The IGS precise orbits of GPS have been widely used in the world ever since the beginning of their broadcast in 1994. Major changes have taken place both in the data processing softwares and the reference frame over the years, but the orbits have not been updated. In this study we reanalyzed the GPS data from the IGS global tracking station since 1994 and compared our results with IGS orbits to assess their accuracy. Uniform data processing strategy was adopted using GAMIT/GLOBK software, consistent orbital and Earth rotation parameters were prescribed, the most recent geophysical models and appropriate error correction models were used, and the ITRF2000 station positions and velocities of the IGS sites were used to define the reference frame. By comparing our results with IGS precise orbits we find that: (1) Systematic biases and random errors exist in the IGS precise orbits and the reprocessed orbits. Performing a 7-parameter transformation (3 for translation, 3 for rotation, and 1 for scale) between our orbits and IGS orbits can eliminate much of the systematic biases between the two. (2) Systematic biases exist in different ITRF reference frames, whose differences cannot be solely removed by applying the transformation relationships between the reference frames published by IERS. The remaining systematic biases are still significant. (3) The systematic biases of the IGS orbits are closely related to the ITRF reference frames adopted, especially to the differences between their origin, orientations, and velocity fields. (4) Significant differences are found between the IGS claimed and actual orbital accuracies, especially for the orbits of the early years. Relative to the reprocessed orbits, the random errors of the IGS precise orbits diminish along with time: they are about 15-20 cm in 1994, reduced to 6-8 cm in 1998, and are less than 5 cm after 1998.