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.

Originally settled in the Bronze Age, the Umm an-Nar’s culture established itself near modern Abu Dhabi in the 3rd century B.C., and its influence extended to the interior of the Arabian Peninsula as well as along the coast to Oman. Some later settlements by the Greeks have been found, and in the Middle Ages most of the region was part of the Kingdom of Hormuz, which controlled trade in the Arabian Gulf. The Portuguese arrived in 1498 and stayed until 1633 until the British took control of the area. By 1820, the British had destroyed or captured all Qawasim pirates, and installed a garrison. The area was known as the Trucial Coast and is still found to this day.

The first major geodetic datum of the Arabian Gulf area was established by the British Royal Navy in 1933 such that: $\phi_o = 24^\circ 16’ 44.83”$ North, $\lambda_o = 52^\circ 37’ 17.63”$ East of Greenwich, and the Clarke 1880 is the ellipsoid of reference.

The Ajman Datum of 1946 origin is such that: $\phi_o = 25^\circ 23’ 50.19”$ North, $\lambda_o = 55^\circ 26’ 43.95”$ East of Greenwich and is referenced to the Helmert 1906 ellipsoid where $a = 6,378,200$ m, and $1/f = 293.4663077$. The Nahrwan Datum of 1929 is the most prevalent coordinate system of the entire Arabian Gulf area and a $\phi_o = 24^\circ 16’ 44.83”$ North, $\lambda_o = 52^\circ 37’ 17.63”$ East of Greenwich, and the Clarke 1880 is the ellipsoid of reference.

The Sir Bani Yas Island Datum of 1933 was established by the British Royal Navy in 1933 such that: $\phi_o = 25^\circ 23’ 50.19”$ North, $\lambda_o = 55^\circ 26’ 43.95”$ East of Greenwich and is referenced to the Helmert 1906 ellipsoid where $a = 6,378,200$ m, and $1/f = 293.4663077$. The first Grid was the WWII Trucial Coast/Qatar Grid on the Cassini-Soldner projection. The Central Meridian $\lambda_c = +55^\circ$ at 45° 41’ E, the False Northing Latitude of Origin $\phi_{on} = 25^\circ 22’ 56.5”$ N, and both the False Eastings and False Northings are 100 km. Of course, the scale factor at origin by definition is equal to unity.

Dubai was based on only four third-order points in the southeast corner of the Emirate. A military survey department was set up by the Emirates and new mapping was published between 1989 and 1991 as 138 orthophoto sheets on the Nahrwan Datum of 1929 with the UTM Grid. A new GPS network was initiated for Dubai in 1991 with a new local Grid. The Dubai Local Transverse Mercator (DLTM) Grid is referenced to the WGS 84 ellipsoid, the Central Meridian $\lambda_c = +55^\circ$ 20’ E, and the False Easting = 500 km. The Northings are presumably measured from the Equator. Analysis of the old network indicated a potential positional error of the old classical control of up to 9 meters horizontal. The First Order Geodetic GPS Network of Dubai is composed of 62 monumented points with distances between points ranging from 5 to 10 km. Of particular interest is that Dubai has completely abandoned the previous classical geodetic work extant in the Emirate. Zero effort was (apparently) made to relate the old to the new! I personally do not agree with this philosophy because I prefer to relate historical records to current and future work. However, I suspect that this unfortunate tack may be chosen from time-to-time for the sake of expediency.

Satellite positioning studies (by others) in the United Arab Emirates derived a set of Datum shift parameters from WGS72 Datum to Nahrwan Datum of 1929 where: $\Delta X = +225.4$ m, $\Delta Y = +158.7$ m, $\Delta Z = +378.9$ m, based on observations of 8 stations. I personally would consider the tenths of a meter used in these parameters as very optimistic. Interestingly, NIMA lists the transformation from Nahrwan 1929 to WGS 84 as $\Delta X = –249$ m, $\Delta Y = –156$ m, $\Delta Z = –381$ m, ±25 m, based on two stations observed in 1987.

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**UNITED ARAB EMIRATES**

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