

NB Geocalc

Version 3.0 for

Windows 95, 98, NT

User Guide

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What's NEW

1) New conversion capabilities:

- a) NAD27 to ATS77 or vice versa
- b) NAD27 to NAD83(CSRS) or vice versa

2) Input:

- a) Will support all kinds of user defined delimiters (comma, tab, slash, blanks etc...)
- b) Will read coordinates
 - i) Pt # Easting (X) Northing (Y)
 - ii) Pt # Northing (X) Easting (Y)
 - iii) Strict on the first three columns
 - iv) Extra data after third column will be maintained

Point	Easting	Northing	Elevation	Code;Description
2	159307.390	901841.037	186.620	10;SM FD
4000	0.000	0.000	0.000	junk;junkkkkkkkkkk
5093	149276.295	891267.338	160.810	21;NB Monument
5094	149812.567	891064.990	160.320	12;House corner
5098	152627.835	889676.998	155.840	17;Fence line
5099	153154.692	889331.759	161.700	20;Traverse Hub nail
5100	153563.777	889210.198	157.580	10;SM FD
5101	153960.336	889204.933	159.720	21;NB Monument
5102	154670.276	889332.271	163.940	12;House corner
5103	155585.396	889602.054	155.140	14;I.Pipe Fd
5104	156427.370	390225.950	228.500	15;CL Road
5105	156985.051	890379.604	161.150	16;HWL

3) Output:

- a) Will output the same formats as on INPUT

4) Error Trapping:

Better error trapping and processing. Unlike version 2, this version will not stop processing data (unless using the keyboard entry) for out of bound data.

- a) **Line number:** Problems with the input format now indicates the line number of the problematic data, lines 2 and 14 in this example.

C:\nbgeocal\temp\nbgeocal.log

~~~~~  
2000/03/08 2:06:18 PM  
~~~~~

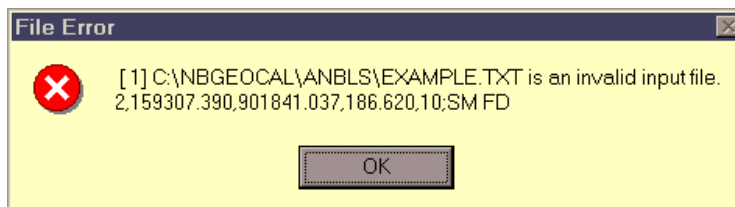
[2]The following Easting is outside the defined limits in the ini file: 0.000 Invalid Easting/File Error
[14]The following Northing is outside the defined limits in the ini file: 390225.950 Invalid Northing/File Error
~~~~~

- b) **Out of bound:** If some points are outside the provincial limits, the problematic data will be saved to an error file (*below*) and a report log file (*above*) without stopping the process. The **zero values** and the Northing of **300 000** in the second point are not acceptable.

C:\nbgeocal\temp\nbgeocal.err

~~~~~  
4000,0.000,0.000,0.000,junk ; junkkkkkkkkkkk
5104,156427.370,390225.950,228.500,15;CL Road

- c) **Separator error:** The default separator was set to a semicolon and the text file is using commas, thus the error will occur at the first line [1].



- d) **Numbers of errors:** and button controls are shown on the main screen.

5) Setup:

- A setup option screen to define default reading and writing paths or directories.
- Language selection between ENGLISH and FRENCH on the fly.
- Definable default for UTM zones.
- Definable default for MTM zones (4 or 5)
- Define the order Easting (X) / Northing (Y) or Northing (Y) /Easting (X)

-
- f) Define the default delimiter to be used for inputs and outputs.
 - g) Allow extra data (like elevation, description etc...)
 - h) Display the information in output file

6) Will work in all 3 Maritime Provinces:

(Capabilities for PEI and NS might be limited. See notes below)

Limited:

- a) Transformations between ATS77 \Leftrightarrow NAD83 (CSRS) is presently **ONLY AVAILABLE** in New Brunswick. NS and PEI will need a Grid Shift file for their respective province.

Can perform:

- a) Can perform coordinate conversions in both directions between different coordinate formats in all provinces using CORDTRAN and being on the same reference frame

ATS77 \Leftrightarrow ATS77	NAD83 (CSRS) \Leftrightarrow NAD83 (CSRS)
East (X) / North (Y) \Leftrightarrow Latitude / Longitude	East (X) / North (Y) \Leftrightarrow Latitude / Longitude
East (X) / North (Y) \Leftrightarrow UTM	East (X) / North (Y) \Leftrightarrow UTM

- b) Will also perform NAD27 \Leftrightarrow ATS77 in all provinces if you purchase the NS and PEI, DAT files for the utility TRANSFORM, which does the conversion.

New Brunswick	Prince Edward Island	Nova Scotia
TRNB2777.DAT	TRPE2777.DAT	TRNS2777.DAT
TRNB7727.DAT	TRPE7727.DAT	TRNS7727.DAT

If you do not already have these files they can be obtained from NS Geomatics in Amherst or the Office of the Provincial Surveyor in Charlottetown.

- c) Can perform ATS77 \Leftrightarrow NAD83 (1989) if the GS7783.GSB file is used in PEI and NS. Again if you do not already have this file it is available from NS Geomatics in Amherst or the Office of the Provincial Surveyor in Charlottetown.

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I. INTRODUCTION

The NB Geocalc interface enables user-friendly access to the following pre-existing DOS- based conversion programs:

- ❑ CORDTRAN
- ❑ CONV27
- ❑ TRANSFORM
- ❑ INTGRID (NTv2)

These programs were previously used in a step-by-step process to go from one Datum/Coordinate System to another. With NB Geocalc, the user can now simply identify the desired conversion and supply the input coordinates (via character delimited text file or keyboard entry). NB Geocalc then carries out all of the data reformatting and program calls required for performing the conversion.

- ❖ CORDTRAN - is a utility used to convert different coordinate types on the same map projection. For example if you have ATS77 - N/E coordinates you would use CORDTRAN to generate ATS77 geographic coordinates in Latitude/Longitude or the UTM X/Y in ATS77. It also supports similar conversions in NAD83 (CSRS). If you want to convert data between ATS77 and NAD83(CSRS) only the use of NTv2 can perform this transformation. Appendix “A” shows the input output format to use this utility as a stand-alone.

NOTE:

It **WILL NOT** go from one datum to another, e.g. ATS77 to NAD83 (CSRS), NTv2 is used to accomplish this.

-
- ❖ CONV27 - an older version of CORDTRAN to convert NAD27 coordinates from one type to another. Appendix “B” shows the input output format to use this utility as a stand-alone.

 - ❖ TRANSFORM - This is a LRIS utility designed for a MicroVax 3100 and recompiled for a PC. It is an adaptation of the ESTPM program developed by Geodetic Survey of Canada. Its purpose is to perform transformations between NAD27 and ATS77. It makes use of a residual file for each province. The process of residual interpolation accounts for local variations in the coordinate system, and provides a conversion accuracy of +/- 5 cm.

 - ❖ NTv2 - The National Transformation Version 2 software and data package provides a national standard for transforming coordinates. This software was developed by the Geodetic Survey Division (GSD) of Natural Resources Canada (NRCan) for the conversion between NAD27 and NAD83 (1989). Now, with the New Brunswick grid shift file, it is possible to convert from ATS77 to/from NAD83 (CSRS). The available file on this CD applies to **New Brunswick only**.

 - ❖ NB7783v2.GSB - Grid shift file designed to specifically transform ATS77 to/from NAD83 (CSRS) in New Brunswick. A 30 second intervals in Lat/Long defines the grid cell units. Details are found below:

Overview Header Block

1	NUM_OREC	11
2	NUM_SREC	11
3	NUM_FILE	1
4	GS_TYPE	SECONDS
5	VERSION	PRELIM_2
6	DATUM_F	AVGERAGE
7	DATUM_T	NAD83
8	MAJOR_F	6378135.000
9	MINOR_F	6356750.305
10	MAJOR_T	6378137.000
11	MINOR_T	6356752.314

Subfile 1 PRELIM_2 Header Records

12	SUB_NAME	PRELIM_2
13	PARENT	NONE
14	CREATED	98-03-25
15	UPDATED	
16	S_LAT	44 0 .000000
17	N_LAT	48 30 .000000
18	E_LONG	63 0 .000000
19	W_LONG	69 30 .000000
20	LAT_INC	0 0 30.000000
21	LONG_INC	0 0 30.000000
22	GS_COUNT	422521

- ❖ INTTAB - The primary purpose of program **INTTAB (Interpolation Table)** is to produce a table showing the coordinate shifts and the accuracies of the shifts at the grid points in a user-specified window. INTTAB may also be used to create a smaller sub-set of the **grid shift file** based on the user-specified window.

NTv2 contains new features that ensure the most reliable results for users seeking compatibility among various data sets. These new features include:

- shifts modeled on more comprehensive control survey networks

- variable grid density to reflect network density
- accuracy estimates for predicted shifts

“The density of the NTv2 grid is adapted to the density of control surveys. The base grid density is increased, typically by reducing the spacing from 5 minutes of arc to 30 seconds, or just under 1 km. A hybrid density grid shift file combines all grid areas, and the software automatically selects the correct grid for each point to be transformed. Densified grid allows for improved modeling of local variations in shifts at control survey points, resulting in greater consistency with the local positioning infrastructure.

Accuracies of predicted shifts can be computed, ***based on the local consistency*** of the shifts at the control survey markers. Consistent control survey networks result in very accurate predictions of a few centimetres or less, whereas problem networks are reflected in lower accuracy estimates of up to a metre or more. Accuracy estimates enable the user to assess the impact of conversion on the integrity of the GIS data, and allow a tangible contribution to the error budget of the transformed coordinates”.

(Extract from the NTv2 User Guide)

If PEI and NS ever create their own grid shift file, then the appropriate file names should be added to *nbgeocal.ini* assuming that they would be respectively called

PE7783v2.GSB
NS7783v2.GSB.

❑ If a transformation from ATS77 \Leftrightarrow NAD83 (CSRS) is required, ***NB7783v2.GSB*** will be used thus yielding coordinates in NAD83 (CSRS).

❑ If a transformation from NAD27 \Leftrightarrow NAD83 (1989) is required, then the grid shift file ***MAR2783.GSB*** will be used to convert the coordinates. *(This file can be used in all three provinces)*

If a transformation from ATS77 \Leftrightarrow NAD83 (1989) is required, then the grid shift file ***GS7783.GSB*** will be used. *(This file can be used in all three provinces)*

NOTE: Absolute positions in NAD83 (1989) will differ from the NAD83 (CSRS) in the order of 20 to 40cm.

- ❑ If a transformation from NAD27 \Leftrightarrow NAD83 (CSRS) is required, differently from the above, the coordinates will:
 - First be converted from NAD27 \Leftrightarrow ATS77 via the utility TRANSFORM.
 - Then the ATS77 coordinates be used with ***NB7783v2.GSB*** to produce the NAD83 (CSRS) values.
 - The fact that two transformations are used and that TRANSFORM will yield a +/- 5 cm transformation, the final NAD83 (CSRS) values are thus influenced.
- ❑ Manuals for NTv2 are available on the CD under the *d:\NTv2\Usrguide* directory.
- ❑ Even though we are allowed to redistribute a New Brunswick subset of NTv2, and its use is transparent to the users in NB Geocalc, it is still there as a stand alone and subject to

the terms and conditions enumerated in the NRCan license agreement found under the above directory.

NTv2 is registered software to Natural Resources Canada.
 All Provinces can distribute a subset of the national coverage. The license agreement from NRCan still applies and should be read prior your installation. You will find this license agreement under d:\NTv2\License\english or d:\NTv2\License\français

Examples, license agreement and other files to use NTv2 as a stand-alone are found as subdirectories to *d:\NTv2\Examples* on the CD.

d:\NTv2\Grid\Exe_cp
d:\NTv2\Grid\License
d:\NTv2\Grid\Usrguide

II. REQUIREMENTS

The front-end application was designed with MS Visual Basic (32 bit versions), thus requiring a MS Windows environment.

Windows 95, 98, NT is required for NBGeocalc version 3.0. It will not operate under Windows 3.x

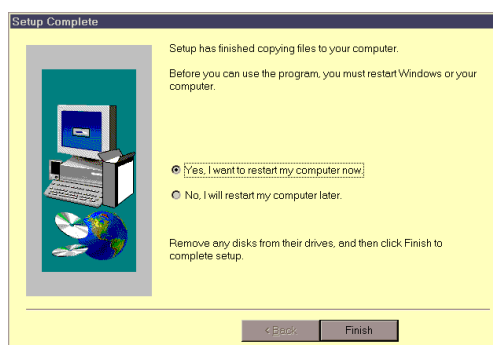
Suggested Minimum:

- 486, Pentium® processor-based personal computer
- Microsoft Windows 95, Windows 98, NT
- MS Windows Notepad has to be operational under the following path: *c:\windows* in order to view the output results. Other text editors can be used if they are identified in the *nbgeocal.ini* file located in the *c:\windows* directory.
- 9 MB of available hard-disk space
- CD-ROM drive
- ADOBE Acrobat Reader version 3.0 or better
 (<http://www.adobe.com/products/acrobat/readstep.html>)

III. INSTALLATION

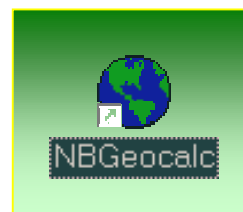
1. Insert CD in drive
2. Execute the **GeoCalcSetup.exe** from the main directory on the CD to start the installation process.
3. The following window should appear. Choose the language you want to use for the installation, then click on the button “Install”.
4. The installation software will guide you through the necessary steps.
5. For the Windows 95,98 users, it is important to let the installation process restart your computer before you use the software.

Be patient when you hit the “Finish” button. On various PC it might take several seconds to close Windows.



IV. STARTING THE PROGRAM

To start the program, simply select “NB Geocalc” from the Windows Start menu in the tool bar at the bottom of the screen. Alternatively, if there is a “NB Geocalc” shortcut on the desktop, a globe, double click it. When the program begins, the Main Screen will appear.



V. SETUP

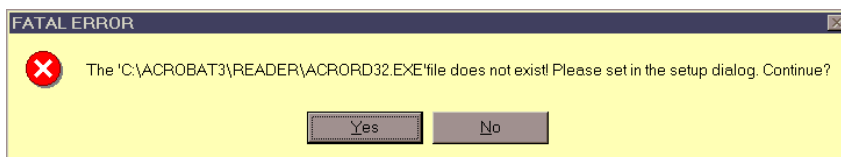
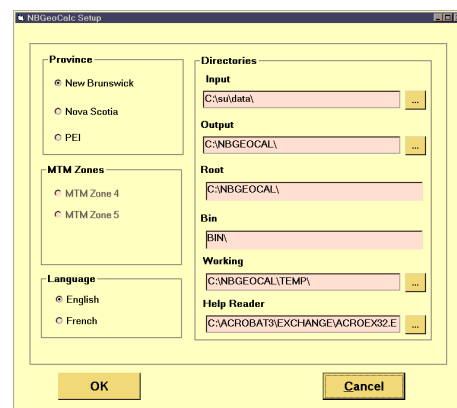
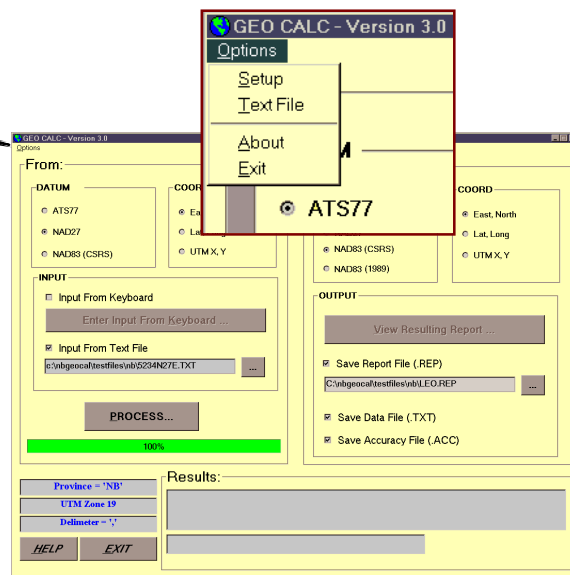
- a) NBGeocalc version 3.0 gives the user more capabilities to set its own environment.

Before proceeding with data input, you should check your environment by clicking on the Options selection at the top left corner and then choose setup.

- b) The next window will appear and will and you will be able to choose:

- Province
- UTM or MTM zones (4 or 5)
- Language (French or English)
- *It is **strongly** recommended to define your own working directories since NBGeocalc will delete all data files in the c:\Nbgeocal\TEMP and c:\Nbgeocal\bin directories Set all your default directories.*
- **ACROBAT READER**
The help reader path also has to be filed-in if you have your ACROBAT reader installed elsewhere. Version 3.0 of the reader is supplied on the CD. Just run **AR32E30.EXE** from the **d:\acoread** directory. Otherwise you will be getting this error message that can be bypassed by answering YES to the prompts. If so, you will not be able to view the User guide under the **HELP** button.

New setup options

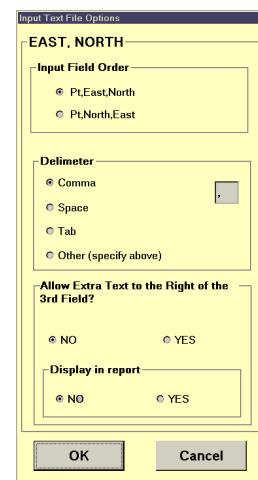


- c) If you plan to read and write text (ASCII) files you should set the following parameters in the text file option button.

c.1) First define the order of the first three columns:

- Point number Easting (X) Northing (Y)
- Point number Northing (Y) Easting (X)

c.2) Then choose the character you will use as a separator or delimiter by clicking on one of the four radio buttons. If you decide to choose a character not in the above list, click the other radio button and type

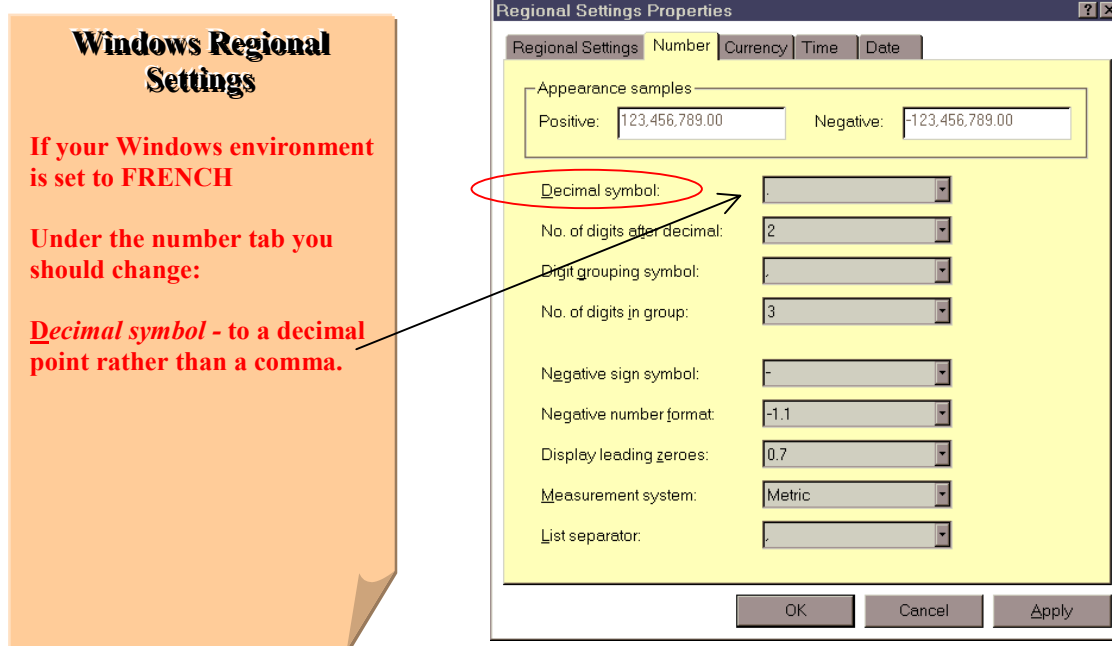


the character in the box provided.

- c.3) The third section of the screen is asking you if you want to use extra text beyond the three columns defined in (d). This would be for example if you carried an elevation, some data collector code or a point description. By selecting YES NBGeocalc will store this data away when processing the coordinates and will append it to your ASCII character delimited file.
- c.4) The final section “Display in report” will attach the extra data to the *.rep report file, which is the one viewed when the “View Resulting Report...” button is pushed.

Known problems with your Windows' Regional Settings:

This causes the software to read the nbgeocal.ini boundary limits as text rather than coordinates and will report an *Error 13 – Type mismatch*. The work around is to do the following:



VI. MAIN SCREEN

The main screen is broken down into two main sections:

The “**From**” section on the left

The “**To**” section on the right

From:

DATUM

- ☐ ATS77
- ☐ NAD27
- ☐ NAD83 (CSRS)

COORD

- ☐ East, North
- ☐ Lat, Long
- ☐ UTM X, Y

INPUT

☐ Input From Keyboard

Enter Input From Keyboard ...

☒ Input From Text File

c:\nbgeocal\testfiles\nb\CG77ENCO.TXT ...

PROCESS...

100%

To:

DATUM

- ☐ ATS77
- ☐ NAD27
- ☐ NAD83 (CSRS)
- ☐ NAD83 (1989)

COORD

- ☐ East, North
- ☐ Lat, Long
- ☐ UTM X, Y

OUTPUT

View Resulting Report ...

☐ Save Report File (.REP)

...

☐ Save Data File (.TXT)

☐ Save Accuracy File (.ACC)

Results:

The conversion has been completed !

Number of rejected points = 2

View Error **View Log**

Displayed when the number
of rejected points are >0

HELP BUTTON:

Clicking on the HELP button will load the ACROBAT reader if it is installed on your computer and will display the NBGeocalc user guide in PDF format. The setup screen should have the proper path for the reader, otherwise you will get a non critical error every time you start NBGeocalc.

Four steps are required to enter data:

1. The user must start in the upper left hand portion of the screen by choosing one of the following:

As these choices are made in sequence, only applicable options are enabled. The main purpose for this calculator is to ease the conversion from ATS77 to NAD83 (CSRS).

-
- 1.1. Choose the datum information in the “From” section
 - 1.2. Choose the type of coordinates that will be used in the “From” section
 2. The user then moves to the upper right hand “To” portion of the screen to choose one of the following:
 - 2.1. Choose the datum you want to generate coordinates into in the “To” section
 - 2.2. Choose the type of coordinates you want to obtain in the “To” section
 3. Once the conversion has been defined, the user must move to the lower left hand portion of the screen where one of the following input options are chosen to identify where the data will come from:
 - 3.1. **Input From Keyboard:** If you choose this option, other screens will be generated to gather the necessary information. (refer to the next section)
 - 3.2. **Input From Text File:** Will read the information from an existing text file. (refer to the next section)

KNOWN FILE NAME PROBLEMS :

Even though Windows 9x or NT are used and these operating systems will accept long filenames, the background applications TRANSFORM, CORDTRAN, CONV27 and INTGRID are DOS environment applications and they will not necessarily accept long file names.

This will either create an error or plainly produce an OUTPUT file with only INPUT data. The OUTPUT SECTION will be blank. Depending on the length of the storage path, the background application used, sometimes, long filenames will work.

RECOMMENDATION :

Use the DOS format, i.e. 8 character for the filename followed by a 3 character extension if you minimize problems.

4. Next, in the lower right hand portion of the screen, the desired *output option(s)* are chosen from the following to identify where the output will go to:
 - 4.1. Save Data File (.TXT)
 - 4.2. Save Report File (.REP)
 - 4.3. Save Accuracy File (.ACC)

VII. INPUT

The user can input coordinates either by keyboard entry or from a character delimited text file.

KEYBOARD

- a) If input from the keyboard is desired, the user must press the **“Enter Input From Keyboard...”** button. The keyboard entry screen will then appear for input of the specified

coordinates (see Figures 2, 2a, 3, and 4).

- b) As with the main screen, this is also very user-friendly, and guides the user through the required input.

*As each field is filled in, the data being entered **cannot exceed** a maximum allowable length as defined in the following section on entries from a text file.*

- c) Once all the fields are filled-in, press the **“COMMIT”** button.
- d) Pressing either the TAB key, the ENTER key or simply clicking once inside the area with the mouse does navigation between fields.
- e) After each entry is committed, it is added to a list in the large box on the bottom of the screen.
- f) If a mistake is noticed or a correction is required, the user may double click on the appropriate item in the list and the data entry fields on the top of the screen will be repopulated. The field containing the mistake can then be fixed and the entry is updated by pressing the **“UPDATE”** button or removed from the list all together by pressing the **“DELETE”** button.
- g) If so desired, a character delimited input text file can be saved from the entered coordinates for future use, thereby saving the user from re-entering the coordinates from the keyboard again. Choosing the **“Save Input Text File”** at the bottom of the screen will save the data to the default directory.
- h) Once satisfied with the coordinates in the list, press the **‘OK’** button to return to the main screen and continue with the conversion.

Figure 2, 2A

Figure 3

Figure 4

TEXT FILE

If “**Input From Text File**” is desired, the user must simply identify the path, or use the default, and name of the input file in the space provided. Pressing the “...” button can also browse for the file. Depending on the type of coordinate system identified as the input, the file must meet one of the following character delimited formats: example below uses a comma for delimiter.

Maximum significant figures allowed input format:

NBGeocalc will let you input 5 significant figures for all rectangular coordinates but will round off to three internally to perform the computations and will only OUTPUT 3 significant figures.

This does not apply to geographic coordinates where the full 5 significant figures are used for input and output computations.

Coordinate	Description	Format to follow	Character
East(X)/North(Y)	Point,Easting,Northing	Pppppppp,eeeeee.eeeee,nnnnnnn.nnnnn	9,7.5,75
	7055,348833.84012,956081.97334	7055,348833.84012,956081.97334	
Latitude/Longitude	Point,Lat,Long (d,m,s)	Pppppppp,dd,mm,ss.sssss,dd,mm,ss.sssss	9,2,2,2.5
	7055,45°,54',07.74182",65°,50',48.77840"	7055,45,54,07.74182,65,50,48.77840	
UTM X/Y	Point,X,Y,Zone	Pppppppp,xxxxxxx.xxxxx,yyyyyyy.yyyyy,zz	9,7.5,7.5,2
	7055,287242.90589,5309346.59454,20	7055,287242.90589,5309346.59454,20	

Note: Extra characters in the format will cause an error to occur: e.g. six decimal characters in the Stereographic coordinates (E=348833.840123) rather than five (E=348833.84012) will cause an error. **You can have less but not more.**

This type of file structure can be easily created by other software environment like a text editor, a database, a spreadsheet or through an ASCII export in your Coordinate Geometry (COGO) software.

In both the keyboard and text file format, checks are made by the system to ensure that it does meet the required input format. In all cases (*except* UTM X/Y), the values are also checked to ensure that they fall within the valid range. These limits are defined in the nbgeocal.ini file independently for each province. Figure 5 shows a graphical extent graphically of the default limits as set in the nbgeocal.ini file.

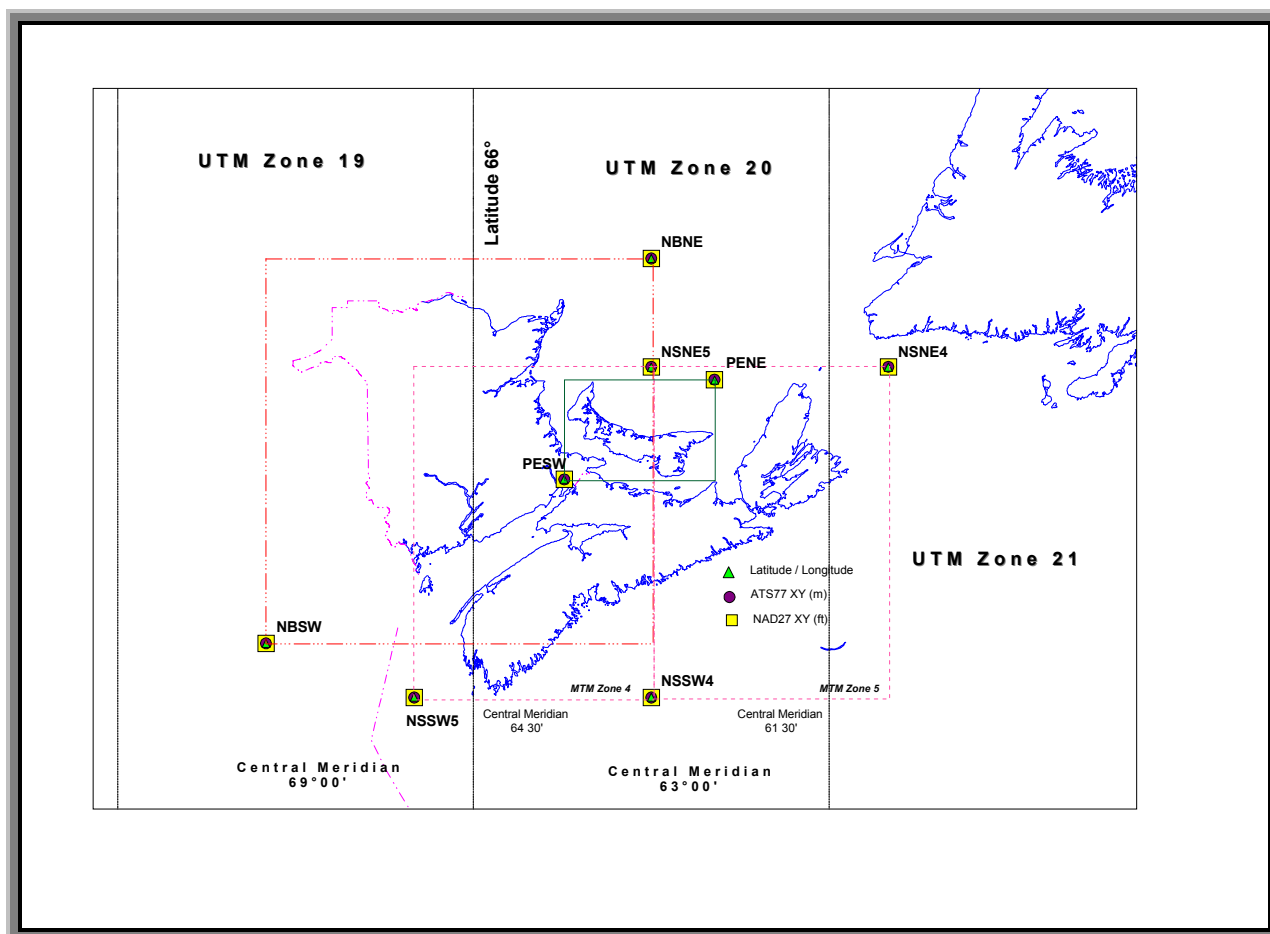


Figure 5 Even though there are overlaps between provinces, *it is ill advised* to use a grid shift file for one province to generate coordinates in another province.

VIII. OUTPUT

The user has the following output options to choose from

- a) *Save Report File (.REP)*
- b) *Save Data File (.TXT)*
- c) *Save Accuracy File (.ACC).*

NOTICE:

- ✓ You can only pick options (b) and (c) above if (a) was chosen. If none of the options are chosen, no output files will be saved, and the report can only be viewed using the defined text editor.
- ✓ Once the conversion is complete by pressing the **“View Resulting Report...”** button.
- i) If the **“Save Report File (.REP)”** option (a) is chosen, a report file will be saved with the user-entered name filled in the name field provided. The default path can be used or pressing the **“...”** button can also browse for the file. Once the report file option has been chosen, either, one, or both of the other two options may also be chosen.
- ii) If option (a) was chosen then you will be able to choose the **“Save Data File (.TXT)”** option. This will result in the creation of a character delimited text file (with the same name as the report file and a .TXT extension). This file can then be used later as input to NB Geocalc or any other software.
- iii) If option (a) was chosen, then you will be able to choose the **“Save Accuracy File (.ACC)”** option. This option will make a copy of the .NEW file generated by NTv2. Since this file *.ACC is generated from NTv2, this option is only available when converting from and to NAD83 (CSRS) or vice-versa. The file contains the following information for each point respectively:

1. Ghost Code 04
2. Point number
3. Latitude (dms)
4. Longitude (dms)
5. Latitude shift (m)
6. Longitude shift (m)
7. Latitude accuracy (m)
8. Longitude accuracy (m)

NOTE :

Accuracy listed is **not the accuracy of your position in an absolute term**, but the magnitude of the transformation and variation with respect to all neighboring control monuments used in the model.

1	2	3	4	5	6	7	8
4	7055	47 54 7.85804	65 50 48.62297	3.589	-3.228	.004	.003

This provides a picture of how accurately NTv2 transformed each point. This accuracy is relative to the neighbors and with respect to the existing ATS77 network.

Note: By default NOTEPAD is being used and need to be on your computer. You can use your preferred text editor if you define it in the *nbgeocal.ini* file.

IMPORTANT:

It is **strongly recommended** to save the output files in a different directory than the *c:\nbgeocal\tmp* or *c:\nbgeocal\bin* directories.

*** All data files from these directories will be wiped clean when the calculator is re-started. ***

If it did happen, make sure to copy the files to another directory before you start NB Geocalc for new computations.

This procedure can be used if you want to save some of the original files generated by CORDTRAN, CONV27, TRANSFORM or NTv2.

Appendix “A”

Only applies if you are to use CORDTRAN in a stand-alone mode. If you are using NB Geocalc data with be formatted automatically.

CORDTRAN *PC Version 3.3 (April 1, 1998)*

Converts coordinates from one projection to another in either the ATS77 or NAD83 (CSRS) system, but not between them.

1) **INPUT:**

PROMPT 1: Enter title (80 Cols) (Optional)
Appears on top of output

PROMPT 2: Enter datum
1 ATS77
2 NAD83

PROMPT 3: Enter variance/covariance matrix **Y/N**
Y - will compute Semi-Major & Semi-Minor

PROMPT 4: Save the coordinate in output files **Y/N**
Y - will save a structured file that can be used for input (sect.3 - Formats)

PROMPT 5: Enter province code **1 - 3**
1 New Brunswick
2 Nova Scotia
3 Prince Edward Island
0 (Return) To Stop

PROMPT 6: Enter input coordinate type **1 - 3**
1 Latitude and Longitude
2 Provincial Grid Easting (X) and Northing (Y) in metres
3 UTM Easting (X) and Northing (Y) in metres

PROMPT 7: Read from keyboard or data file **1 - 2**
1 KEYBOARD
2 File (will prompt for file name)

PROMPT 8: Type Of Input Data File
1 Map Format
2 Ghost Format

PROMPT 9: TYPE “V” <ENTER> to view each record
“N” <ENTER> to bypass viewing each record and just create the file

2) OUTPUT

<u>PRINT FILES:</u>	CRDTRAN3.OUT	(Detailed output one page per station)
	CRDTRAN4.OUT	(ATS77/NAD83 coordinate summary)
	CRDTRAN5.OUT	(UTM coordinate summary)
<u>DATA FILES:</u>	XY_MAP.DAT	(ATS77/NAD83 coordinates in map format)
	LL_GHOST.DAT	(Latitude & Longitude in ghost format)
	UTM_GHST.DAT	(UTM X/Y coordinates in ghost format)

3) FORMATS (when Y is chosen at prompt 4)

1) Map Format:

□ (LAT – LONG)

POINT	cc 1 - 9	(9 CHARACTERS)
LAT	cc 11 - 24	DD MM SS.SSSSS
LONG	cc 26 - 39	DD MM SS.SSSSS
CMER(NS MTM)	cc 41 – 44	DD.D (61.5 OR 64.5)
CMER UTM	cc 62 – 66	DD.D (57.0, 63.0, 69.0)

FORMAT (A9,I3,I3,F9.5,I3,I3,F9.5,F5.1,17X,F5.1)

□ (NORTH(Y) & EAST(X))

POINT	cc 1 - 9	(9 CHARACTERS)
NORTH(Y)	cc 11 - 22	NNNNNNNNNN.NNN
EAST(X)	cc 24 - 35	EEEEEEEEEEEE.EEE
HEIGHT	cc 37 – 44	HHHH.HHH

FORMAT (A9,F13.3,F13.3,F9.3)

2) GHOST Formats:

1) GHOST format geographic coordinate record

<u>Columns</u>	<u>Field Description</u>
2 - 3	Coordinate record type (Default is 04)
7 - 15	Station number (unique identifier of point – 9 characters)
40	Latitude North/South indicator (Default is North – “N”)
41 – 42*	Latitude degrees
43 - 45*	Latitude minutes
46 - 54*	Latitude seconds (DD MM SS.SSSSS)
55	Longitude East/West indicator (Default is West – “W”)
56 - 58*	Longitude degrees

59 - 61* **Longitude minutes**
62 - 70* **Longitude seconds** (DDD MM SS.SSSSSS)

Example Records:

```

-----1-----2-----3-----4-----5-----6-----7-----8
4   A9423                               50 58 19.85940 114 00 01.98630
4   538134                             62 10 57.36448 136 18 09.96039
4   D23865                             44 54 36.46115  79 46 24.05018
-----1-----2-----3-----4-----5-----6-----7-----8

```

2) GHOST format transverse Mercator coordinate record

<u>Columns</u>	<u>Field Description</u>
2 - 3	Coordinate record type (Default is 04)
4 - 6	Coordinate data type
7 - 15	Station number (unique identifier of point)
16 - 30	Station name (descriptive)
51 - 52*	Zone number
57 - 68*	Easting (metres)
69 - 80*	Northing (metres)

Example Records:

```

-----1-----2-----3-----4-----5-----6-----7-----8
4   A9423                               11      710583.087 5650796.659
4   538134                             8       432173.928 6895003.176
4   D23865                             17      596832.904 4973481.600
-----1-----2-----3-----4-----5-----6-----7-----8

```

* Minimum data required

Appendix “B”

Only applies if you are to use CONV27 in a stand-alone mode. If you are using NB Geocalc data with be formatted automatically.

CONV27 (1991) version 1

Converts coordinates from one projection to another in the NAD27 system

**** *Prompts are case sensitive and will ONLY respond to capital letters.* ****

PROMPT 1: Enter province code: **1 - 3**

- 1 New Brunswick
- 2 Nova Scotia
- 3 Prince Edward Island
- 0 Stop

PROMPT 2: Enter coordinate type: **1 - 4**

- 1 Latitude and Longitude
- 2 Provincial Grid Easting & Northing in Feet
- 3 Provincial Grid Easting & Northing in Metres
- 4 Utm Easting & Northing in Metres

PROMPT 3: Enter Central Meridian:

- 63.0 or 69.0 for N.B. & N.S. UTM
- 63.0 for P.E.I. UTM
- 61.5 or 64.5 for N.S. MTM

PROMPT 4: Do you want to go to another Province: **Y/N**

Y - Option to change coordinates from one province to another
EG: NB <> NS, NB <> PEI OR NS <> PEI

PROMPT 5: Enter coordinates from a file: **Y/N**

Y - Will prompt for a file name:

Data in file must correspond to coordinate type

DATA FORMAT (NORTH(Y) & EAST(X))

POINT	cc 1 - 8	pppppppp (8 Chars)
EASTING	cc 9 – 20	xxxxxxxx.xx
NORTHING	cc 21 – 32	xxxxxxxx.xx

DATA FORMAT (LAT & LONG)

Lat	cc 1 – 12	ddmmss.sssss
Long	cc 13 – 24	ddmmss.sssss
Point	cc 25 – 32	pppppppp (8 chars)

PROMPT 6: Save output coordinate to file: **Y/N**

Y - will save point, Easting & Northing to a file

PROMPT 7: Coordinate INPUT:
Format depends on input type

PROMPT 8: Do you want a printed copy: **Y/N**
Y - will keep output file for downloading
N - will delete the output file

APPENDIX “C”

Software for Windowing the Grid Shift File - INTTAB

The primary purpose of program **INTTAB** (**I**nterpolation **T**able) is to produce a table showing the coordinate shifts and the accuracies of the shifts at the grid points in a user-specified window. INTTAB may also be used to create a smaller sub-set of the **grid shift file** based on the user-specified window.

This overview is a quick look at the basic operation of the program. For more complete detail on the variety of functions and their operation, see the **Reference Section** for program INTTAB.

The menu for program INTTAB appears as follows:

```

National Transformation
Program INTTAB V2 Menu
-----
Transformation grid file      [G]
Output Listing File          [O]
-----
Create a new grid file        [N] NO
Window grid file              [W] NO
Print grid table              [P] YES
-----
View header records           [V]
Proceed - Continue execution  [X]
Exit from program             [Q]
Information Screens            [H]
-----
Select a menu item
=====

```

The following is a list of the key menu items for basic operation:

APPENDIX “D”

Typical Nbgeocal.ini

Note: *Line starting with a colon (:) is a comment line and not used by the software*

```

:! ~~~~~
:!
:! ~~~~~
[PATH]
ROOT=C:\NBGEOCAL\
BIN=BIN\
EDITOR=C:\WINDOWS\
INPUT=c:\nbgeocal\testfiles\nb\
OUTPUT=C:\nbgeocal\testfiles\nb\
WORKING=C:\NBGEOCAL\TEMP\
PDF READER=C:\PROGRAM FILES\ADOBE\ACROBAT 4.0\ACROBAT\ACROBAT.EXE

: Province settings "NB" "NS" or "PEI"
: Province Code=NS
: batch extent error logging action "Screen" or "Log File"
: Nova Scotia MTM zone "4" or "5"
: Language setting "ENGLISH" or "FRENCH"
: Central Meridian transform 69.0 63.0 57.0
: Central Meridian conv27 NB 69.0/63.0 NS UTM 69.0/63.0 NS MTM 64.5/61.5

[SETUP]
Help Format=PDF
Province Code=NB
Extent Logging=Log File
Input file extension=*.CSV
Report file extension=*. *
MTM Zone=5
UTM Zone=19
LANGUAGE=ENGLISH
NB Central Meridian 19=69.0
NB Central Meridian 20=63.0
NS 4 Central Meridian conv27 MTM=61.5
NS 5 Central Meridian conv27 MTM=64.5
NS 19 Central Meridian transform=69.0
NS 20 Central Meridian transform=63.0
NS 21 Central Meridian transform=57.0
NS 19 Central Meridian conv27=63.0
NS 20 Central Meridian conv27=63.0
NS 21 Central Meridian conv27=57.0
PEI Central Meridian 19=69.0
PEI Central Meridian 20=63.0

```

EN order=EN
 Delimeter=,
 Extra Text=FALSE
 Display Extra Text=FALSE
 Title String English=GEO CALC - Version 3.0
 Title String French=GEO CALC - Version 3.0

[FILE]
 EDITOR=NOTEPAD.EXE
 FRENCH HELP=NBGCFREN.pdf
 HELP=NBGCENGL.PDF

: ***** NAD 27 <-> NAD83 (89) *****
 NS GRID SHIFT 27 - 83 (89)=mar2783.gsb
 PEI GRID SHIFT 27 - 83 (89)=mar2783.gsb
 NB GRID SHIFT 27 - 83 (89)=mar2783.gsb

: ***** ATS 77 <-> NAD83 (CSRS) *****
 NB GRID SHIFT 77 - 83 csrs=NB7783v2.GSB
 NS GRID SHIFT 77 - 83 csrs=
 PEI GRID SHIFT 77 - 83 csrs=

: ***** ATS 77 <-> NAD83 (89) *****
 NB GRID SHIFT 77 - 83 (89)=GS7783.GSB
 NS GRID SHIFT 77 - 83 (89)=
 PEI GRID SHIFT 77 - 83 (89)=

: **** The Transform file names should be the following *****
 :Transform NB 27 to 77=TRNB2777.DAT
 :Transform NB 77 to 27=TRNB7727.DAT
 :Transform NS 27 to 77=TRNS2777.DAT
 :Transform NS 77 to 27=TRNS7727.DAT
 :Transform PEI 27 to 77=TRPE2777.DAT
 :Transform PEI 77 to 27=TRPE7727.DAT

Transform NS 27 to 77= ‘ ‘
 Transform NS 77 to 27= ‘ ‘
 Transform PEI 27 to 77= ‘ ‘
 Transform PEI 77 to 27= ‘ ‘

:***** New Brunswick Extent Coordinates *****

[NB LAT_LONG]
 NE_LAT=48.5
 NE_LON=63.0
 SW_LAT=44.0
 SW_LON=69.5

[NB NAD83]

NE_EAST=2758660.0
NE_NORTH=7728192.0
SW_EAST=2259317.0
SW_NORTH=7226616.0

[NB ATS77]
NE_EAST=558660.0
NE_NORTH=1028192.0
SW_EAST=59317.0
SW_NORTH=526616.0

[NB NAD27]
NE_EAST=1848649.0
NE_NORTH=1748658.0
SW_EAST=210334.0
SW_NORTH=103078.0

.***** Nova Scotia Extent Coordinates Zone 5 *****

[NS 5 LAT_LONG]
NE_LAT=47.23
NE_LON=63.00
SW_LAT=43.37
SW_LON=67.00

[NS 5 NAD83]
NE_EAST=5613574.028
NE_NORTH=5233755.614
SW_EAST=5297380.422
SW_NORTH=4806011.232

[NS 5 ATS77]
NE_EAST=5613573.993
NE_NORTH=5233753.956
SW_EAST=5297380.5
SW_NORTH=4806009.709

[NS 5 NAD27]
NE_EAST=1372629.74
NE_NORTH=17170396.81
SW_EAST=335218.69
SW_NORTH=15767046.61

.***** Nova Scotia Extent Coordinates Zone 4 *****

[NS 4 LAT_LONG]
NE_LAT=47.23
NE_LON=59.00
SW_LAT=43.37

SW_LON=63.00

[NS 4 NAD83]

NE_EAST=4689287.093

NE_NORTH=5235696.660

SW_EAST=4378429.697

SW_NORTH=4804067.706

[NS 4 ATS77]

NE_EAST=4689287.034

NE_NORTH=5235695.0

SW_EAST=4378429.7

SW_NORTH=4804066.2

[NS 4 NAD27]

NE_EAST=1621039.88

NE_NORTH=17176765.27

SW_EAST=601135.95

SW_NORTH=15760670.03

.***** Nova Scotia Extent Coordinates UTM zone 21*****

[NS 21 LAT_LONG]

NE_LAT=0

NE_LON=0

SW_LAT=0

SW_LON=0

[NS 21 NAD83]

NE_EAST=0

NE_NORTH=0

SW_EAST=0

SW_NORTH=0

[NS 21 ATS77]

NE_EAST=0

NE_NORTH=0

SW_EAST=0

SW_NORTH=0

[NS 21 NAD27]

NE_EAST=0

NE_NORTH=0

SW_EAST=0

SW_NORTH=0

.***** PEI Extent Coordinates *****

[PEI LAT_LONG]

NE_LAT=47.08
NE_LON=61.93
SW_LAT=45.92
SW_LON=64.47

[PEI NAD83]
NE_EAST=480991.786
NE_NORTH=782025.484
SW_EAST=286214.994
SW_NORTH=652847.413

[PEI ATS77]
NE_EAST=780991.761
NE_NORTH=382025.490
SW_EAST=586215.029
SW_NORTH=252847.460

[PEI NAD27]
NE_EAST=765729.17
NE_NORTH=641028.80
SW_EAST=126678.54
SW_NORTH=217218.63

APPENDIX “E”

TRANSFORM

Transform coordinates from one system to another ats77 <> nad27

PROMPTS

PROMPT 1: ENTER TRANSFORMATION DESIRED 1 - 6

- 1 NB NAD27 => NB ATS77
- 2 NS NAD27 => NS ATS77
- 3 PEI NAD27 => PEI ATS77
- 4 NB ATS77 => NB NAD27
- 5 NS ATS77 => NS NAD27
- 6 PEI ATS77 => PEI NAD27

PROMPT 2: ENTER TYPE OF INPUT COORDINATES 1 - 4

- 1 LATITUDE & LONGITUDE
- 2 PROVINCIAL GRID IN FEET (NAD27)
- 3 PROVINCIAL GRID IN METRES (ATS77)
- 4 UTM IN METRES (NAD27)

PROMPT 3: IF DOING NS

ENTER NS MTM ZONE (4 OR 5)

PROMPT 4: ENTER TITLE (FOR PRINTING ON OUTPUT) [NOT NECESSARY]

PROMPT 5: IS EVERYTHING CORRECT Y/N

N CHANGE OPTIONS

PROMPT 6: ENTER DATA FROM FILE OR KEYBOARD F/K

F PROMPT FOR FILE NAME

K ENTER DATA ACCORDING TO FORMAT

PRESS RETURN ON A BLANK LINE TO END

PROMPT 7: IF INPUT IS LAT & LONG

ENTER INPUT FORMAT TYPE

- 1. TRANSFORM FORMAT
- 2. GHOST FORMAT

DATA FORMAT	TRANSFORM FORMAT	GHOST FORMAT
POINT (6 CHARS)	cc 3 – 11	cc 7 - 15
LAT DD MM SS.SSSSS	cc 13 – 26	cc 41 - 54
LONG DD MM SS.SSSSS	cc 28 – 40	cc 57 - 70
ELEVATION EEEEE.EEE	cc 43 – 51	cc 71 - 79

DATA FORMAT (NORTH(Y) & EAST(X))

POINT	cc 1 - 9	(9 CHARS)
NORTHING	cc 10 – 22	xxxxxxxx.xxx
EASTING	cc 23 – 35	xxxxxxxx.xxx
FORMAT	(A9,F13.3,F13.3,1x,F8.3)	

INPUT FILES:

(New Brunswick)

TRNB2777.DAT - TRANSFORMATION RESIDUALS FROM NAD27 TO ATS77.
 TRNB7727.DAT - TRANSFORMATION RESIDUALS FROM ATS77 TO NAD27.

OUTPUT FILES:

TRANSFORM.OUT - OUTPUT FROM PROGRAM TRANSFORM
 TRN_CORD.DAT - TRANSFORMED COORDINATES IN TRANSFORM FORMAT
 TRN_GHST.DAT - TRANSFORMED COORDINATES IN GHOST FORMAT

REGISTRATION FORM

NBGeocalc version 3.0

Service New Brunswick is committed to bring you quality customer service in a timely, courteous manner, so please take a few moments to register with us. Your registration is important and will be the only way for us to contact you if there were new developments or modifications to NBGeocalc.

Name or Company:

Mailing Address:

Contact:

Telephone:

Fax:

E-mail:

Return or fax to:

Service New Brunswick

Survey Control Coordinator

985 College Hill Road

PO Box 1998

Fredericton, NB, E3B 5G4

Tel: (506) 453-2353

Fax: (506) 453-3898

E-mail: leo-guy.leblanc@snb.gov.nb.ca

<http://www.gov.nb.ca/snb>

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