

The Cape Geodetic Standards and Their Impact on Africa

Tomasz ZAKIEWICZ, South Africa

Key words: standards, length measure, metre, Cape foot, 30th Meridian, baseline, ellipsoid.

SUMMARY

The Cape Geodetic Standards consist of two ten-foot iron bars, brought from England in 1839, and used by Sir Thomas Maclear, during the years 1841/42, for the verification of Lacaille's Arc of 1752. Forty years later, when Sir David Gill, having commenced the Geodetic Survey of South Africa, initiated the measurement of the Arc of the 30th Meridian, the "Cape Bar A" was still in existence and kept as a standard reference. In 1886, in Paris, the bar was standardized in terms of the international metre. However, due to the implications with the legal and international metres, it appeared later, that the results of the geodetic triangulation were computed not in English feet but in terms of the fictitious unit now called the South African Geodetic foot. This caused the reference ellipsoid to be renamed to the Modified Clarke 1880 ellipsoid. Later, as a consequence of an extension of the Cape Datum, the 1950 ARC Datum was established, giving a uniform framework of triangulation from the Cape to the Equator. Until the present, some countries, along the 30th Meridian, use the 1950 ARC Datum, thus, the Modified 1880 Clarke ellipsoid, or, its revision, the Arc 1960.

The paper gives an outline of the development of the English and metric systems, which have, without doubt, influenced the establishment of the "commercial" Cape units, used for everyday purposes, and, also, of the unit of the Geodetic Survey of South Africa. The paper describes the reference geodetic standards of this Great Survey, and produces a brief summary of the history of the measurement and computation of the Arc of the 30th Meridian. It will also focus on the Cape Datum, as well as on the 1950 Arc Datum and their influence on Africa.