

National Oceanic and Atmospheric Administration

[Docket No.900665-0165]

Notice To Adopt Standard Method for Mathematical Horizontal Datum Transformation

AGENCY: National Oceanic and Atmospheric Administration, Commerce.

ACTION: Notice.

SUMMARY: The purpose of this notice is to announce a decision by the Federal Geodetic Control Committee (FGCC) to recommend adoption of a standard method for mathematical transformations between the horizontal geodetic datums: the North American Datum of 1927 (NAD 27) and the North American Datum of 1983 (NAD 83). There are three methods generally considered when converting between NAD 27 and NAD 83. These methods are designated, in descending order of accuracy: 1) the recomputation or readjustment of survey observations method, 2) the mathematical transformation method, and 3) the average shift method. In order to maintain consistency of results and to minimize misuse associated with the mathematical transformation method, FGCC recommends software identified as NADCON (North American Datum Conversion) as a Federal standard.

FOR FURTHER INFORMATION CONTACT: Mr. James E. Stem. N/CG1X4, Rockwall Building, Room 110, National Geodetic Survey, NOAA. Rockville, Maryland 20852: telephone: (301) 443-8749.

SUPPLEMENTARY INFORMATION: The intent of this notice is to standardize a horizontal datum transformation method when a *mathematical* transformation is desired. FGCC selected the method incorporated in the software identified as NADCON, It is not the intent of the notice to declare when to use a datum transformation or by what method but only to declare that when a mathematical transformation is appropriate, NADCON is recommended. Note that NADCON is not appropriate to transform FGCC first- or second-order coordinates between NAD 27 and NAD 83 and retain first- or second-order accuracies in the results. Method 1, recomputation or readjustment of survey observations, is usually more appropriate to maintain first- and second-order FGCC accuracies.

NADCON contains several files of gridded datum shift information computed using a technique known as "minimum curvature," Simply bilinear interpolation is used on the shift data to determine correctors. At the 67 percent confidence level, this method introduces approximately 0.15 meter uncertainty within the conterminous United States, 0.50 meter uncertainty within Alaska, 0.20 meter uncertainty within Hawaii, and 0.05 meter uncertainty within Puerto Rico and the Virgin Islands. In areas of sparse geodetic data coverage, NADCON may yield less accurate results, but seldom in excess of 1.0 meter. In near offshore regions, results will be less accurate, but seldom in excess of 5.0 meters.

Copies of NADCON based software are available for use on IBM-compatible personal computers. The software code is also available when specifically requested, To obtain copies contact the National Geodetic Information Branch. N/CG174, Rockwall Building, Room 24, National Geodetic Survey, NOAA, Rockville, Maryland, 20852: (301) 443-8631.

Dated: July 16, 1990.

Virginia K. Tippie,

Assistance Administrator for Ocean Services and Coastal Zone Management, NOAA.

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