

# Grids & Datums

## FEDERATION OF SAINT KITTS AND NEVIS

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“At the time of European discovery, Carib Indians inhabited the islands of St. Kitts and Nevis. Christopher Columbus landed on the larger island in 1493 on his second voyage and named it after St. Christopher, his patron saint. Columbus also discovered Nevis on his second voyage, reportedly calling it Nevis because of its resemblance to a snowcapped mountain (in Spanish, “*Nuestra Señora de las Nieves*” or Our Lady of the Snows). European settlement did not officially begin until 1623–24, when first English, then French settlers arrived on St. Christopher’s Island, whose name the English shortened to St. Kitts Island. As the first English colony in the Caribbean, St. Kitts served as a base for further colonization in the region.

The English and French held St. Kitts jointly from 1628 to 1713. During the 17th century, intermittent warfare between French and English settlers ravaged the island’s economy.

Meanwhile Nevis, settled by English settlers in 1628, grew prosperous under English rule. St. Kitts was ceded to Great Britain by the Treaty of Utrecht in 1713. The French seized both St. Kitts and Nevis in 1782. The Treaty of Paris in 1783 definitively awarded both islands to Britain. They were part of the colony of the Leeward Islands from 1871–1956, and of the West Indies Federation from 1958–62. In 1967, together with Anguilla, they became a self-governing state in association with Great Britain; Anguilla seceded late that year and remains a British dependency. The Federation of St. Kitts and Nevis attained full independence on September 19, 1983” (*Background Note, Bureau of Western Hemisphere Affairs, U.S. Dept. of State, 2009*).

With an area about 1.5 times the size of Washington, D.C., the lowest point is the Caribbean Sea (0 m), and the highest point is Mt. Liamuiga or Mt. Misery (1,156 m). With coastlines in the shape of a baseball bat and ball, the two volcanic islands are separated by a 3-km-wide channel called The Narrows; on the southern tip of long, baseball bat-shaped Saint Kitts lies the Great Salt Pond; Nevis Peak sits in the center of its almost circular namesake island and its ball shape complements that of its sister island (*World Factbook, 2009*).

Although local cadastral surveys of the British West Indies date back to the 19<sup>th</sup> century, the first known geodetic observations of St. Kitts and Nevis were

in the middle of the 20<sup>th</sup> century. The origin of the local 1955 datum at Fort Thomas is Station K 12 where:  $\Phi_0 = 17^\circ 17' 17.37''$  N,  $\Lambda_0 = 62^\circ 44' 08.295''$  W, the azimuth from North to Station Upper Bayford is:  $\alpha_0 = 13^\circ 53' 02.7''$ , and the reference ellipsoid is the Clarke 1880 where:  $a = 6,378,249.145$  m and  $f = 293.465$ . There is no published relation between the Ft. Thomas Datum of 1955 and WGS 84 Datum, but the U.S. National Geodetic Survey (NGS) did perform a number of high-precision GPS observations on the island of St. Kitts in 1966. Although the NGS indeed occupied *one* of

the local cadastral control points, they neglected to research the local coordinates of the point. The point occupied was KT 8, and the adjusted NAD83 coordinates observed are:  $\phi = 17^\circ 17' 58.85758''$  N,  $\lambda = 62^\circ 41' 43.83677''$  W,  $h = 85.287$  m. Once the local BWI (*pronounced “bee-wee”*) coordinates are obtained, the

transformation to WGS 84 will be a trivial computational exercise for local orienteering purposes. The BWI Transverse Mercator Grid for St. Kitts and Nevis is defined as: Central Meridian ( $\lambda_0$ ) =  $62^\circ$  W, Scale Factor at Origin ( $m_0$ ) = 0.9995, False Easting = 400 km, False Northing = null.

The U.S. Army Map Service, Inter American Geodetic Survey (IAGS) performed cooperative geodetic surveys of all of Latin America and the Caribbean after WWII, and carried the North American Datum of 1927 throughout Central America and the Caribbean Islands. The approximate transformation from NAD 27 to WGS 84 for that area of the Caribbean is:  $\Delta X = -3\text{m} \pm 3\text{m}$ ,  $\Delta Y = +142\text{m} \pm 9\text{m}$ , and  $\Delta Z = +183\text{m} \pm 12\text{m}$ , and the solution is based on 15 stations in that region of the Caribbean. Thanks go to John W. Hager for the Fort Thomas geodetic reference.



*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 (C<sup>2</sup>G).*

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