Grenada

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

Discovered by Christopher Columbus in 1498 on his third voyage, the island was not settled until 1609 when the English attempted to establish tobacco plantations. Native Carib Indians made numerous raids on the English settlers and convinced them to abandon the island. In 1650, the governor of Martinique purchased Grenada from the Caribs, and re-settled the island with about 200 French citizens. After a year of subsequent raids by the Caribs, a contingent of French soldiers was sent to Grenada to secure the island. The Caribs were routed at Sauteurs Bay, but rather than surrender, the entire Carib population leaped to their deaths into the Caribbean Sea, and the highest point is Mount Saint Catherine (840 m).

The British Directorate of Colonial Surveys (DCS) flew the first aerial photography of Grenada in 1951. The original geodetic surveys of the island were performed by DCS in 1953, and the origin point is the astronomical station G5 B, Santa Maria (at the Santa Maria Hotel yard), where: $\phi = 12^\circ 02' 36.56''$ N and $\lambda = 61^\circ 45' 12.495''$ West of Greenwich. The defining azimuth to G5 North Extension is $\alpha = 207^\circ 30' 46.55''$ East of North, and scale is defined by the length from G1 West Base (Grand Anse Rum Distillery Hill) to G2 East Base (SE of the Grand Anse Rum Distillery chimneys) of 1991.394 meters. The height of Santa Maria ($H$) = 160.24 feet, determined by leveling from the Colony bench mark at St. Georges Harbor which is 3.17 feet above mean sea level. The ellipsoid of reference is the Clarke 1880 where: $a = 6,378,249.145$ m, $1/f = 293.465$. The grid system used for Grenada is the BWI Transverse Mercator Grid where the central meridian, $\lambda_o = 62^\circ$ W, the latitude of origin $\phi_o = equator$, the scale factor at the latitude of origin $m_o = 0.9995$, False Easting = 400 km, and False Northing = nil. The formulae are the Gauss-Krüger, but merely added black grid lines for ground to the supporting pilots. Air, ground, and sea Services planned and operated using separate maps referenced to three distinctly different coordinate systems. Accustomed to large-scale maps depicting terrain in familiar grids, Army units deploying from Fort Bragg used maps constructed by the Army’s 100th Engineer Company (Cartographic), from a tourist map with an arbitrary grid overlay. Despite pictures of palm trees in the margins, the map was excellent. Constructed by British military engineers, the base map included highly accurate survey data replete with topographic contours. The American Army engineers merely added black grid lines for ground troops to use as a grid reference system. While this worked well for the Army, coordinates from the grided overlay were useless to any combatant without a copy of the modified tourist map. Some historians link the strafing of the U.S. Army command post to this lack of a common positional picture. “Ground units experienced difficulty in orienting themselves and in directing supporting gunfire and airstrikes. [This] inadvertent airstrike…has been blamed partly on this chart confusion problem” (Rivard, DTIC 1985). The failure to create a common reference for continued on page 129
planning highlighted the Services’ utter lack of attention to planning the joint fight. The ‘tourist map’ debacle merited considerable media attention, providing further grist for 1986 Goldwater-Nichols Act proponents.” (Gruetzmacher, Holtery, and Putney, Joint Forces Staff College Joint and Combined Staff Officer School, #02-02, 2002)

A GPS survey by the U.S. National Geodetic Survey (NGS) occupied the station GS 15, Fort Frederick in 1996. I computed a singlepoint datum shift relation from Grenada 1953 Datum to WGS 84 Datum as: $\Delta X = +72 \text{ m}$, $\Delta Y = +213 \text{ m}$, and $\Delta Z = +93 \text{ m}$. Thanks to Dennis McCleary of NGA for validation that the Santa Maria “astro” position was the same as the geodetic position I received from Dave Doyle of NGS.

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