RDF: The Re-Adjustment Distribution Format

File format information for web-distributed, text-based NAD 83 (NSRS 2007) coordinate+accuracy files

In order to facilitate immediate access to NAD 83 (NSRS 2007) coordinates and their respective local and network accuracies, the data are being distributed in a text format called the Re-adjustment Distribution Format (or "RDF"). NGS anticipates making this same data available in datasheet format by the end of March 2007.

RDF is similar to, but in many ways quite different from, the well known NGS Blue Book format. <u>Although RDF is being used to quickly make the re-adjustment data available, users should be cautioned that no plans are in place to continue the widespread use of this format for any other NGS products.</u> It is, quite simply, a convenient tool solving a temporary delay in datasheet availability of the re-adjustment data.

The description of RDF is below.

Record Descriptions in Re-adjustment Distribution Format

Each record (line) in RDF is an 80 column character field. There are only seven record types in RDF (A1, 10, 13, 80, 86, 91 and 92). Each will be described in a separate section later in this document. Each RDF record contains a number of fields, occupying specific columns in the record. The record descriptions are broken down by field, showing the columns, format, range, and description of each. Some special symbols are used in the format and range specifications. These special symbols are defined below.

Symbol	Definition
\n	Newline character.
A	Capitalized alphabetic characters only [A..Z].
9	Numeric, digits, sign and decimal point only [0..9, +, -, .] according to field format picture.
N	Capitalized alphabetic characters and numeric characters only [A..Z, 0..9].
X	Capitalized alphabetic characters, numeric characters [A..Z, 0..9], and special characters as specified in the field range.
.	Decimal point or period.
..	Denotes a range of characters such as [A..Z] or [1..9].
✸	Denotes a blank or the space character.
±	Denotes a plus sign "+', a minus sign '-', or a blank.

Any field can be defined in short or long field format notation. For example, the field format X(30) is equivalent to XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX.

The format specification A(1-200) means that the field is a variable length with 1 to 200 alphabetic characters.

In some cases the numeric fields, e.g. latitude, longitude, and elevation have more detailed field formats. In these situations there will be an additional format specification to describe the breakdown of the numeric value. For example the latitude field definition DDMMSSsssss means DD = degrees, MM = minutes and SSsssss = seconds (with the SS and sssss values separated by an implied decimal point). The range for degrees is 0 to 90, minutes is 0 to 59, and seconds is 0000000 to 5999999 with an implied precision of five places to the right of the decimal point. Separation of capital and lower case in such format descriptors always means an implied decimal point.

The individual types of records are described below.

A1 Record (First and Last records of a file)

Columns	Field Name	Field Format	Field Range	Field Description/Comments
01-06	Blanks	X(6)	�	Intentionally Blank
07-10	Data Code	XA9X	*A1*	Record identifier
11-80	Blanks	X(70)	✘	Intentionally Blank

10 Record (Helmert Block Identifier)

Columns	Field Name	Field Format	Field Range	Field Description/Comments
01-06	Blanks	X(6)	✘	Intentionally Blank
07-10	Data Code	X99X	*10*	Record identifier
11-80	Helmert Block Name	X(70)	[A..Z, 0..9, =, -, ., +, /, ✘]	Description identifying this Helmert Block (within the greater re-adjustment)

13 Record (Horizontal Datum)

Columns	Field Name	Field Format	Field Range	Field Description/Comments
01-06	Blanks	X(6)	✘	Intentionally Blank
07-10	Data Code	X99X	*13*	Record identifier
11-34	Datum Name	X(24)	"NAD 83 (NSRS 2007)"	The official name of the 2007 Re-adjustment of NAD 83.
35-80	Blanks	X(46)	✘	Intentionally Blank

80 Record (Latitude and Longitude of one control point)

Columns	Field Name	Field Format	Field Range	Field Description/Comments
01-06	PID (Permanent Identifier)	AANNNN	AA0001 to ZZZZZZ	A unique identifier assigned to every recoverable survey point in the NGSIDB.
07-10	Record Type	X99X	*80*	Record identifier
11-14	SSN (Station Serial Number) of Control Point	9999	0001 to 9999	A number which uniquely identifies this control point within this Helmert Block.
15-44	Designation (a.k.a. Station Name)	X(30)	[A..Z, 0..9, =, -, ., +, /, ✖]	The name of the control point.
45-55	Latitude	99999999999 (DDMMSSsssss)	00000000000 to 90000000000	The latitude of the control point.
56	Latitude Hemisphere	A	"N" or "S"	A code representing the hemisphere (direction) of the latitude.
57-68	Longitude	999999999999 (DDDMMSSsssss)	000000000000 to 360000000000	The longitude of the control point.
69	Longitude Hemisphere (a.k.a. Longitude Direction)	A	"W" or "E"	A code representing the hemisphere (direction) of longitude.
70-76	Blank	X(7)	✖	Intentionally Blank
77-78	State Code	AA	Any of the valid two character state codes from the NGSIDB.	State where the control point is located.
79-80	Blank	XX	✖	Intentionally Blank

86 Record (Ellipsoid Height of one control point)

Columns	Field Name	Field Format	Field Range	Field Description/Comments
01-06	PID (Permanent Identifier)	AANNNN	AA0001 to ZZZZZZ	A unique identifier assigned to every recoverable survey point in the NGSIDB.
07-10	Data Code	X99X	*86*	Record identifier.
11-14	SSN (Station Serial Number) of Control Point	9999	0001 to 9999	A number which uniquely identifies this control point within this Helmert Block.
15-45	Blanks	X(31)	✖	Intentionally Blank
46-52	Ellipsoid Height	9999999 (MMMMmmm).	-999999 to 9999999	Ellipsoid Height in meters (when implied decimal point is in place)
53-80	Blanks	X(28)	✖	Intentionally Blank

91 Record (Network Accuracy of one control point)

Columns	Field Name	Field Format	Field Range	Field Description/Comments
01-06	PID (Permanent Identifier)	AANNNN	AA0001 to ZZZZZZ	A unique identifier assigned to every recoverable survey point in the NGSIDB.
07-10	Data Code	X99X	*91*	Record identifier.
11-14	SSN (Station Serial Number) of Control Point	9999	0001 to 9999	A number which uniquely identifies this control point within this Helmert Block.
15-20	Blanks	X(6)	✘	Intentionally Blank
21-30	Latitude Network Accuracy	9999999.99	0.00 to 9999999.99	Latitude component of horizontal network accuracy (standard deviation, or "1 sigma" in the North-South Direction). In centimeters.
31-40	Longitude Network Accuracy	9999999.99	0.00 to 9999999.99	Longitude component of horizontal network accuracy (standard deviation, or "1 sigma" in the East-West Direction). In centimeters.
41-50	Horizontal Correlation Coefficient	±.99999999	-.99999999 to +.99999999	The correlation coefficient between the north-south (latitude) component and the east-west (longitude) component of horizontal network accuracy.
51-60	Ellipsoid Height Network Accuracy	9999999.99	0.00 to 9999999.99	Ellipsoid height network accuracy (standard deviation, or "1 sigma" in the direction normal to the ellipsoid). In centimeters.
61-64	Blanks	X(4)	✘	Intentionally Blank
65	Accuracy Scaled Code	A	"Y" or "N"	A code which indicates whether or not the horizontal network accuracy is computed using a priori (N) or a posteriori (Y) standard deviation of unit weight.
66-80	Blanks	X(15)	✘	Intentionally Blank

92 Record (Local Accuracy between two control points)

Columns	Field Name	Field Format	Field Range	Field Description/Comments
01-06	Blanks	X(6)	▮	Intentionally Blank
07-10	Data Code	X99X	*92*	Record identifier.
11-14	First Point SSN (Station Serial Number)	9999	0001 to 9999	A number which uniquely identifies the first (of two) control points within this Helmert Block.
15-16	Blanks	XX	▮	Intentionally Blank
17-20	Second Point SSN (Station Serial Number)	9999	0001 to 9999	A number which uniquely identifies the second (of two) control points within this Helmert Block.
21-22	Blanks	XX	▮	Intentionally Blank
23-32	Latitude Local Accuracy	9999999.99	0000000.00 to 9999999.99	Latitude (north-south) component of horizontal local accuracy of the two control points relative to one another. In centimeters.
33-42	Longitude Local Accuracy	9999999.99	0000000.00 to 9999999.99	Longitude (east-west) component of horizontal local accuracy of the two control points relative to one another. In centimeters.
43-52	Horizontal Correlation Coefficient	±.99999999	-.99999999 to +.99999999	The correlation coefficient between the north-south (latitude) component and the east-west (longitude) component of horizontal local accuracy between the two control points.
53-62	Ellipsoid Height Local Accuracy	9999999.99	0000000.00 to 9999999.99	Ellipsoid height local accuracy (standard deviation, or "1 sigma" in the direction normal to the ellipsoid) of the two control points relative to one another. In centimeters.
63-66	Blanks	X(4)	▮	Intentionally Blank
67	Accuracy Scaled Code	A	"Y" or "N"	A code which indicates whether or not the horizontal local accuracy is computed using a priori (N) or a posteriori (Y) standard deviation of unit weight.
68-80	Blanks	X(15)	▮	Intentionally Blank