Senegal was part of the Ghana Empire in the 8th century and the Djolof kingdom in the area between the Senegal River and modern-day Dakar. The Toucouleur people, among the early inhabitants of Senegal, converted to Islam in the 11th century, although their religious beliefs retained strong elements of animism. The Portuguese had some stations on the banks of the Senegal River in the 15th century, and the first French settlement was made at Saint-Louis in 1659. Gorée Island became a major center for the Atlantic slave trade through the 1700s, and millions of Africans were shipped from there to the New World. The British took parts of Senegal at various times, but the French gained possession in 1840 and made it part of French West Africa in 1895. Dakar was built as the administrative centre, and as early as 1848 Senegal had a (French) deputy in the French parliament. In 1946, together with other parts of French West Africa, Senegal became an overseas territory of France. On June 20, 1960, it formed an independent republic federated with Mali, but the federation collapsed within four months. Although Senegal is neither a large nor a strategically located country, it has nonetheless played a prominent role in African politics since its independence. As a black nation that is more than 90% Muslim, Senegal has been a diplomatic and cultural bridge between the Islamic and black African worlds. Senegal has also maintained closer economic, political, and cultural ties to France than probably any other former French African colony.

Thanks to John W. Hager, “the International Hydrographic Bureau published another list of coordinates in 1961, the France section included a number of points for Senegal. In 1977, the Canadian Hydrographic Service conducted a LORAN-C and SatNav-based survey off Senegal and The Gambia. The ‘Datum’ for the shore based LORAN-C stations was given as Clarke 1880!!”

The French 1922 report to the IUGG gave general details of their work up to then. An additional Astro position was determined at St.-Louis: $\Phi = 16^\circ 01' 31"$ N, $\Lambda = 16^\circ 30' 23"$ West of Greenwich.

The 1930-1931 Hydrographic Mission of Saloum (Mission Hydrographique du Saloum) by Lieutenant de Vaisseau Tromeur was performed because of the steadily increasing shipping tonnage with the river port of Kaolack. A Hatt Azimuthal Equidistant Grid was used for the hydrographic survey of the Saloum River, and the origin point chosen was one earlier established by Lebail in 1910 where: $\Phi = 13^\circ 51' 11.22"$ N, $\Lambda = 16^\circ 45' 29.97"$ West of Greenwich was the South Terminal of the Saloum 1,102.8675 meter Baseline, and the reference azimuth was: $\alpha = 001^\circ 25' 06.2"$. A second-ary coordinate system used an origin at the South Terminal of the 1,896.1760 meter Baseline at Diamniayo where: $\Phi = 14^\circ 03' 19.36"$ N, $\Lambda = 16^\circ 35' 13.00"$ West of Greenwich, and the azimuth from the South Terminal to the North Terminal was: $\alpha = 047^\circ 25' 41"$. All angles observed were with a WILD Heerbrugg Universal Theodolite, and to this date (1931), no mention of any ellipsoid of revolution was given for Senegal. However, in later memoranda of the French Institut Geographique National (IGN), the use of the Clarke 1880 ellipsoid in all of French Africa was implicit.

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The definitive geodetic survey of Dakar was that of Lieutenant de Vaisseau Bonin as reported in *Annales Hydrographiques de 1937*. The origin was defined as the South Terminal of the Base of the Route d’Yof (Terme Sud de la Base de la Route d’Yof) where: $\phi_o = 14° 43’ 53.2” N$, $\lambda_o = 17° 29’ 18.4”$ West of Greenwich, and the ellipsoid of reference was the Clarke 1880 using the specific French definition parameters where: $a = 6,378,249.2$ m and $1/f = 293.4660208$. In *Wolkaub*, it was noted, “However, these geographics are not consistent with the geographics of Gouvernement as cited. The geographics of Terme Sud de la base de la route d'Yof that are consistent with these of Gouvernement are: $\Phi_o = 14° 43’ 53.1” N$, $\lambda_o = 17° 29’ 19.1”$ West of Greenwich. It appears that this inconsistency was noted by the French and corrected in their city plan of *Port Da Dakar*, but their published rectangular coordinates were not corrected. These positions are regarded as local UTM coordinates and made to refer to the 15º meridian which is central to UTM Belt 28.” In 1938, Gougenheim densified the triangulation of Dakar, using the same Hatt Grid as Bonin, but with a False Easting = False Northing of 50 km.

In 1944, the U.S. Lake Survey, New York Office, Corps of Engineers published tables for the Senegal Belt on the Transverse Mercator projection. The ellipsoid of reference is the Clarke 1880 with the standard U.S. Army parameters being: $a = 6,378,249.145$ m and $1/f = 293.465$. The latitude of origin is $\phi_o = 13° N$, Central Meridian, $\lambda_o = 16°$ West of Greenwich, Scale Factor at origin, $m_o = 0.99975$, False Easting = 400 km, False Northing = 500 km, Limits of Belt North: Parallel of 16ºN; East: Meridian of 14º West; South: Zero meter Northing line of Senegal Belt; West: Meridian of 19º West. A test point is provided where: $\phi = 15° 47’ 39.616” N$, $\lambda = 14° 02’ 29.729” W$, $X = 609,817.26$ m, $Y = 810,047.94$ m.

From October 1946 to August 1948, *Capitaine de Corvette M. Paul Bonnin* led the Mission de Triangulation de L’A.O.F. Utilizing WILD Heerbrugg T-2 and T-3 theodolites with Bilby towers, the triangulation party started about 30 km southeast of Dakar, and occupied a couple of existing triangulation stations named Tiao and Niangol. According to *Instruction N° 1312 S.G.C. de l’Institut Géographique National*, dated 12 December 1945, a new Grid was used to calculate the triangulation: *Fuseau Senegal*, the parameter of which were: latitude of origin, $\phi_o = $ Equator, Central Meridian, $\lambda_o = 13°$ 30’ West of Greenwich, Scale Factor at origin, $m_o = 0.999$, False Easting = False Northing = 1,000 km, and surprisingly the ellipsoid of reference was the International 1909 where: $a = 6,378,388$ m and $1/f = 297$.

Coordinates of these two points are: Tiao: $\phi = 14° 39’ 32.270” N$, $\lambda = 16° 59’ 14.945” W$, $X = 624,488.42$ m, $Y = 2,622,547.50$ m, and Niangol: $\phi = 14° 37’ 28.384” N$, $\lambda = 17° 09’ 28.763” W$, $X = 606,046.48$ m, $Y = 2,619,027.27$ m (*Annales Hydrographiques, 4e série, Tome quatorzième, Années 1967-1968*).

From 5 January 1949 to 12 May 2010, Mannevÿ densified Bonin’s triangulation in the region south of Dakar, and used *Fuseau Senegal* as the Grid system for his computations and published coordinates.

On 20 September 1950, *SGC 1312* was rescinded by the IGN in Paris in favor of the UTM Grid for Senegal, using the Clarke 1880 (*AMS version*) as the ellipsoid of reference.

A detailed triangulation and hydrographic survey of the mouth of the Casamance River was performed from 17 February to 6 June 1951 and from 20 February to 20 March 1952, led by M. Alain Le Fur. Astro station Djogué (in the vicinity of the Djogué Lighthouse), was observed with an astrolobe, and the final coordinates were: $\Phi_o = 12° 34’ 14.5” N$, $\lambda_o = 16° 44’ 28.5”$ West. The triangulation was computed and published on *Fuseau Senegal*. From 1 October 1953 to 1 November 1954, M. Albert Sauzay, Principal Hydrographic Engineer performed a survey of the Saloum River in a continuation of Bonin’s work and Sauzay continued with computations and publication of his Trig List on the *Fuseau Senegal Grid*.

Re-observed in 1958, Astro station Djogué was updated to $\Phi_o = 12° 34’ 14.3” N$, $\lambda_o = 16° 44’ 25.5”$ West, and was re-published on the UTM Grid. Zone 28 by M. Jean Bourgoin, Principal Hydrographic Engineer (*Mission Hydrographique de la Côte Ouest d’Afrique*). The local hydrographic survey of the mouth of the Saloum River was a continuation on the local Djogué Datum, Clarke 1880 ellipsoid. From January to March of 1960, M. André Comolet-Tirman extended a triangulation traverse from the Saloum River to the border with Gambia. Published in UTM coordinates, Zone 28, the Djogué Datum origin was updated again to: $\Phi_o = 12° 34’ 14.7” N$, $\lambda_o = 16° 44’ 25.5”$ West, $X = 310,918.9$ m, $Y = 1,390,166.1$ m.

In January 1962, M. Antoine Demeuric measured a baseline in the city of Thies, east of Dakar. The average of 4 invar measurements was 3,710.5040 meters. This compared favorably with a Tellurometer measurement of 3,710.5093 meters (*Annales Hydrographiques, 4e série, Tome quatorzième, Années 1967-1968*).

Thanks to John W. Hager, "the International Hydrographic Bureau published another list of coordinates in 1961, the France section included a number of points for Senegal. In 1977, the Canadian Hydrographic Service conducted a LORAN-C and SatNav-based survey off Senegal and The Gambia. The 'Datum' for the shore based LORAN-C stations was given as Clarke 1880!!" In a note from Mr. Russell Fox of the Ordnance Survey, Southampton to Mr. Malcolm A. B. Jones of Perth, Australia of 7 December 1999, "I believe that Yoff 200 and Point 58 datums were IGN adjustments of the Senegal-Mali section of the 12th Parallel Survey. Yoff 200 was used in the Senegambia adjustment, linking the Senegal and Gambia trig networks. Adindan Datum itself was the US DMA adjustment of the entire 12th Parallel survey. I believe the main Senegal Datum is Dakar-Hann IGN 1952, using Clarke 1880 (SGA-IGN) spheroid." In a related note from Mr. Jean-Pierre Pirat of the French IGN to Mr. Malcolm A. B. Jones later that month, "The geodetic Systems that one finds in Senegal were established during the measurement of the geodetic advance of the 12th parallel in 1968 (Senegal-Sudan crosses). They are composed of the Adindan system as you say it in your message, but also Yoff datum and Point 58 datum. Yoff (or Yoff-200 datum): the datum is the astronomical point of Yoff (n’200 in the repertory of the 12th Parallel), spheroid Clarke 1880. Adindan datum: the datum is the astronomical point of Adindan located as the border Sudan-Egypt, spheroid Clarke 1880. It is the system retained for the international geodetic connections. The parameters of passage (datum shifts) of these local systems towards World System WGS84 are respectively: Yoff-200 towards WGS84: $Tx = -31$, $Ty = +173$, $Tz = +90$; Adindan (Senegal) towards WGS84 $Tx = -128$, $Ty = -18$, $Tz = +224$, Point 58 towards WGS84: no comment."

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).