Universal Time Coordinated (UTC)

A continuing misconception is that the GPS system presents a timing signal that is always directly related to Universal Coordinated Time or UTC. UTC is a global collection of highly accurate atomic clocks and astronomical observations, coordinated and maintained by the Bureau International Des Poids et Mesures (BIPM) in Paris, under the International Treaty of the Second (Fig. 1). Many GPS receiver specification sheets state that the receiver is accurate within 100 nanoseconds of UTC. The problem is that the timing accuracy of the GPS system, or GPS time, is controlled by the United States Naval Observatory (USNO). USNO is a major contributor to the BIPM time base. The Naval Observatory has the charter to maintain the GPS system to within 1 microsecond of UTC. During the past year, the standard deviation of GPS time with respect to UTC was less than 10 nanoseconds. The observation is that most of the time, GPS time is very near to UTC time. However, this can be changed by the USNO as military needs dictate.

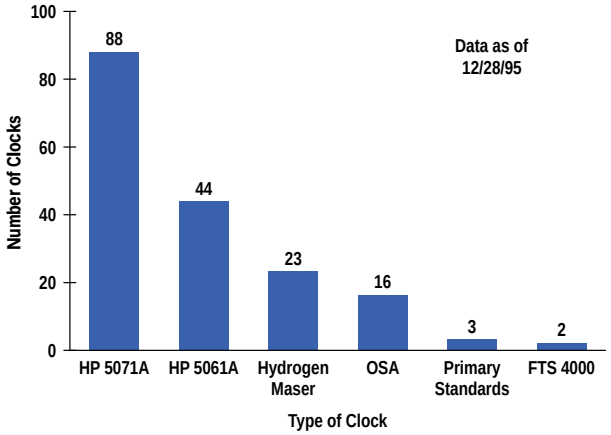

Fig. 1. *Component clocks in the BIPM time base. HP clocks represent 71% of the clocks (OSA and FTS are other cesium standard manufacturers) and over 82% of the weight in defining Atomic Time International (TAI), the size of the second in the UTC time base (from reference 1, 12/28/95.)*

Reference

1. Bureau International des Poids et Mesures, *Circular T Bulletin*, issued every two months, Paris, France.

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