



Local ties survey at San Fernando Naval Observatory

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A local ties survey in the San Fernando Naval Observatory (ROA: Real Observatorio de la Armada) was carried out by the Instituto Geografico Nacional de España (IGNE) team during the summer of 2009. A SLR station (SFEL) contributing to the International Laser Ranging Service (ILRS) and a Continuous GPS receiver (SFER), contributing to the International GNSS Service (IGS) are collocated at ROA since 1996. Another CGPS receiver (ROAP) was installed a couple of years ago to contribute to the IGS Time Transfer Experiment.

The objective of the survey was to verify old values, modifying them as needed and, to complete the information linking not only these three reference points together but also linking them with other points to allow further reviewing: there are a number of survey monuments and pillars within the observatory to be used as reference marks for the local ties determination through terrestrial connections.

But local ties determination at ROA is actually complicated due to the situation of the main points. The SLR station is located inside a closed dome at the top of the Observatory main building while the intermediate reference marks are placed at the main terrace. It means that there are large height gradients, and it is also difficult to get a direct line of sight from the reference points located at the terrace to the SLR telescope reference point. Furthermore, to look for the telescope axis cross point is not an easy task due to the reduced dimensions of the SLR telescope dome. And last, but not least a background of scattered buildings of very different heights and large trees that hinder the visual intermediate between them seem to be not the best scenario to ensure uncertainty improvements.

This paper shows the methodology used to perform the work made, as well as the results and accuracy that we got and delivered to the International Terrestrial Reference Frame.