

# ISO Geodetic Registry

|                           |   |  |
|---------------------------|---|--|
| <i>Item class</i>         | Transformation  |  |
| <i>Name</i>               | <b>ITRF94 to NAD83(CSR96) v1 [v1]</b>                                       |  |
| <i>Item status</i>        | VALID   |  |
| <i>Identifier</i>         | 583   |  |
| <i>Information source</i> | <i>Title</i>  | The Evolution of NAD83 in Canada   |
|                           | <i>Author</i>   | M. Craymer   |
|                           | <i>Publisher</i>  | Canadian Institute of Geomatics  |
|                           | <i>Publication date</i>   | 2006   |
|                           | <i>Series/Journal name</i>  | Geomatica  |
|                           | <i>Issue identification</i>   | Volume 60, No. 2   |
| <i>Information source</i> | <i>Page</i>   | 151-164  |
|                           | <i>Title</i>  | Modern Geodetic Reference Frames for Precise Satellite Positioning and Navigation  |
|                           | <i>Author</i>   | J. Kouba, J. Popelar   |
|                           | <i>Publication date</i>   | 1994-09-02   |
| <i>Information source</i> | <i>Series/Journal name</i>  | Proceedings on the International Symposium on Kinematic Systems in Geodesy, Geomatics and Navigation, Banff, Canada, August 30 - September 2, 1994 |
|                           | <i>Page</i>   | 79-86  |
|                           | <i>Title</i>  | The Canadian Spatial Reference System (CSRS)   |
|                           | <i>Author</i>   | Canadian Geodetic Survey   |
| <i>Information source</i> | <i>Publisher</i>  | Canadian Geodetic Survey, Surveyor General Branch, Earth Sciences Sector, Natural Resources Canada, Government of Canada                           |
|                           | <i>Publication date</i>   | 2016-08-30   |
| <i>Data source</i>        | ISO Geodetic Registry   |  |
| <i>Remarks</i>            | Transformation defines NAD83(CSR96)v1 and is treated as errorless.          |  |
| <i>Operation version</i>  | v1  |  |
| <i>Scope</i>              | Spatial referencing   |  |
| <i>Operation accuracy</i> | 0.0 m   |  |
| <i>Source CRS</i>         | ITRF94 - XYZ  |  |
| <i>Target CRS</i>         | NAD83(CSR96) v1 - XYZ   |  |
| <i>Operation method</i>   | Time-Dependent Position Vector Transformation (geocentric Cartesian domain) |  |

## Extent

|                                |  |         |
|--------------------------------|--|---------|
| <i>Description</i>             | <b>Canada - onshore and offshore - Alberta, British Columbia, Manitoba, New Brunswick, Newfoundland and Labrador, Northwest Territories, Nova Scotia, Nunavut, Ontario, Prince Edward Island, Quebec, Saskatchewan, Yukon.</b> |         |
| <i>Geographic Bounding Box</i> | <i>West-bound longitude</i>  | -141.01 |
|                                | <i>North-bound latitude</i>  | 90.0    |
|                                | <i>East-bound longitude</i>  | -47.74  |
|                                | <i>South-bound latitude</i>  | 40.04   |

## Operation parameter values

|   |                                 |
|---|---------------------------------|
| <i>Time reference</i>                       | 1988.0 year                     |
| <i>Rate of change of scale difference</i>   | 0.0 parts per billion per year  |
| <i>Rate of change of Z-axis rotation</i>    | 0.032 milliarc-second per year  |
| <i>Rate of change of Y-axis rotation</i>    | 0.762 milliarc-second per year  |
| <i>Rate of change of X-axis rotation</i>    | -0.052 milliarc-second per year |
| <i>Rate of change of Z-axis translation</i> | -8.0E-4 metre per year          |
| <i>Rate of change of Y-axis translation</i> | 4.0E-4 metre per year           |
| <i>Rate of change of X-axis translation</i> | -4.0E-4 metre per year          |
| <i>Scale difference</i>                     | 4.9 parts per billion           |
| <i>Z-axis rotation</i>                      | -10.7 milliarc-second           |
| <i>Y-axis rotation</i>                      | -15.4 milliarc-second           |
| <i>X-axis rotation</i>                      | -27.3 milliarc-second           |
| <i>Z-axis translation</i>                   | -0.534 metre                    |
| <i>Y-axis translation</i>                   | -1.979 metre                    |
| <i>X-axis translation</i>                   | 0.942 metre                     |

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|                    |  |
|--------------------|--|
| <i>Item class</i>  | OperationMethod  |
| <i>Name</i>        | <b>Time-Dependent Position Vector Transformation (geocentric Cartesian domain)</b>   |
| <i>Item status</i> | VALID  |
| <i>Identifier</i>  | 82   |
| <i>Alias</i>       | Time-Dependent 7-Parameter Transformation  |
| <i>Alias</i>       | 14-Parameter Transformation  |
| <i>Alias</i>       | Time-Dependent Position Vector Transformation  |
| <i>Data source</i> | ISO Geodetic Registry  |
| <i>Remarks</i>     | Note the analogy with the rotation for the Time-dependent Coordinate Frame Transformation but beware of the differences! The Position Vector Transformation convention is used by IAG. |
| <i>Formula</i>     | Geomatics Guidance Note No 7, part 2: Coordinate Conversions and Transformations including Formulas  |

## Operation parameters

|   |
|---|
| <i>X-axis translation</i>                   |
| <i>Y-axis translation</i>                   |
| <i>Z-axis translation</i>                   |
| <i>X-axis rotation</i>                      |
| <i>Y-axis rotation</i>                      |
| <i>Z-axis rotation</i>                      |
| <i>Scale difference</i>                     |
| <i>Rate of change of X-axis translation</i> |
| <i>Rate of change of Y-axis translation</i> |
| <i>Rate of change of Z-axis translation</i> |
| <i>Rate of change of X-axis rotation</i>    |
| <i>Rate of change of Y-axis rotation</i>    |
| <i>Rate of change of Z-axis rotation</i>    |
| <i>Rate of change of scale difference</i>   |
| <i>Time reference</i>                       |