ISO Geodetic Registry

Item class	Transformation	
Name	**NAD 83 (HARN) to NAD 83 (FBN) [v1]**	
Item status	VALID	
Identifier	714	
Information source	*Title*	Notice to Adopt Standard Method for Horizontal Datum Transformation
	Author	US Government
	Publisher	Office of Federal Register, NARA
	Publication date	1990-08-10
	Edition date	1990-08-10
	Series/Journal name	Federal Register Notice
	Issue identification	Volume 55, No. 155, Document: 00-18809
	Page	32681.0
	Other citation details	Mandates use of NADCON for official transformations between datums
Information source	*Title*	NADCON 5.0: Geometric Transformation Tool for points in the National Spatial Reference System
	Author	D. Smith, A. Bilich
	Publisher	NOAA's National Geodetic Survey
	Publication date	2017-03-27
	Edition date	2017-03-27
	Series/Journal name	NGS Technical Report
	Other citation details	Replaces version 4.2 and all earlier. Provides gridding algorithm, datum transformations, and extents of covnversion grids.
Data source	ISO Geodetic Registry	
Remarks	Grid Transformation	
Operation version	V1	
Scope	Spatial referencing	
Operation accuracy	0.05 m	
Source CRS	NAD 83 (HARN) - LatLonEHt	
Target CRS	NAD 83 (FBN) - LatLonEHt	
Operation method	NADCON 5 (3D)	

Extent

Description	**United States (USA) - onshore and offshore - CONUS (Alabama, Arizona, Arkansas, California, Colorado, Connecticut, Delaware, Florida, Georgia, Idaho, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Montana, Nebraska, Nevada, New Hampshire, New Jersey, New Mexico, New York, North Carolina, North Dakota, Ohio, Oklahoma, Oregon, Pennsylvania, Rhode Island, South Carolina, South Dakota, Tennessee, Texas, Utah, Vermont, Virginia, Washington, West Virginia, Wisconsin, Wyoming).**

Geographic Bounding Box	*West-bound longitude*	-135.0
	North-bound latitude	50.0
	East-bound longitude	-66.0
	South-bound latitude	24.0

Operation parameter values

Latitude difference file	nadcon5.nad83_harn.nad83_fbn.conus.lat.trn.20160901.b
Longitude difference file	nadcon5.nad83_harn.nad83_fbn.conus.lon.trn.20160901.b
Height difference file	nadcon5.nad83_harn.nad83_fbn.conus.eht.trn.20160901.b

ISO Geodetic Registry

Item class	OperationMethod
Name	**NADCON 5 (3D)**
Item status	VALID
Identifier	87
Alias	NADCON
Alias	NADCON 5
Data source	ISO Geodetic Registry
Remarks	The latitude, longitude and height offsets at a point are derived by interpolation within the gridded data. Separate grid files are given for latitude, longitude and height offsets. The grid file format is given in documentation available from the information source. Biquadratic interpolation is used to derive the offset values. For the forward calculation the interpolated value of the offset is then added to the source CRS coordinate value to give the coordinates in the target CRS. Transformations between NAD83(HARN) and all subsequent realizations of NAD83 are expressed in 3D with latitude, longitude and height offsets. This operational method is designed to use all three operational parameters. Previous realizations of NAD83 were only 2D and use a different operational method. NADCON includes all versions from 1 through 5 (released in 2017). While the first and the last used slightly different grids and interpolation methods, the differences are deemed to be within the errors of the methods and considered equivalent. Hence users of NADCON 2.1 should generate equivalent results for transformations using NADCON 5.0. Note that this operational method is for 3D transformation. Another method uses only a 2D transformation (latitude and longitude only). Reversibility: Iteration is required for the reverse transformation. The coordinate reference system for the coordinates of the grid nodes is the source coordinate reference system for the forward transformation. Then in forward transformations the offset is obtained through straightforward interpolation of the grid file. But for the reverse transformation the first grid interpolation entry will be the value of the point in the second coordinate reference system, the offsets are interpolated and applied with sign reversed, and the result used in further iterations of interpolation and application of offset until the difference between results from successive iterations is insignificant.

Operation parameters

Latitude difference file
Longitude difference file
Height difference file