



PUBLIC NOTICE

FEDERAL COMMUNICATIONS COMMISSION
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THE FEDERAL COMMUNICATIONS COMMISSION CONTINUES TO REQUIRE APPLICANTS TO USE COORDINATES BASED ON THE NORTH AMERICAN DATUM OF 1927

Released Date: September 1, 1992

This public notice is intended to provide a background for eventual changes in Commission rules and procedures needed for a planned transition to specifying geographical coordinates (latitudes/longitudes) in terms of the North American Datum of 1983 (NAD 83). This change will in the future affect all Commission licensees and is a result of the Federal Aviation Administration's (FAA) impending conversion to NAD 83 on October 15, 1992.

BACKGROUND

In the field of telecommunications it is essential that the latitude and longitude of antennas and towers be known to a high degree of accuracy. Those coordinates are used to determine spacings between stations, determine antenna height above average terrain, assess potential impact of structures on air safety, allow efficient frequency reuse, and evaluate environmental effects, among other things. The proper specification of latitude and longitude is an integral part of the Commission's regulations; errors and inconsistencies could have technical and legal consequences.

Until recently the determination of position in the continental United States was based on various geodetic reference systems that had been established over the past 70 years. The method for determining coordinates used in filing FCC station applications were based on these various geodetic reference systems as show on the attached Table, "Local Horizontal Datums of the United States of America". Improvements in technology, particularly in satellite surveying and photography, have resulted in a small but noticeable shift in the geodetic reference system which, in turn, will alter the coordinates (latitude and longitude) of towers and antennas.

The Earth is not a perfect sphere, but rather, being somewhat flattened in the polar regions, an ellipsoid. Until the early 1980s, the latitudes and longitudes of places in North America were based on a model of the earth's shape formulated in 1866 and known as the Clarke ellipsoid. Surveys made to determine the coordinates of a given point were referenced to a triangulation station in the conterminous United States known as MEADES RANCH. Eventually as more observations were added to the network of the U.S. Coast and Geodetic Survey, they were incorporated into a system which became codified as the North American Datum of 1927 (NAD 27).

The 25,000 survey points in the 1920's expanded to 250,000 in the 1970's, many of which were 'forced' to fit the NAD 27 network. That led to a loss of accuracy. Accordingly, the National Academy of Sciences recommended that the North American Datum be re-adjusted. Using the latest technology, scientists updated their depiction of the shape of the earth and the location of physical features on it. That finally lead to a more accurate and consistent reference system for North America, known as the North American Datum of 1983 (NAD 83), based on the Geodetic Reference System of 1980 (GRS 80) ellipsoid. This new system was adopted as the official horizontal coordinate system of the United States by notice in the *Federal Register*, June 14, 1989.

IMPACT

One of the benefits of using more accurate position data is enhanced safety afforded the aviation industry. Consequently, Congress passed Public Law 101-508, Section 9120, the *Aviation Safety and Capacity Expansion Act of 1990*, which mandated that the FAA convert all position data used in the National Airspace System to NAD 83. In compliance with this law, the FAA, on May 11, 1992, issued a Notice in the *Federal Register* advising that they will convert all latitude and longitude coordinates used in the National Airspace System to NAD 83 on October 15, 1992. This will directly affect coordination between the FAA and FCC on all matters related to tower and antenna and aviation facility locations.

The FCC will eventually be required to use NAD 83 coordinates in all of its activities, including licensing and the maintenance of data bases. However, before this can be implemented, studies must be carried out to determine how best to accomplish the conversion with the resources available and at a minimum impact to the public, while also analyzing how best to resolve issues as:

- changes to application forms
- issuance of adjusted licenses to existing licensees
- changes to rules and regulations
- minimizing the public burden and confusion
- changes to formulae such as those for computing distance between two points
- international interchange of coordination data with Canada and Mexico, etc.

INTERIM PROCEDURE

The FCC will assign the first priority to internally converting those software systems and data bases affected by the FAA changeover to NAD 83. However, in order to provide sufficient time to study the changes and issues discussed above and to assure continuity of operations, the Commission will require applicants to continue to provide position information in NAD 27 coordinates or, for certain specialized areas in accordance with the attached Table of local horizontal datums. We realize there could be some confusion to applicants, consulting engineers and frequency coordinators for filing applications. Applicants and those preparing applications must be aware of the necessity of providing coordinates in accordance with the attached Table of local horizontal datums UNTIL FURTHER NOTICE. We will issue further guidance later as experience is gained with problem areas.

TUTORIAL

The Commission has arranged for a tutorial, open to the public, to be presented on September 15, 1992, at 1:30 pm in the Commission Meeting Room, on conversion to NAD 83. At that time, a group of experts will expand on the background information presented above, and answer queries. A public notice will be issued announcing the tutorial. If necessary, the Commission will issue additional public notices and other documents on the subject of NAD 83 to clarify areas of concern or new developments.

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Local Horizontal Datums of the United States of America

Geographic Location	Horizontal Datum
Conterminous United States	North American Datum of 1927 (NAD 27) (USGS, 1:24,000)
Alaska (except St. George Island, St. Paul Island and St. Lawrence Island)	North American Datum of 1927 (NAD 27) (USGS, 1:24,000, 1:25,000, 1:63,360 & 1:250,000)
Hawaii	Old Hawaiian (USGS, 1:24,000 & 1:62,500)
Puerto Rico (Commonwealth of)	Puerto Rico (USGS, 1:20,000)
United States Virgin Islands (unincorporated territory of)	Puerto Rico (USGS, 1:24,000)
Navassa Island, Quita Sueno Bank, Roncador Bank, Serrana Bank and Serranilla Bank	"Local astronomical datum" (No USGS map coverage) (NOAA No. 26194 <i>Navassa Is.</i> , 1:15,000)
St. George Island, AK	St. George (USGS, 1:250,000)
St. Paul Island, AK	St. Paul (USGS, 1:250,000)
St. Lawrence Island, AK	St. Lawrence (USGS, 1:250,000)
Midway Island	Midway Astro 1961 (No USGS map coverage) (NOAA No. 19481 <i>Midway Island</i> , 1:32,500)
Johnston Island	Johnston Island 1961 (No USGS map coverage) (NOAA No. 540 <i>Hawaiian Archipelago</i> , 1:3,121,170)
Northern Mariana Islands (Commonwealth of the)	
Saipan, Tinian and Rota	Guam 1963 (USGS, 1:24,000)
Other islands	"Local astronomical datum" (Not individually mapped by USGS)
American Samoa (unincorporated territory of)	American Samoa 1962 (USGS, 1:24,000)
Guam (unincorporated territory of)	Guam 1963 (USGS, 1:24,000)
Baker Island	"Local astronomical datum" (No USGS map coverage) (NOAA No. 83116 <i>Islands in the Pacific Ocean - Jarvis, Baker and Howland Islands</i> , 1:15,000)
Howland Island	"Local astronomical datum" (No USGS map coverage) (NOAA No. 83116 <i>Islands in the Pacific Ocean - Jarvis, Baker and Howland Islands</i> , 1:15,000)
Jarvis Island	"Local astronomical datum" (No USGS map coverage) (NOAA No. 83116 <i>Islands in the Pacific Ocean - Jarvis, Baker and Howland Islands</i> , 1:15,000)
Kingman Reef	"Local astronomical datum" (No USGS map coverage)
Palmyra Island	"Local astronomical datum" (No USGS map coverage) (NOAA No. 83157 <i>Palmyra Atoll and approaches to Palmyra Island</i> , 1:10,000)
Wake Island	Wake Island 1952 (No USGS map coverage) (NOAA No. 81664 <i>Wake Island</i> , 1:15,000)