

## Saint Vincent and the Grenadines

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

The cannibal warrior Caribs arrived in Saint Vincent around the 14<sup>th</sup> century, and they strongly resisted colonial settlers until the 18<sup>th</sup> century. Christopher Columbus probably sighted the island on 22 January 1498 (St. Vincent's Day). In 1673 the first African slaves were shipwrecked in the Grenadines, but they managed to get to St. Vincent, intermarry with the Caribs, and became known as the "Black Caribs." In 1795 the Caribs unsuccessfully rose in revolt against the British, and 5,000 or more of them were deported to Roatan Island off the coast of Honduras. The hurricane of 1898 and the volcanic eruption of 1902 were disastrous to the economy. In 1958 Saint Vincent joined the West Indies Federation, it received a new constitution in 1960, and it became a state in association with the United Kingdom (*PE&RS, October 2003*) in 1969. Independen-

ce in 1946 by the Hydrographic Service of the British Admiralty on 04 December. The coordinates of Fort Charlotte (V.1) are  $\Phi_0 = 13^\circ 09' 24''$  N and  $\Lambda_0 = 61^\circ 14' 43''$  West of Greenwich, the reference azimuth from "V. 1" to "V. 3" is  $\alpha_0 = 107^\circ 30' 13.42''$ , the elevation of "V.2" is:  $H_0 = 370.36$  feet, and the baseline length (measured in 1945 by the Royal Engineers [R.E.] by catenary) from "V.30" to "V.32" is 2,347.504 m. (Invar tapes or wires were commonly calibrated for a standard length by being supported only at the ends of the tape or wire with a specific tension, thus the sag formed a catenary curve). The reference ellipsoid is the Clarke 1880 where:  $a = 6,378,249.136$  m, and  $1/f = 293.46631$ , the same parameters as for Jamaica (*PE&RS, May 2003*). Courtesy of the U.K. Military Survey, "The height of V.2 was established by the R.E. party by leveling

isting survey control marks previously set by the Lands and Surveys Department (L&SD), and I was successful in obtaining the classical St. Vincent Datum of 1946 coordinates of four of the six points collocated with GPS observations. Unfortunately, I do not have a record of who it was that sent the information to me on official L&SD stationery. I ran a solution for the three parameters of geocentric translation for those four points; two were listed as First Order and two were listed as Second Order. The resultant relation I derived from the St. Vincent Datum of 1946 to WGS 84 is  $\Delta X = +196$  m,  $\Delta Y = +332$  m, and  $\Delta Z = +275$  m. I estimate the horizontal accuracy to be good to about 1 meter for the island of Saint Vincent. Because I had zero data on collocated points on any of the other islands, my guess is that the three-parameter shift values listed above are

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dence for Saint Vincent and the Grenadines was achieved on 27 October 1979. *Encyclopedia Britannica* says, "In 1979 the Soufrière volcano (1,234 m) erupted once again, damaging agriculture and the tourist trade. Hurricane Allen virtually wiped out the all-important banana crop in 1980."

Slightly less than twice the size of Washington, D.C., there are 32 Grenadine islands and cays, of which the largest are Bequia, Mustique, Canouan, and Union. Of a total 389 km<sup>2</sup>, the area of Saint Vincent is 344 km<sup>2</sup>. Some of the smaller islands are privately owned – probably not by retired cartographers. Part of the Windward Islands, the name dates back to the 18<sup>th</sup> century when English ships bound for Jamaica followed the trade-wind passage, and stopped at islands along the way. The islands constitute a north-south chain in the southern section of the Lesser Antilles and share a volcanic rock formation.

The earliest geodetic survey of Saint Vincent was of Fort Charlotte (lighthouse)

from a Bench Mark on a step of the Aquatic Club, Kingstown; the height of the Bench Mark was established by the R.E. party from mean tide gauge reading taken over a period of four months." (*Note that a Metonic cycle is 18.67 years! – Ed.*)

The coordinate system used by the Lands and Surveys Department of Saint Vincent and the Grenadines is the British West Indies (BWI) Grid which is based on the Transverse Mercator projection where the Central Meridian  $\lambda_0 = 62^\circ$  W, the Scale Factor at Origin  $m_0 = 1999/2000 = 0.9995$ , and the False Easting is 400 km. Note that the unit of measurement for this BWI Grid is the meter where 1 meter = 3.2828456 feet. The strange conversion factor is likely due to an earlier colonial length standard that was used for property surveys; a common quirk of old British Colonies throughout the world.

In 1996, the United States National Geodetic Survey (NGS) performed a GPS survey of selected points on the island of Saint Vincent. The NGS occupied a number of ex-

likely good to no more than a few meters for the remainder of the islands to the south because of the usually superb quality of work produced by the Royal Engineers. Thanks to Dave Doyle of NGS for the NAD83 coordinates of Saint Vincent.



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