



# The Avalon Survey Converter

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# 1. Why and what

## *Why this converter?*

There were two motivations for me to write this converter:

### **a) Longevity of survey data**

I have been caving and surveying caves for most of my life. I have learned the hard way that cave surveying programs do not have an eternal life. They come and they go. Some maybe around for 10 years, others for 25 years, but eventually they will disappear when their aging developers abandon them, and/or the programs become incompatible with continuously changing operating systems.

When the cave-surveying program in which you have stored your precious cave survey data, no longer runs on your computer, your data might be impossible to read. Losing cave survey data is a disaster, because (re-) surveying a cave is a big effort. It might take a lifetime to (re-)survey a big, complex cave system.

Now, you could try to extract your data from the programs' files, but depending on the format, that might be an impossible task, or at least a very tedious one! A lot of cave surveying programs have very proprietary formats, and some of them are hardly readable by humans.

15 years ago, I decided I never wanted to lose my survey data because of such reasons. I invented my own data format: a simple text file, easily human readable, and without too many constraints: **the Avalon text file**.

### **b) Conversion between survey programs**

There are many cave surveying programs but none of them have everything you would like. In addition, they all have their own format. Therefore, I needed a tool that could convert my own "Avalon" text file into the format of the two programs I used most often: Compass and Onstation.

Also, being involved in the exploration and surveying of the Pierre-St-Martin massif, I was often confronted with survey files in other formats (Compass, Visual Topo, Toporobot) which I needed to integrate into one big overview.

## ***History***

I made the first version of this converter way back in the mid- '90s. I was using an English surveying program called SURVEX, and I was limited by the possibilities of it. I needed something that could read my Survex files and convert them into something else.

This first converter was written in Clipper and ran under DOS. It could convert Survex files into Compass and Onstation files. On the fly, I added some keywords that did not exist in Survex (using a mixture of Compass- and Survex-like keywords in the textfile).

It served me well for many years, but in 2007, I rewrote the whole thing using a modern Windows programming language (Visual Objects). I dropped the support for Survex files and added conversions from other formats (Visual Topo, Toporobot).

## ***What will this convertor do?***

### **Conversions to other survey formats**

- convert an Avalon TXT file to a Compass DAT file
- convert a Compass DAT file to an Onstation CDI file.

Conversion to other file formats is not provided. In fact, once you've converted to a Compass DAT format, you will find plenty of cave surveying programs that can read native Compass DAT files (just to name one: Winkarst)

There is also another conversion tool that allows conversion between various formats: the Rosettastal. See <http://www.resurgentsoftware.com/rosettastal.htm>

This also provides a basic DAT to CDI conversion, but personally I think mine is better ☺ (it supports nearly every possible setting in Compass)

### **Conversion to the Avalon TXT format**

- convert a Compass DAT file to Avalon TXT
- convert a Visual Topo TRO file to Avalon TXT
- convert a Toporobot TAB file to Avalon TXT

During this conversion, there is also a verification of the integrity of survey data (e.g. impossible azimuths)

The TXT file can be converted further to Compass DAT and from there to Onstation CDI.

## ***What it will not do?***

It will not convert Compass Projects ("MAK-files").

It will not create Fixed Points in Onstation.

It cannot solve the problem of missing features in your survey programs.

It is important to realize that, since no two survey programs have the same features, you will nearly always lose certain settings when converting from one format to another. It is always a trade-off. The lost settings might be unimportant and not influence the way the final cave plot will look like, or they might be important and the cave plots will not be the same in all of the programs you are using.

This is why you should read this document, to fully understand the possible consequences of converting from one format to another.

E.g. some programs (Toporobot; Compass) support automatic calculation of declination, others do not (Onstation). Some support automatic calculation of UTM convergence (Compass), others do not. Some support using shot Flags to indicate exclusion of certain shots from length calculations or plotting, others do not. And so on!

After file conversion, it might be necessary to "fine-tune" the new datafile using your survey software.

This fact is also one of the reasons why it might be a good idea to use the Avalon Text format as your "base" format: it supports many features and you can enter unlimited comment lines.

***The converter is a tool to help you moving from one survey program to another. It is not a miracle solution.***

## 2. Installation

Run SetupTC.EXE

Install the program in any folder, e.g.

c:\TopoConv (the default)

or

c:\Program Files\Converter

*Note: under Vista, I recommend that you do not install it under c:\Program Files! Install it anywhere, but not there! In Vista, this is a special folder that requires administrative rights.*

## 3. Preferences

First thing to do is open this window and indicate the default folders of your survey (SOURCE) files that you want to convert. It is just a default that you can change in the conversion windows (when actually converting files).

As you will see, you cannot indicate a default location for the converted (TARGET) files. This is deliberate. I want to avoid that you output the new files to a folder that already contains good survey files. You might easily overwrite a file and lose precious information. Of course, in the conversion windows you can still change the output location to any other you like. By default, it will be the \output folder (one level below the program folder)

## 4. The “Avalon” text format

This is the basic format in which you could/should keep all of your data.

- it is a human readable format
- text files have existed for decades and will continue to exist for decades to come
- you can enter data by using a simple text editor (like Windows Notepad); you don't even need a cave surveying program!
- it is not really a fixed format, so typing a space or tab more or less doesn't matter and will not invalidate your file
- it is easy to use and easy to explain, even novices can enter data
- you can enter as many comment lines as you like, anywhere!
- it supports a lot of settings, more than supported in many other cave surveying programs

### 4.1 Description of the Avalon-Text format

You create this plain text file with a Text Editor like Windows Notepad. I recommend giving it a TXT extension. It may have a long name, even with spaces.

Since the final goal is to convert this TXT file into a Compass compatible format, I have built in some limitations (like station names maximum 12 characters long).

#### How does it look like?

An example says more than a thousands words...

```

*SVYNAM NOUV_AN2
*SVYDAT 01 18 1998
*SVYCOM Annexen Salle Aventure
*SVYTEAM Paul and Annette
*DECLIN TO ADD -1.28
*UNITS BEARING DEGREES
*UNITS GRADIENT DEGREES
; measured with Compass no 5
na21 na25 4.91 144.00 11.10 5.5 0 7 1.5 #|L# small room
na25 na26 1.86 126.00 42.30 1.3 0.3 0.8 0.1
na26 na27 1.55 121.00 59.20 0.3 1.2 0.4 0.7
na27 na28 2.60 258.00 23.70 0.0 1.0 0.8 0.5
na28 na29 1.94 323.00 23.30 0.3 0.4 0.8 0.2 too narrow
na23 na30 1.13 305.00 -8.30 - - - - #|L#
na30 na31 3.35 233.00 7.00 0.6 3.0 3.5 0.7
na31 na32 3.66 340.00 -3.60 0.2 0.5 0.1 0.8 to big chimney

```

### Let us take a closer look...

- The file contains one or more **survey sections**.
- A survey section has a **header**, that consists out of lines containing **keywords**
- A header is followed by the **measurements** (data)

### What is a survey section?

That is entirely up to you. You might like to start a new section when:

- the survey date changes
- the survey team changes
- the instruments change (and their units of measurements, corrections etc)
- the way of surveying changes (with/without backsights)

Some people even start a new section when in the cave, the gallery changes!

*Note: many cave surveying programs allow you to color different parts of the caves, depending on the survey section. The more survey sections, the more possibilities you will have.*

### Conventions:

- A keyword starts with an asterisk (\*)
- A comment starts with ; and will be ignored by the converter
- Do not put comments on the same line as keywords
- Comments on separate lines are OK
- Decimal sign is ALWAYS a point (.)
- Every line that is not a keyword or a comment, is considered to be a data (measurement)

## 4.2 Header and Keywords

Each Survey Section must start with a header.

The header is identified with a **Survey Name keyword**:

**\*SVYNAM Sect07-04**

*Note: \*SVYNAM is followed by the name of the section; which should not exceed 12 characters. This is a Compass limitation (actually, in general, you will get away in Compass with longer names, but there are no guarantees that everything will work without flaws then).*

After this first header line, you can add additional header lines with other keywords. They are all **optional** but remember: when not given, the converter will use **defaults values!!!!**  
The order of these keywords is not important.

*Note: You can put comment lines between header lines, but the converter will only check the next 25 lines following a \*SVYNAM, for other keywords. So do not put too many comment lines in between keyword lines because you might reach the 25 lines limit!*

### An overview of these keywords:

<p><b>*SVYDAT</b> followed by a space and the date in USA format MM DD YYYY or <b>*DATEUR</b> followed by a space and the date in EUR format DD MM YYYY</p> <p>Note: the separator of the 3 datefields is of no importance (space, dash, slash)</p> <p>&gt;&gt;When not given, defaults to 01/01/1900</p>
<p><b>*SVYCOM</b> followed by a space and then a comment or description, max. 60 chars.</p> <p>&gt;&gt;When not given, defaults to blank</p>
<p><b>*SVYTEA</b> or <b>*SVYTEAM</b></p> <p>followed by a space and the names of the survey team, max. 60 chars.</p> <p>&gt;&gt;When not given, defaults to blank</p>
<p><b>*UNITS GRADIENT</b> or: <b>*UNITS INCLINATION</b></p> <p>followed by a space and then D, G, DEGREES, GRADS (only the first character is used)</p> <p>&gt;&gt;When not given, defaults to DEGREES</p>
<p><b>*UNITS BEARING</b> or: <b>*UNITS COMPASS</b></p> <p>followed by a space and then D, G, DEGREES, GRADS (only the first character is used)</p> <p>&gt;&gt;When not given, defaults to DEGREES</p>
<p><b>*UNITS LENGTHS</b> followed by a space and then M, F, Y, METRIC, FEET, METERS, METRES, YARDS (only the first character is used)</p> <p>&gt;&gt;When not given, defaults to METERS</p>
<p><b>*CALIBRATE DECLINATION</b> followed by a space and then 9.99 where 9.99 is any digit (pos/neg) with two decimals -&gt; this declination will be changed sign before creating the Compass DAT file (Compass will ADD it to your compass bearing). or: <b>*DECLIN TO ADD</b> 9.99 where 9.99 is any digit (pos/neg) with two decimals</p> <p>-&gt; will NOT change sign. before creating the Compass DAT file (Compass will ADD it to your compass bearing).</p> <p>So, *CALIBRATE DECLINATION 2.47 is the same as *DECLIN TO ADD -2.47. In both cases, a declination of -2.47 will be written to the Compass file.</p>

Note: declination is always in decimal degrees, never in Grads!
>>When not given, defaults to 0
<p><b>*ADDCOMP</b><b>COR</b> followed by a space and then 9.99 where 9.99 is any digit (pos/neg) with two decimals</p> <p>This is a correction that will be added by Compass to your compass measurements, to correct a faulty compass.</p>
>>When not given, defaults to 0
<p><b>*ADDCLINC</b><b>COR</b> followed by a space and then 9.99 where 9.99 is any digit (pos/neg) with two decimals</p> <p>This is a correction that will be added by Compass to your inclination measurements, to correct a faulty clinometer.</p>
>>When not given, defaults to 0
<p><b>*ADDLENG</b><b>COR</b> followed by a space and then 9.99 where 9.99 is any digit (pos/neg) with two decimals</p> <p>This is a correction that will be added by Compass to your length measurements, to correct a faulty tape</p>
>>When not given, defaults to 0
<p><b>*DIVING</b> followed by a space and then Y or N Indicates diving depths instead of inclinations. These are not really inclinations, but (underwater) depths.</p>
>>When not given, defaults to N
<p><b>*BACKSIGHTS</b> followed by a space and then Y or N Indicates that there are backsight measurements with a second compass and clinometer. In your survey data, you must provide two extra columns for azimuths and inclinations.</p>
>>When not given, defaults to N

### 4.3 Measurements (survey data)

They must follow the header lines.

They MUST be formatted, and the columns must be in the order, as described below.

#### **FROM TO LENGTH BEARING INCLIN LEFT RIGHT UP DOWN FLAG COMMENT**

- Columns must be separated by one or more Tabs or Spaces
- Leading or trailing spaces are of no importance. So it is pretty much a free format.
- ALL columns must be entered, except FLAG and COMMENT which are optional
- When you do not have LRUD data, put any sign (a dash is fine) in place of the missing data. This is important! The converter expects to find 4 values.
- From/To station names cannot exceed 12 characters in length! (Compass limitation).
- Upper/Lowercase is of no importance for station names.

When using **backsights** (keyword **\*BACKSIGHTS Y**), then the format must be like this:

#### **FROM TO LENGTH BEARING INCLIN LEFT RIGHT UP DOWN BEARING2 INCLIN2 FLAG COMMENT**

Flag: you can use the same flags as in Compass, and just as in the Compass DAT-files, the flags have to start with **#|** and end with **#**.

The flags are:

- L Exclude length when calculating the total length of the cave
- P Don't plot this shot but use it in calculations or for loop closures (e.g. for surface surveys)
- X Exclude this shot from plotting and from calculations

You can combine these flags, e.g. **#|PL#**

## 4.4 **\*INCLUDE** keyword

With the **\*INCLUDE** keyword you can include another text file, that will be inserted at the exact line where you use the **\*INCLUDE** keyword.

The syntax is:

**\*INCLUDE** followed by the filename of the file you want to include.

Example:

**\*INCLUDE** Arphidia.TXT

- you can use this keyword anywhere you like
- but it should be on a separate line
- you should not use it in between survey header lines, as it might lead to unexpected results
- the include file should be located in the same folder as the file you are converting
- you cannot use a path or drive; only the filename.

### **What is it good for?**

If you have very big projects, then it might be a good idea to break them up over multiple text files and create a hierarchical file structure.

You could for instance make one "parent" text file in which you only have **\*INCLUDES** of the child text files that contain the actual data.

So you could have a file called "MasterProject.TXT" in which you have nothing more than:

**\*INCLUDE** Surveys2006.TXT

**\*INCLUDE** Surveys2007.TXT

**\*INCLUDE** Surveys2008.TXT

You could even use the **\*INCLUDE** keyword in the childfiles as well.

When the converter runs, the first thing it does is track all those includes and merge them into one big text file.

## 5. Survey Conversion

OK, this is where it all comes to, finally.

One important remark: not every survey program supports everything. When converting from one format to another, you will without doubts loose certain things. That is one of the reasons why I choose to use the Avalon text format as much as possible. In there I can store whatever information I like.



## 5.1 General workflow

- In the menu you choose the type of conversion you want.
- Select the file you want to convert (the program will propose the default location that you can set in the Preferences window).
- The source file will not be touched (except for the Text-to-Compass conversion where some minor cleaning up is performed).
- The outputfile will be created in the 'output folder below the converters' program folder. You can – if desired – change it here but take care: existing files will be overwritten without warning!
- Choose if you want to see detailed logging or not. Detailed logging will slow down things a bit but might be useful to locate problem data.
- Start the conversion.
- A logging window will show the progress. Errors or warnings will show up in red.
- When the conversion is finished, review the error log for errors.

Below I will describe the particularities for each type of conversion.

## 5.2 Text (TXT) to Compass (DAT)

- The source file must comply with the “Avalon Text Format” structure as described elsewhere in this document.
- Some minor reformatting will be performed on your source file; this is for compatibility with old-style TXT files that date back from the first version of this converter (under DOS!)
- You can optionally enter a name for the cave.
- You can optionally choose a Codepage (character set) for your source file. It will be translated to the current character set (Windows ANSI). Might be necessary when you have problems with accented characters becoming garbage (e.g. when dealing with old DOS OEM text files).
- You can switch on the “Warn when no declination is entered” -option. When dealing with survey headers with manually entered magnetic declination, you can verify if there are no survey headers where you have forgotten it.
- You can switch on the “Warn when length, azimuth and inclination are all zero” -option. This will often reveal comment lines in your file, where you forgot the leading “;” . The converter will think those lines are survey data.
- This option might also be useful if you are dealing with TXT files that have been converted from Visual Topo or Toporobot, because in those programs, the first shot in each survey section has got 0,0,0 data.
- After a successful conversion, you get a dialog window asking if you want to convert the freshly created DAT files straight away to Onstation.

### **You will keep:**

- Nearly everything

### **You will loose:**

- The commentlines that you have entered in your text file (lines beginning with “;”)

## 5.3 Compass (DAT) to Onstation (CDI)

### You will keep:

Most possibilities that exist in Compass, also exist in Onstation. You will keep:

- Most settings of the survey header: survey team, survey date, comment, instrument corrections, declination
- The actual cave surveying data (shots) and their comments
- Shot flags "L" (exclude length)
- Diving data
- Backsights

*Note: the created file will be recalculated and have all lengths in **meters** and all angles (azimuth, inclination) in **decimal degrees***

### You will loose:

- Shot flags "P" (Exclude from plotting), "C" (Exclude from closure) and "X" (Exclude entirely) because in Compass, these flags can be set on each individual shot. Onstation does not have this possibility; it only supports to "Hide" or "Disable" an entire survey section. The convertor will warn you if it encounters these flags. You will have to sort it out manually in Onstation!

## 5.4 Compass (DAT) to Avalon Text (TXT)

You might find this useful when:

- You have entered your survey data only in Compass
- You have received a Compass DAT file from someone and you want it in a metric format.

and in both cases you would like to switch over to the more independent and human readable Avalon Text format.

### You will keep:

- Nearly everything

### You will loose:

- Practically nothing

*Note: the created file will be recalculated and have all lengths in **meters** and all angles (azimuth, inclination) in **decimal degrees***

## 5.5 Visual Topo (TRO) to Avalon Text (TXT)

The converter currently supports Visual Topo v4.9 files.

### You will keep:

- Nearly everything...

but Visual Topo lacks some important settings such as:

- survey date (so the converter will use a default date of 01/01/1900 for each survey section)
- shot flags (such as L-exclude length)
- survey team names (the converter will create an empty string)
- instrument corrections
- only metric lengths

### **You will loose:**

- The coordinates of the entrance (you will have to manage these in the final survey software, e.g. in Compass you have to create a project).
- In Visual Topo, the Passage Dimensions (LRUD) are measured in the "TO" instead of the "FROM" station. The converter will not move them, in other words they will remain where they are. What happens further will depend on how you setup the survey software in which you will use the survey data. Compass for instance, does only have an application-wide compiler setting "Use LRUD with To-station", which will affect all of your surveys.
- "Height difference" inclinations are not supported yet (the converter will warn you when it meets them)

*Note:.. Magnetic declination will be recalculated in decimal degrees (in an original Visual Topo file, it is always in degrees, minutes, seconds). Inversed shots will be recalculated in the "correct" direction/angle*

## **5.6 Toporobot (TAB) to Avalon Text (TXT)**

Toporobot, a survey program running on Apple Macintosh, has got quite some exotic settings (like Nadiral or Zenithal inclinations) but most of them are supported by the converter. The converter actually only converts TAB files, but Toporobot uses other file formats as well, such as TEXT (not to be confused with the Avalon Text files!). If you need to convert such files, please send them to a Toporobot user and ask him to export them in the TAB format.

Very typical for Toporobot is the concept of "Series". There are no from/to stations, just a continuous range of strictly numerical station numbers. Continuous means that there are no gaps in the numbering allowed. Each series is identified by a unique number, and in each series the shots are numbered 0,1, 2,3 ...

Many topographers will tell you that a "series" is the equivalent of a "gallery" in the cave, but that is an incorrect generalization.

Surveying a labyrinth cave using the Toporobot system is a bit of a nightmare, since in one and the same series you cannot use a station used in another series. You cannot, in one and the same series, make a "side step" into another gallery. You must create a new series, that has to begin (or end) at a station already defined in another series. Yes, you read it right: the beginning, or the end! You cannot connect an intermediate station in a series with another intermediate one. Wow! In a labyrinth cave, with hundreds of closed loop, that is quite a challenge!

However, don't worry: the converter will figure it all out for you and create normal shots with from/to stations!

In addition, in a Toporobot file there are no "survey headers". There are "**Series**" with their respective shot data. There are "**Expeditions**" in which the survey team, magnetic declination, survey date are stored; and there are "**Instrument Codes**" in which the instrument units and instrument precision are stored. But – a total mystery why this is registered here and not at the shot level! – in the instrument codes you can also enter an indication that these measurements should be "invisible" or "ignored".

And then... you can link each shot to a series, code and expedition. So, in one and the same "series" you can have shot data with different instruments, different dates and declinations etc. This is not possible in most survey programs (such as Compass, Onstation) where such settings are always stored in the survey section header.

In order to get around this problem, the converter will create a new survey section each time the combination of Series, Code and Expedition changes.

Now, since it is not possible to use “flags” on a shot level, that indicate if a shot should be counted or not in the Length calculations, plotted or not etc..., Toporobot users have worked around this by creating extra “Codes” where they use the “Invisible” or “Ignore” codes. For one shot they might very well refer to instrument code 12, and for the next shot to instrument code 17... though in reality both shots were measured the same day, with the same instruments!

As a result, the converter will split up such shots in different survey sections.

Survey sections will be named as follows:

*Unique sequence number + “S” + number of series + “C” + number of code + “X” + number of expe*

example: **123S45C12X21**

(There is a risk of hitting the 12-character limit of Compass...)

Station names will be named as follows:

*number of series + “/” + number of station*

Example: **102/12**

But if you are converting several Toporobot files that you want to combine later on in one big Compass Project, you might end up with identical stations in different files (because the same series will exist in both files)! In that case, the converter allows you to choose a “Prefix” character that will be added before the station name, e.g. P102/12.

Of course, you will have to choose a different prefix for each Toporobot file.

### **Other remarks:**

- You can optionally choose a Codepage (character set) for your source file. It will be translated to the current character set (Windows ANSI). Might be necessary when you have problems with accented characters becoming garbage (e.g. when dealing with Macintosh text files).
- Shots marked as “Invisible” will be marked with a #|PL# flag (exclude from Plotting and from Length)
- Shots marked as “Ignored” will be marked with a #|X# flag (total exclusion). But, in Toporobot, this has a slightly different meaning. The shot will be ignored but Toporobot will **connect the previous station with the one following the ignored station**. So it will “skip” the station. In Compass, the station will simply be excluded, in other words not exist. As a result, the survey will be broken there, since all shots following the excluded one, will no longer have a connection to the survey. So you will have to fix this manually in Compass. *(For me, the Compass way is the correct one. I see people using the Toporobot “ignore” option to eliminate bad shots.. But what happens in reality is that you simply cut away the bad part, and that everything you surveyed after that shot, will actually **shift place**! That might be exactly what you intended... but it might be not!). Anyway, I will in the following version of the converter, make sure it makes the previous/following station connection in Compass also)*
- Inversed shots will be recalculated in the “correct” direction/angle
- I haven’t been able to test “Topofil” data.

### **You will keep:**

- Most settings of the survey header: survey team, survey date, comment, manual declination
- The actual cave surveying data (shots) and their comments
- Clinometer correction (there is no Compass correction in Toporobot!)

### **You will loose:**

- The coordinates of the entrance (you will have to manage these in the final survey software, e.g. in Compass you have to create a project; in Onstation a fixed station). They will however be written to the text file as a comment line.
- In Toporobot, the Passage Dimensions (LRUD) are measured in the "TO" instead of the "FROM" station. The converter will not move them, in other words they will remain where they are. What happens further will depend on how you setup the survey software in which you will use the survey data. Compass for instance, does only have an application-wide compiler setting "Use LRUD with To-station", which will affect all of your surveys.
- "Height difference" inclinations are not supported yet (the converter will warn you when it meets them)
- Survey headers flagged with "Automatic declination" in Toporobot. Again, this is not supported on a "survey header" level by most surveying programs. The converter will warn you.
- Instrument precision: is used in Toporobot (even on shot level) for calculating loop closures but in Compass it is not possible to enter these on a shot level, not even on a survey section level.
- Limit Angles: similar remark as above, used in Toporobot for drawing 3D pits.

## **6. FAQ**

**Question: why don't you keep the data in Compass format? That is also a simple, human readable text format.**

**Answer:** Well, no it isn't.

- Compass stores its data always in decimal feet and degrees. For Europeans this is a dreadful idea. I also think it is important that your data is stored in the file, the way it was measured (in meters, feet, grads, degrees or whatever).
- Because of that particularity, you need Compass software to decode your files back to the original measurements.
- Compass also lacks a possibility to enter many and/or long comments (and I need a lot of comments; about the instruments used, the problems they might have etc..)
- It is a relatively fixed format and it is not meant to be edited manually with a text editor. If you mess with the DAT file, then Compass might not be able to decode it anymore.
- I know that the author of Compass, Larry Fish, has plans to switch over to an XML-format. It would give him more possibilities to develop his software further, but XML is hardly "human readable" neither...

**Question: Why can't I convert straight from Toporobot to Compass? Or from Visual Topo to Compass?**

**Answer:** I wasn't interested in writing a converter from anywhere to anywhere! It would mean a lot of work, and each time the structure of the source and/or the target format was changed, I would have to adapt my converter.

Also, I wanted to have the surveys in a human readable text format. Therefore, the converter will always create a TXT format, which will be the starting point for the conversion to Compass

**Question: In the Avalon TXT format; it would be handy if I could enter things like declination, measurements units, and instrument corrections only once. Now I have to enter them in each survey header. Can this be changed?**

**Answer:** No. This is a deliberate choice. In the DOS-version of the converter, it was as you ask. A keyword remained valid until another one overruled it. E.g. you could use a \*UNITS COMPASS GRADS keyword and this would be carried over to all following survey sections. But this has caused me a lot of problems and has proved to be a big "pain in the \*\*\*" E.g., you use a keyword somewhere to switch one particular survey from degrees to grads, and it will remain in effect for all following surveys! Especially when using \*INCLUDE files, it might become a nightmare. Suddenly all of your surveys are using the wrong magnetic declination, because somewhere buried in a \*INCLUDE file you have used a declination keyword.

So, in the Windows version, I changed this. You do have to enter these keywords in each survey header. Again and again and again... but copy/paste might save you a lot of work.

### **Question: Does the converter run from a USB Flash drive?**

**Answer:** Yes, because it does not install/change anything in your Windows folder. When installing the converter, just install it on the flash drive. Alternatively, you could install it on your PC's local drive, and then copy the whole folder over to your flash drive.

## **Some Compass Tips**

Compass is a cave-surveying program made by Larry Fish. I am not going to compare it with other software here, but it is what I use, because:

- it is very powerful and has lots of possibilities that I don't find in other programs
- it is very reliable, doesn't crash often and has never corrupted my data
- of all surveying software I have used, it has the best printing possibilities (multiple-page preview etc)
- it can be used to manage very big cave systems
- the author is a very reactive guy, if you got a problem or question he will help you
- the software is continuously improving

*If you are using Compass: don't forget to show your appreciation and pay Larry for it. This software is worth a lot more than the small fee he asks for it!*

But there are a few things that you must be aware of.

If I send you one of my Compass survey files (DAT or MAK), then I have absolutely no certainty that you will see the cave in Compass exactly the same way I do. This is because there are some settings in Compass that affect the calculations and compilation, and those settings are **application-specific**. They are not stored in the cave survey file (DAT/MAK) but they are stored on your PC only, and they will affect every survey you compile with Compass!

This is a big problem when you are responsible for managing different cave surveys that you receive from different people. In the ideal world, all Compass users should have exactly the same settings and then all users will see exactly the same cave plot. But this world does not exist.

*I strongly feel that a survey file should have everything in it, that the survey programs possibly need to perform their calculations. I'm sure Larry feels the same way about it, and one day he will probably fix these problems (which will maybe mean that the DAT-format will radically change!).*

*However, time being, be aware of this:*

## ***Important options in the Project Manager, Options, Settings, General Options***

- **Automatically Calculate declinations.** If you check this box, the Compass will calculate the magnetic declination for all of your surveys and apply it when calculating the cave plot. This might cause an undesirable rotation of the cave plot. I recommend to **leave this unchecked**, and to enter the appropriate declination in the survey headers.
- **Use instrument corrections.** If you check this box, the Compass will correct your instruments with whatever correction you have entered in the survey headers. **This box should be checked** (*I feel Larry should better remove it all the way. If there are instruments correction entered, then they should be applied. If you don't want instrument correction, leave the fields zero then*).
- **Use Shot Flags:** If you check this box then Compass will use the shotflags such as "Exclude from plotting, from length etc). **This box should be checked.** (*I feel Larry should better remove it all the way. If there are shot flags, then they should be applied. If not the cave plot might radically change*).
- **Average Back/Forth sights:** might also influence your cave plot. **Should be checked.**

## ***Important options in the Project Manager, Options, Settings, General Options***

- **Use UTM convergence:** if you check this box, the Compass will calculate the convergence angle between true North and the coordinate grid North, and apply it when calculating the cave plot. This might cause an undesirable rotation of the cave plot. I recommend leaving **this unchecked**. If you want to use UTM convergence, then combine it with magnetic declination and enter the appropriate declination in the survey headers. (*I feel this should really be managed at the cave project (MAK), or even cave survey (DAT) level!*)

So, when installing Compass, go through these options! Don't forget to use the "Save User settings" menu option or your changes will be lost. When exchanging surveys with other people, make sure you all have the options set the same way. When upgrading your Compass version, go through the option because sometimes Compass will set them back to their default values.

*To conclude: what Compass misses now, is a dialog window in which you can enter Project-wide settings (MAK), and a dialog window in which you can store Survey file-wide settings (DAT). Time being, you only have Application-wide settings, and settings on the survey section level.*