

1. INTERNATIONAL COMPARISONS

The first phase of the laboratory upgrading consisted in putting into operation a time transfer system TTS-2 for tracking satellites of the GPS constellation for time applications. By means of some modifications the method of data acquisition of the equipment was updated to allow re-starting the contribution to Coordinated Universal Time (UTC) at the BIPM with weekly data submission.

At the beginning of 2012, new modifications to the equipment were developed at the laboratory and implemented for daily data provision in the frame of the calculation of the Rapid UTC (UTC_r) at the BIPM.

2. NATIONAL COMPARISONS

In parallel to the activities related to the provision of data to the BIPM, other developments were implemented for realizing time comparisons with two other laboratories in Argentina (Observatorio Naval Buenos Aires, ONBA, and Instituto Nacional de Tecnología Industrial, INTI).

IGNA acquired instruments for environment control in the laboratory (such as thermometers), and a new time interval counter (TIC) Agilent 53230A that has a resolution of 20 picoseconds. A recently installed GPS dual-frequency receiver will allow better time comparisons using the codes P1 and P2 (denominated P3).

3. IGNA ATOMIC STANDARDS

IGNA operates equipment suitable to the maintenance of the international time scales. The two atomic standards at IGNA contribute to International Atomic Time (TAI) with weights comparable to those in other contributing laboratories; they are caesium industrial clocks with high and low performance tubes, respectively. It is planned to incorporate a new caesium clock for increasing the redundancy and enhance the services.

The laboratory has much improved in the last years, and plans for the future include also progress in the generation of a national atomic time scale.

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