

Grids & Datums

REPUBLIC OF THE CONGO

by Clifford J. Mugnier, C.P., C.M.S.

“First inhabited by Pygmies, Congo was later settled by Bantu groups that also occupied parts of present-day Angola (PE&RS, March 2001), Gabon (PE&RS, September 1998), and Democratic Republic of the Congo (PE&RS, June 2005), forming the basis for ethnic affinities and rivalries among those states. Several Bantu kingdoms – notably those of the Kongo, the Loango, and the Teke – built trade links leading into the Congo River basin. The first European contacts came in the late 15th century, and commercial relationships were quickly established with the kingdoms – trading for slaves captured in the interior. The coastal area was a major source for the transatlantic slave trade, and when that commerce ended in the early 19th century, the power of the Bantu kingdoms eroded. The area came under French sovereignty in the 1880s. Pierre Savorgnon de Brazza, a French empire builder, competed with agents of Belgian King Leopold’s International Congo Association (later Zaire) for control of the Congo River basin. Between 1882 and 1891, treaties were secured with all the main local rulers on the river’s right bank, placing their lands under French protection. In 1908, France organized French Equatorial Africa (AEF), comprising its colonies of Middle Congo (modern Congo), Gabon, Chad, and Oubangui-Chari (modern Central African Republic). Brazzaville was selected as the federal capital” (U.S. Department of State Background Note, 2010). Bordered by Angola (201 km), Cameroon (PE&RS, May 2007) (523 km), Central African Republic (467 km), Democratic Republic of the Congo (2,410 km), and Gabon (1,903 km), the lowest point is the Atlantic Ocean (0 m), and the highest point is Mount Berongou (903 m).

“The Angola – Congo (Brazzaville) boundary is delimited by the Franco-Portuguese convention of May 12, 1886, between Ponta Chamba and boundary pillar D. Ponta Chamba is situated near the Atlantic Ocean at the confluence of the Rio Loema and Rio Lubinda² and boundary pillar D is located inland at the end of the median line between these two rivers. The remainder of the boundary is delimited to the tripoint with Congo (Kinshasa) at or near the confluence of the Bidihimba and Rio Chiloango by the Franco-Portuguese arrangement of January 23, 1901, which interprets the convention of May 12, 1886, in this sector. The boundary is demarcated clockwise by pillars A through J, including additional intervening pillars. Boundary pillar A is located on Ponta Chamba and J is located on a hill about 0.5 mile southwest of the Congo (Kinshasa) tripoint” (International Boundary Study No. 105 – October 15, 1970).

“Cameroon and Congo (Brazzaville) have a common boundary of about 325 miles. It follows a drainage divide for approximately 21 miles, a parallel of latitude for 85 miles, and rivers for 219 miles. Tripoints with both Gabon and the Central African Republic are situated on the thalwegs of rivers. The Gabon tripoint is located in the Ayina at 2° 10’ 20” N., and the Central African Republic tripoint is located in the Sangha at about 2° 13’ 20” N” (International Boundary Study No. 110 – May 14, 1971).

“The Central African Republic–Congo boundary extends between the Sangha and Ubangi rivers and is about 290 miles long. For much of this distance, it follows the drainage divide between the Lobaye and the Ibenga. The boundary also follows a long straight-line sector adjacent

to the Cameroon tripoint and passes along the Gouga river adjacent to the Zaire tripoint. The line is not demarcated by pillars” (International Boundary Study No. 145 – July 17, 1974).

“The Congo – Zaire [Republic of the Congo (Brazzaville) – Democratic Republic of the Congo (Kinshasa) – Ed.] boundary is approximately 1,010 miles long. From the Angola tripoint to the Congo river, it follows the Shiloango, the Congo – Niari drainage divide, straight-line segments, and various other rivers for a distance of about 220 miles. The remainder of the boundary consists of the Congo river for 500 miles and the Ubangi for 290 miles to the Central African Republic tripoint. Except in Stanley Pool, the exact alignment of the boundary in the Congo river sector is indefinite” (International Boundary Study No. 127 – September 8, 1972).

The earliest published geodetic data of the Congo (Brazzaville) is that by Captain Dion of the French *l’Institut Géographique National* in which the defining datum origin at the astronomical station *Pointe-Noire* in 1948 was observed as: $\Phi_0 = 04^\circ 47' 00.1''$ S and $\Lambda_0 = 11^\circ 51' 01.55''$ E, the reference azimuth to the Lighthouse (*Phare*) at *Point Noire* is: $\alpha_0 = 242^\circ 45' 04''$, and the ellipsoid of reference is the Clarke 1880 where $a = 6,378,249.145$ m, and $1/f = 293.465$. A subsequent survey in 1959 by the French Navy was done in collaboration with the French Oil Company, *Société des Pétroles de l’Afrique Équatoriale Française* or *S.P.A.É.F.* By this time, geodetic surveys performed by the French were commonly computed on the UTM grid as it was in this case, using Zone 32, South. Wild-Heerbrugg T-3 theodolites and AGA Geodimeter electronic distance meters were used in the coastal geodetic survey in order to establish control for TORAN equipment, which was a French version of the standard type of hyperbolic lattice radio-positioning equipment used for over the horizon offshore seismic surveys (*Annales Hydrographiques, Mission Géodésique au Moyen Congo, Avril-Septembre 1959*). TORAN was quite similar to DECCA, LORAN-A, and Raydist in that the Surveyor/Navigator had to manually keep track of the hyperbolic lane count by using a pencil to number the saw-teeth output of a plotter! Skywaves were an interesting annoyance that required no small amount of ingenuity to prevent losing one’s lane count. Later developments to come up with an “automatic” lane count, as with the Argo system, yielded remarkable blunders when the skipper would change course.... I entered the arcane world of offshore radio-positioning surveying and mapping during the early 1960s.

With the war over in Congo (Brazzaville), the local economy is recovering and exploration and production of hydrocarbons as well as other mining ventures are opening up much of the undeveloped interior. At present though, there is but a single observed point published by NGA (TR8350.2) for the transformation **from** the Point Noir Datum of 1948 **to** the WGS 84 Datum: $\Delta X = -148$ m ± 25 m, $\Delta Y = +51$ m ± 25 m, and $\Delta Z = -291$ m ± 25 m. Note that there likely is little to no classical control to be found in the undeveloped interior, anyway.



The contents of this column reflect the views of the author, who is responsible for the facts and accuracy of the data presented herein. The contents do not necessarily reflect the official views or policies of the American Society for Photogrammetry and Remote Sensing and/or the Louisiana State University Center for Geoinformatics (C⁴G).