

CPTask - Software Operation Instructions

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- **Product** : CPTask Presentation Software
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1 Introduction

Thank you for choosing GeoMil Equipment's CPTask presentation software.

CPTask is a Microsoft Windows based CPT data processing, interpretation and presentation software for all your CPT related office tasks. CPTask offer a user-friendly, mouse driven, working environment by providing a simple graphical user interface. Some key features offered by CPTask 1.15 are:

- Working both on individual files as well as on a project basis
- Simple editing of both signal and header data
- Creation and importing new CPT files
- Export of CPT files to a wide array of output formats
- A high level of control regarding the appearance of plotted signals
- Multilingual
- Customizable plot translations

Updated version of CPTask can be download from the GeoMil website www.geomil.nl

!! Note that a HASP key is required to use CPTask.

1.1 Organization of the user manual

The purpose of this manual is to provide both a introduction to CPTask for new users, as well as a reference for those people who use CPTask regular.

We start of with a short tutorial of CPTask, explaining the installation process and globally discussing various aspects of CPTask. Chapter 2, 3, and 5 discuss the process of working with files, projects and dissipation files. Chapter 4 deals with the exporting of files to various output formats. Next, chapter 6 discusses ways of editing both signal data and header data. Chapter 7 and 8 discuss the extensive collection of both file specific and application wide options available in CPTask. In Chapter 9 we discuss the customization of the plot language by creating our own translation. Finally, appendix A and B contain the formulas used for deriving useful signals and a comprehensive overview of the CPTask menu structure respectively.

1.2 Installing CPTask

The installation package of CPTask should, besides this manual which you've obviously received, contain the following items:

- The CPTask installation CD
- a HASP key

After inserting the CPTask installation CD into your computer, open its contents using the Windows explorer. Click on the "SetupShell" icon to initialize the CPTask installation procedure. Besides installing the CPTask software this program will also install the drivers required for using the HASP key.



The CPTask installation screen

If either the HASP drivers or the CPTask software is already installed on your system, the installation procedure will explicitly ask if you wish to re-install the software.

To install the HASP drivers click on the "Install Hasp Driver" button in the setup screen.

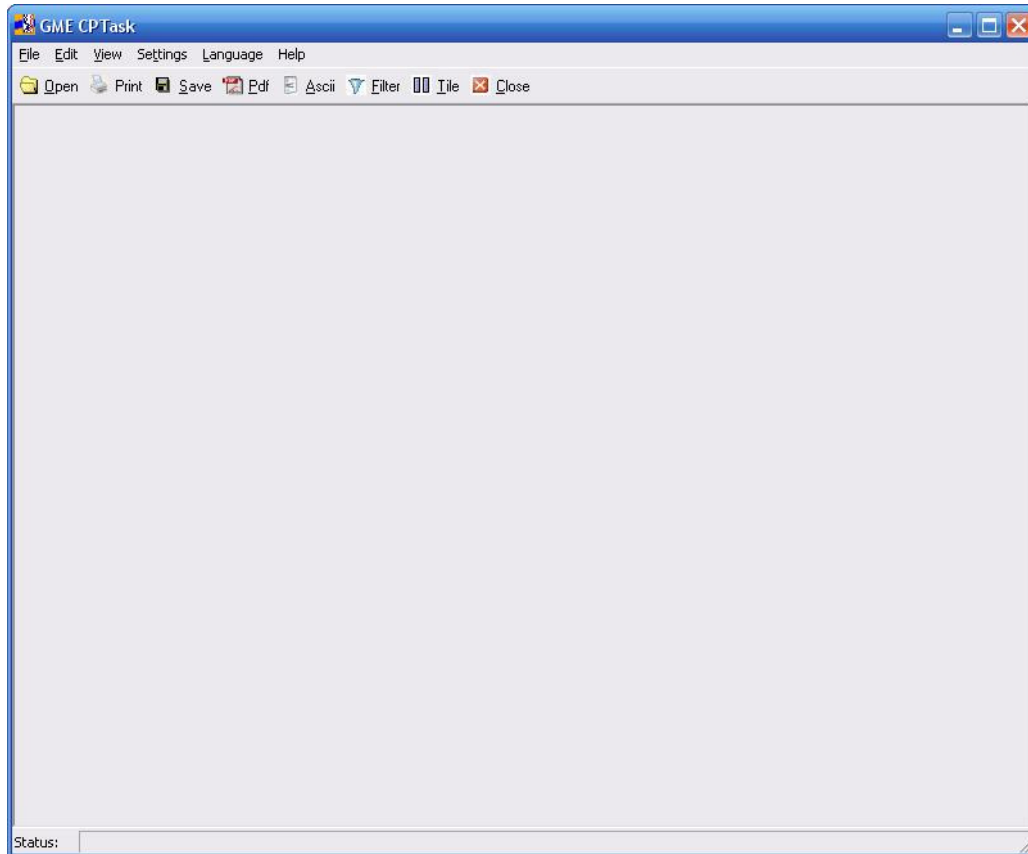
To install the CPTask software click on the "Install CPTask" button in the setup screen.

If CPTask is not yet installed on your system, the installation procedure will ask for a target directory in which the CPTask software will be installed.

If the CPTask software is already installed on your system, the installation procedure will offer you the possibility to repair or un-install the installed software.

1.3 The CPTask user interface

If you start CPTask you will find the menu bar on the top of your screen. Directly below the main menu bar is another menu bar which contains shortcut buttons to various operations. On the bottom of the screen you can see a status bar which notifies you about events happening in CPTask.



Screenshot of CPTask user interface

Clicking on the various items in the main menu will redirect you to one of the sub menu's. The total menu structure of CPTask can be found in one comprehensive overview in Appendix B.

1.4 Supported file formats

CPTask support two sorts of input file formats.

1.4.1 GME files

GME is a file standard which was used in outdated measuring systems. However, this file format is still used since it allows the raw data to be saved instantaneously, thereby dealing effectively with things as power failure during CPT Tests.

The data in the (old) GME data format is stored in two files.

The first file is named *****.0**** (header) and the second file is named *****.1**** (data).

Additional dissipation tests are stored as *****.D**** files.

1.4.2 GEF files

Gef (Geotechnical Exchange Format) is a general language structure for storing and transferring geotechnical information. The Gef data format is stored in just one file. This file type has the extension ***.Gef**. Additional dissipation tests are stored under the same file name as the Gef file but with an additional suffix. These files are referenced by the original Gef file.

A more specific explanation about the Gef-standard can be found at www.geonet.nl (<http://www.geonet.nl/3.020.html>).

Once a file is opened it can be saved to the Gef file format or exported to various output format. For a detailed description of file exporting (see chapter 4).

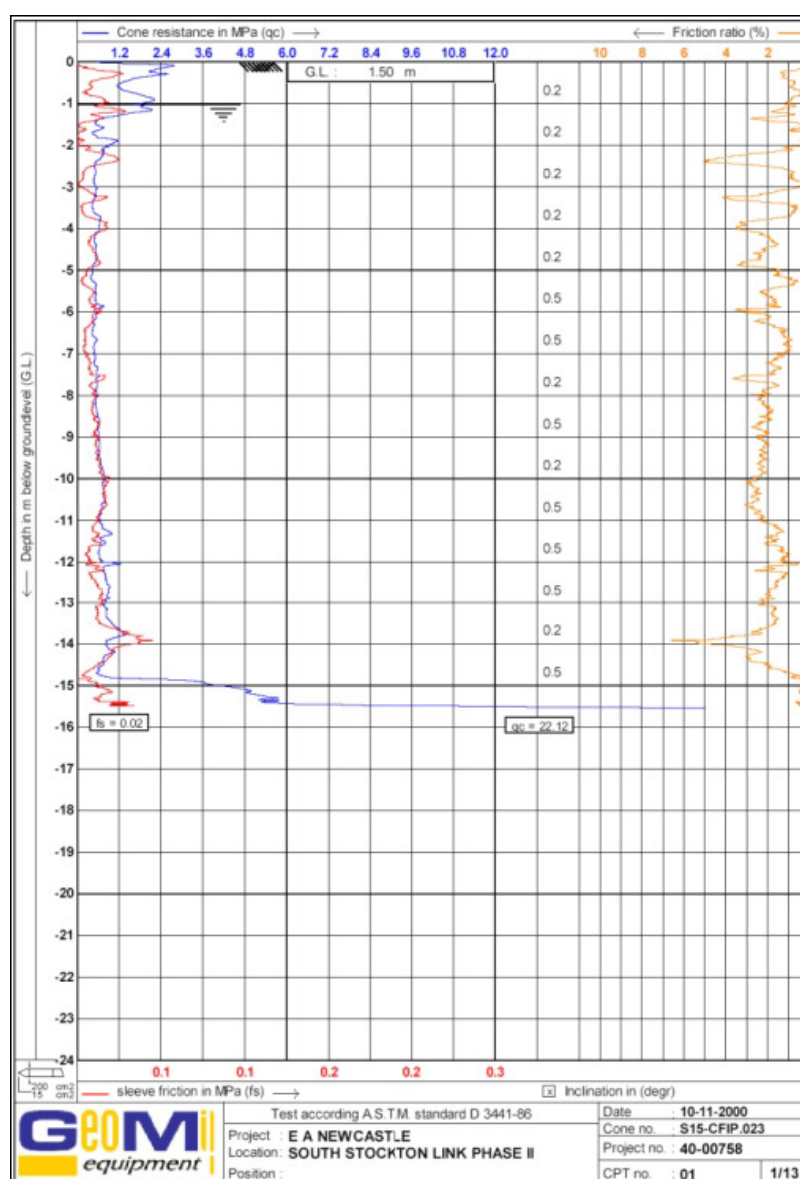
CPTask does not change the opened files and a backup of the original files are always kept in the directory containing the opened file.

1.5 CPTask presentation standards

CPTask provides two main ways of presenting your data. First, there is the Dutch standard which can show multiple graphs on one page. Secondly, there is the international standard which allows dynamic control over the way the various signals are displayed on the plot. Switching between both plot standards can be done in the settings screen (see chapter 8.3).

1.5.1 Dutch standard

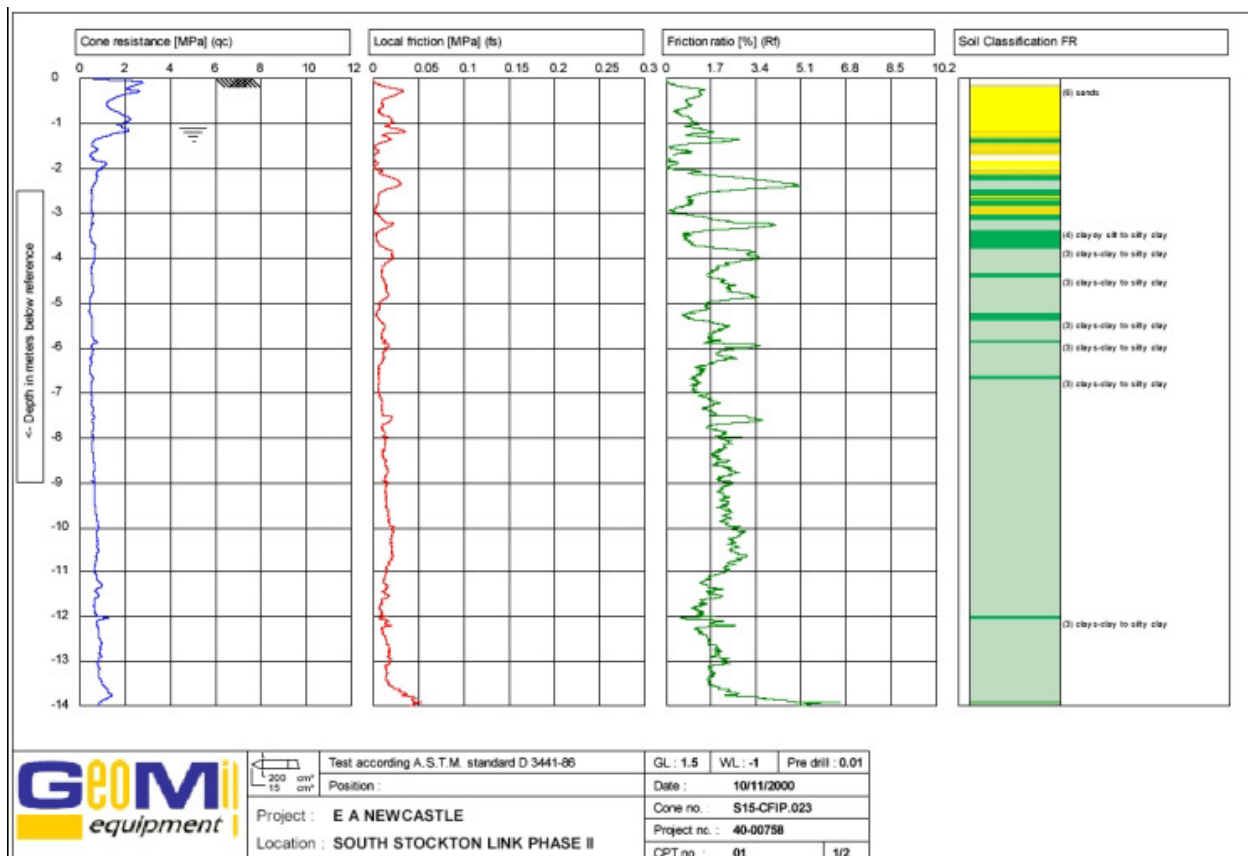
The Dutch standard is a static plot method. It is possible to display up to three graphs on one page. There can be two graphs at the left side of the plot. At the right of the screen it is only possible to print one graph. The horizontal scale of this right graph is reversed. Every graph has it's own horizontal scale that can be customized (see chapter 8.2).



Example of a Dutch standard plot

1.5.2 International Standard

The international standard is a very flexible way of displaying different signals in one plot. Graphs plotted with the international standard can be printed both in landscape or portrait orientation. It is also possible to choose the order, the width and the height of the displayed graphs (see chapter 7 and 8).



Example of a international standard plot

2 Working with files

CPTask offers flexible ways to create your own new soundings, as well as opening existing sounding files obtained from the field. Regardless of the way the data is obtained, it can be saved / exported to various forms of output.

2.1 Creating new CPT files manually

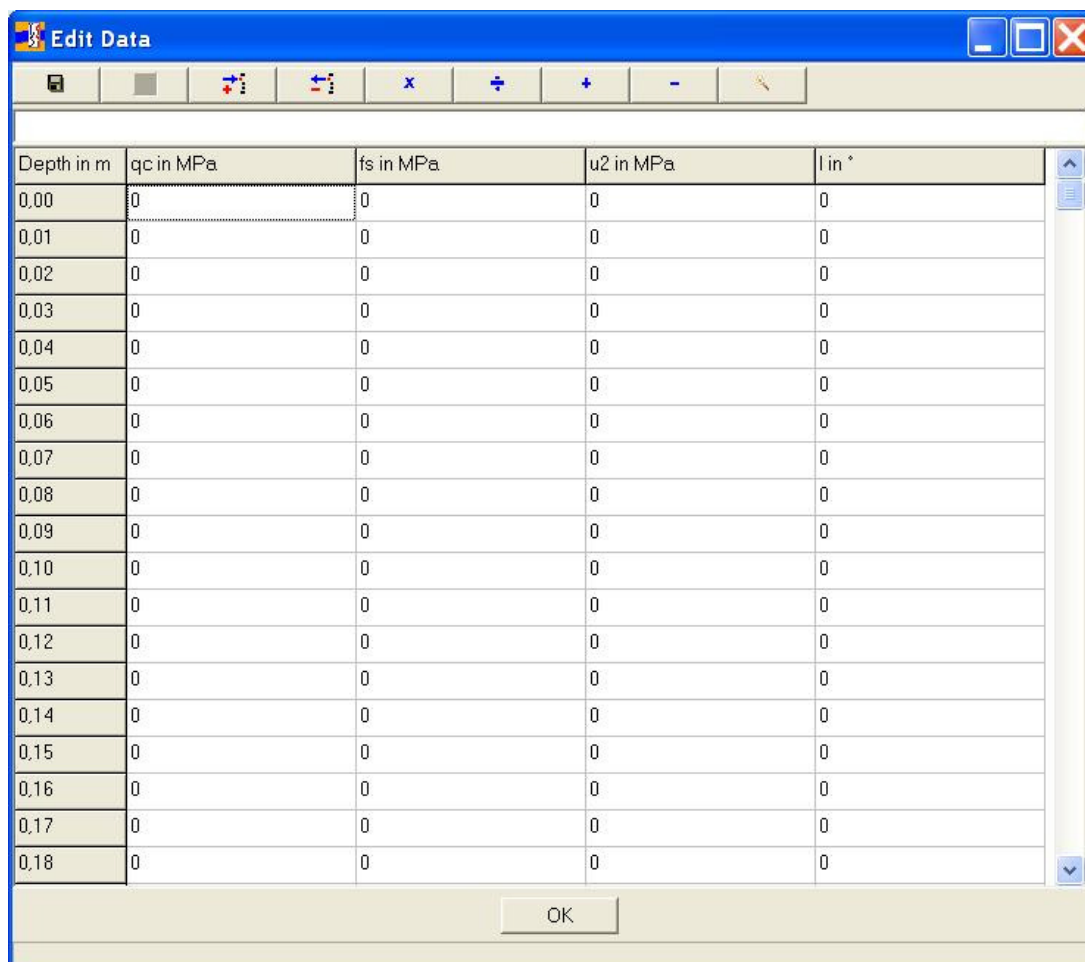
CPTask offers the option to manually create new sounding files which can be fully customized. To create a empty sounding use the menu option:

File → Create → Create CPT

The following information is required to successfully instantiate a new sounding:

- The filename of the sounding file
- The total penetration length of the sounding
- The sample interval

After a new sounding is created the header data can be customized in the header tab (see chapter 6.2). The actual sounding data can specified in at the data editing screen (see chapter 6.1).



Depth in m	qc in MPa	fs in MPa	u2 in MPa	I in °
0.00	0	0	0	0
0.01	0	0	0	0
0.02	0	0	0	0
0.03	0	0	0	0
0.04	0	0	0	0
0.05	0	0	0	0
0.06	0	0	0	0
0.07	0	0	0	0
0.08	0	0	0	0
0.09	0	0	0	0
0.10	0	0	0	0
0.11	0	0	0	0
0.12	0	0	0	0
0.13	0	0	0	0
0.14	0	0	0	0
0.15	0	0	0	0
0.16	0	0	0	0
0.17	0	0	0	0
0.18	0	0	0	0

A empty sounding ready to be edited

2.2 Importing Files

Besides manually creating a new sounding file from scratch, CPTask offers the possibility to import a Microsoft Excel file in which all necessary values are specified. Since Microsoft Excel offers various ways of efficiently manipulating large quantities of data, this method is exceptionally useful for importing new data into CPTask.

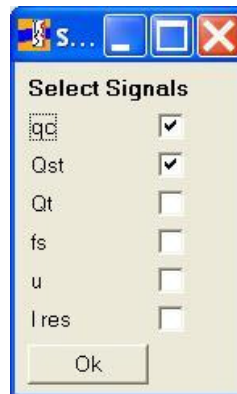
2.2.1 Import from Excel templates

The import of data is possible using the Microsoft Excel templates which comes with CPTask.

Both header data and raw sounding data can be imported simultaneously.

The accompanied Excel templates consist of two Excel worksheets, one titled *header* the other titled *data*. The following header data can be supplied at the *header* worksheet.

- Client Name
- Task Number
- Sounding Number
- Cone Number
- Location
- Operator
- Date
- Starting Time
- Penetration Time
- Stopping Time
- Water Level
- Reference Level
- Ground Level
- Predrilled Depth
- Penetration Depth
- Remark(s)



Selecting signals to import

If no value is filled in the imported value will be empty. Of course the corresponding values can always be filled in after the import process is completed.

The selected signal types needs to be filled in a the *data* worksheet in the following order:

depth,[qc,fs,u,I,Qst,Qt]

After the “*import from Excel*” option is selected in the file menu, the Excel file to import and the output filename can be specified. Finally the signals which need to be imported need to be specified.

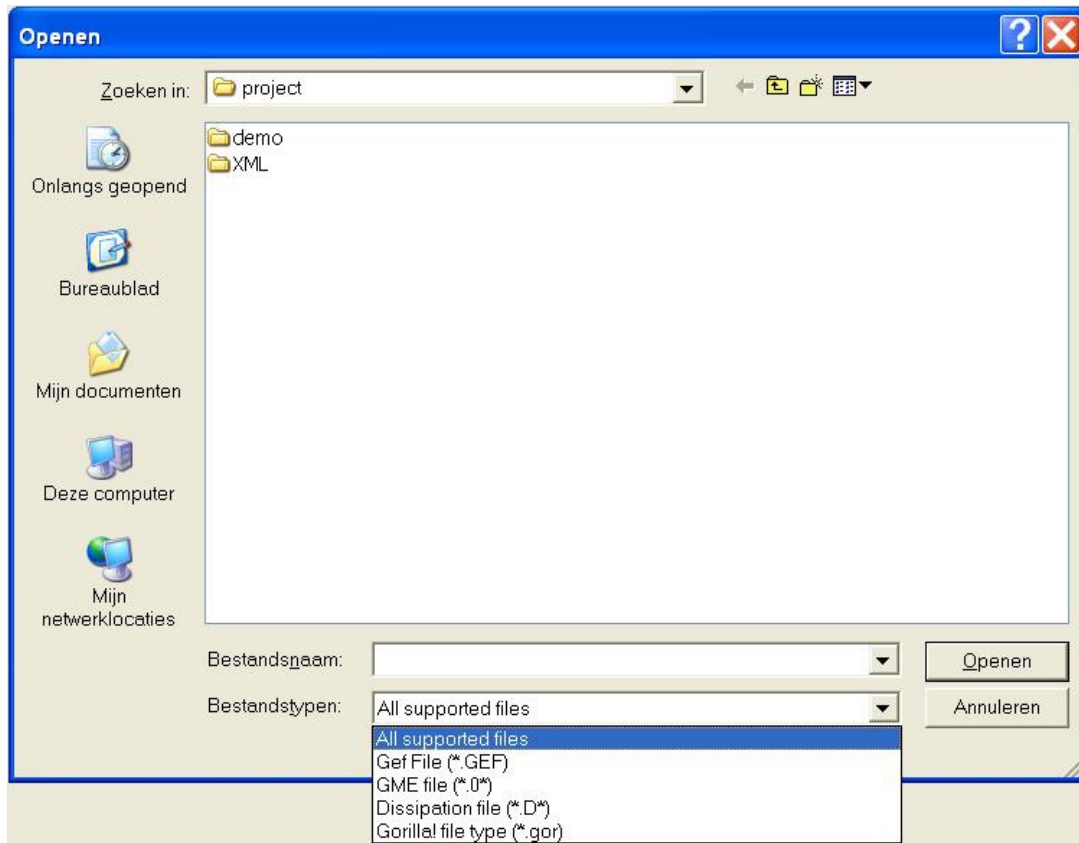
CPTask comes complete with different Microsoft Excel templates which are already formatted to the prescribed data format. The templates are available in various languages and can be found in the \CPTask\Excel Template directory.

2.3 Opening existing files

Opening existing files can be done by selecting the menu option

File → Open CPT (Shortcut Ctrl-O)

The shortcut menu bar below the main menu also contains a short cut button to open files.



Filtering the files to open

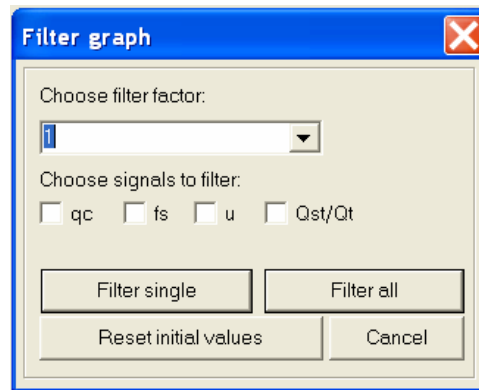
When opening files you can select to filter the files shown in the dialog box by selecting one of the supported extensions. This will result in CPTask showing the selected file type exclusively.

2.4 Filtering sounding files

When opening files in CPTask the data is automatically filtered. Default settings for filtering can be set in the settings screen (see chapter 8.3). After opening files it is still possible to filter signals additional times. By filtering peak signals can be significantly smoothened by taking the average of a certain interval of values around a value. If filtering is applied several times the smoothening effect is even stronger.

Opened files can be filtered by using the menu option

Edit → Filter



Filtering signals

The filter factor is the number of times the filter is executed. The signals to filter can be specified by checking them. Specified filters can be applied to single files or to all files by clicking on “*Filter single*” or “*Filter all*” respectively. With “*Reset initial value's*” the values from the CPT file are loaded again.

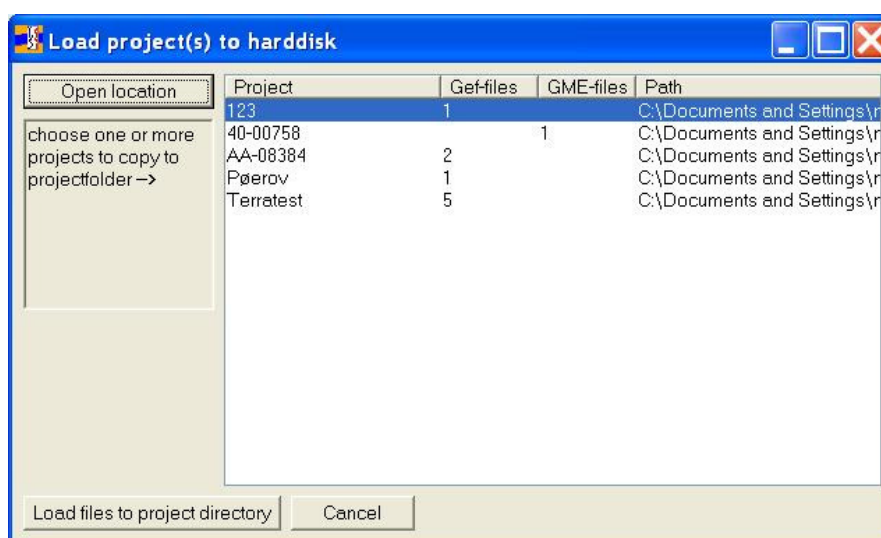
3 Working with projects

In CPTask, projects are sounding files belonging to the same sounding session. All these files have the same project identifier in the Gef header data. CPTask offers the possibility to work with whole projects at the same time. Projects can be opened simultaneously and various header settings can be changed on a project basis.

3.1 Loading projects to your project directory

Project files can be loaded into the project directory by using menu option:

File → *Load Project(s)* *Shortcut (Ctrl-L)*



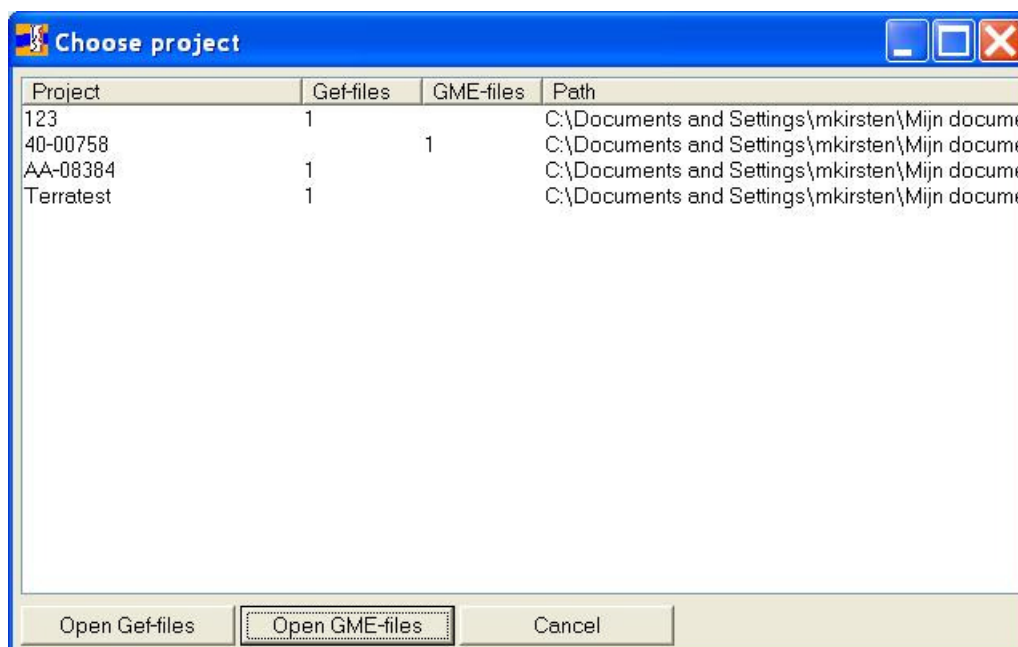
Loading project into the project directory

By selecting the “*Open location*” button a source directory can be selected. After selecting the source directory CPTask will scan this directory and show all available projects in that directory. Besides the project names, the number of files belonging to the project will be shown together with the path of the project files. By selecting the projects and clicking on the “*Load files to project directory*” the selected project will be copied to the project directory. For more information about the project directory and how it can be adjusted see chapter 8.3.

3.2 Opening projects

Whole projects can be opened at once by using the menu option:

File → Open Project → Scan all project folders



Opening projects

By selecting the project to open and clicking either “*Open Gef-files*” or “*Open GME-files*” (depending on the file type used) all files belonging to the project will be opened in CPTask.

You can also open projects from a arbitrary directory by using the menu option:

File → Open Project → Scan selected project folders

After selecting a directory, all project residing in that directory can be opened in the same way as described above.

4 Exporting files

Once a sounding file is opened in CPTask the contents of this file can be exported to various forms of output files. Export file types supported by CPTask are:

- ASCII file format (both CPTask ASCII and iDat ASCII standards)
- PDF file format
- Microsoft Excel file format
- DXF file format
- Jpeg file format

With all export functions a export file name and a directory have to be specified under which the exported files are stored.

4.1 Exporting to ASCII file format

To export the numerical data of the opened file you can choose to export it to the ASCII standard. The main advantage of this file type is that the size of the files are very small and the ASCII file type can be opened on every computer.

To export an opened file to ASCII file format choose the menu options:

File → Export → ASCII → Single → CPTask to export the currently active sounding or
File → Export → ASCII → Single → CPTask to export all soundings currently opened in CPTask.

Another ASCII file format to which soundings can be exported is the iDat format. This function exports the sounding data to a file which contains minimal header data followed by the data which is exported in a well defined order.

To export an opened file to iDat ASCII file format choose the menu options:

File → Export → ASCII → Single → iDat to export the currently active sounding or
File → Export → ASCII → Single → iDat to export all soundings currently opened in CPTask.

Both export file types can be read which a standard ASCII file reader (i.e. Notepad or Microsoft Word).

!! Note that ASCII export gives no graphical representation of the data.

4.2 Exporting to PDF file format

If you want to export the graphical representation of the data you can choose to export a opened sounding file to a PDF file. This effectively exports your graphs to a file format compatible with computers who have Adobe Acrobat Reader installed. This way you can send graphical representation of your data to people who don't use CPTask.

!!! Note that after export to PDF the exported file can not be changed.

To export your file to PDF file format use the menu options:

<i>File → Export → PDF → Single</i>	to export the currently active sounding or
<i>File → Export → PDF → All</i>	to export all soundings currently opened in CPTask.

4.3 Exporting to Microsoft Excel file format

The Excel export function exports the numerical data of your sounding files to a Microsoft Excel file. This file type can only be read by Microsoft Excel (which is a component of the Microsoft Office Suite). Although exporting to Excel files requires more time and disc space than a ASCII export it can be useful if advanced handling of your sounding data is required. After exporting your data to Excel files it can be imported again into CPTask. For a description of Excel import see chapter 2.2.

To export your file to Microsoft Excel file format use the menu options:

<i>File → Export → Excel → Single</i>	to export the currently active sounding or
<i>File → Export → Excel → All</i>	to export all soundings currently opened in CPTask.

4.4 Exporting to DXF file format

The DXF file format is a format which is compatible with various CAD applications (i.e. AutoCAD). Various applications support this file format. Although the data itself is numerical exported, numerous DXF viewers can create a graphical representation of the exported data. When exporting you need to specify the type of AutoCad file (AutoCad 14 or AutoCad 2000 or later).

To export your file to DXF file format use the menu options:

<i>File → Export → DXF → Single</i>	to export the currently active sounding.
<i>File → Export → DXF → All</i>	to export all soundings currently opened in CPTask.

4.5 Exporting to Jpeg file format

The Jpeg file format is a commonly used standard method of compression for photographic images. Exporting opened files will create a picture of the graphical representation of the data. The exported Jpeg file can be opened by almost all picture viewers as well as imported into a Microsoft Word document.

To export your file to JPEG file format use the menu options:

<i>File → Export → JPG</i>	to export the currently active sounding.
----------------------------	--

4.6 Exporting Dissipation tests

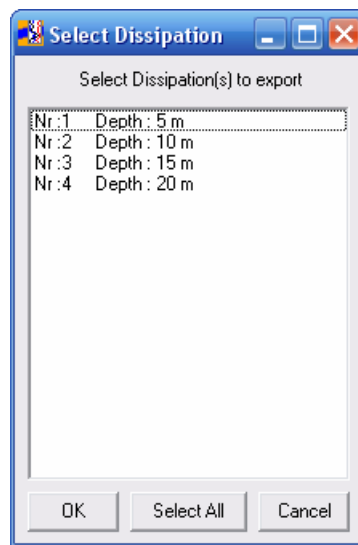
Besides exporting basic sounding files, CPTask also offers a option to export dissipation tests. Dissipation tests can be exported to both ASCII and Microsoft Excel file formats.

To export dissipations use the menu options:

File → *Export* → *Dissipation* → *ASCII* to export dissipation files to the ASCII file format or
File → *Export* → *Dissipation* → *Excel* to export dissipation files to the Excel file format.

After choosing the export method, the dissipation tests you would like to export can be specified. Next you will have to specify a export directory to which the dissipation files are exported.

The files are automatically given a suffix to distinguish them from each other after exporting.

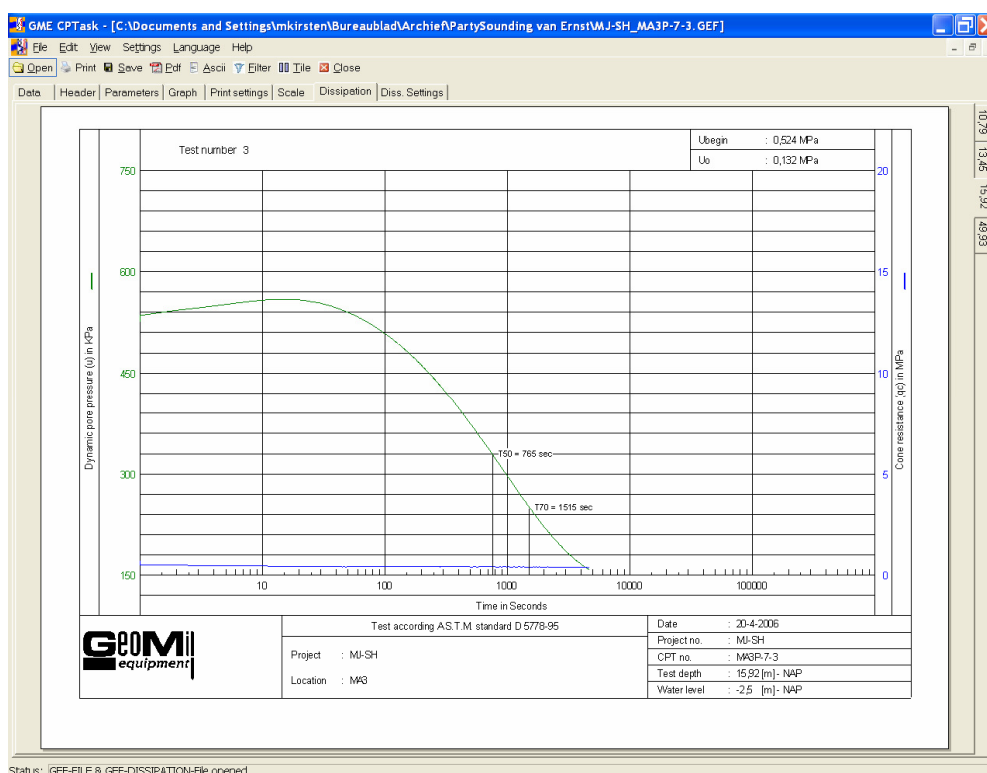


Selecting dissipations tests to export

5 Dissipation tests

Since the Gef standard provides a flexible way to link dissipation tests to their corresponding sounding files, CPTask offers various ways to include these dissipation tests into your plots.

If a Gef file contains dissipation tests, these are automatically opened in CPTask together with the original Gef file. By clicking on the Dissipation tab the various plots of the dissipation tests can be viewed. If a Gef file contains more than one dissipation test, switching between them can be done at the right side of the screen, where each dissipation test is characterized by the depth on which it was conducted.



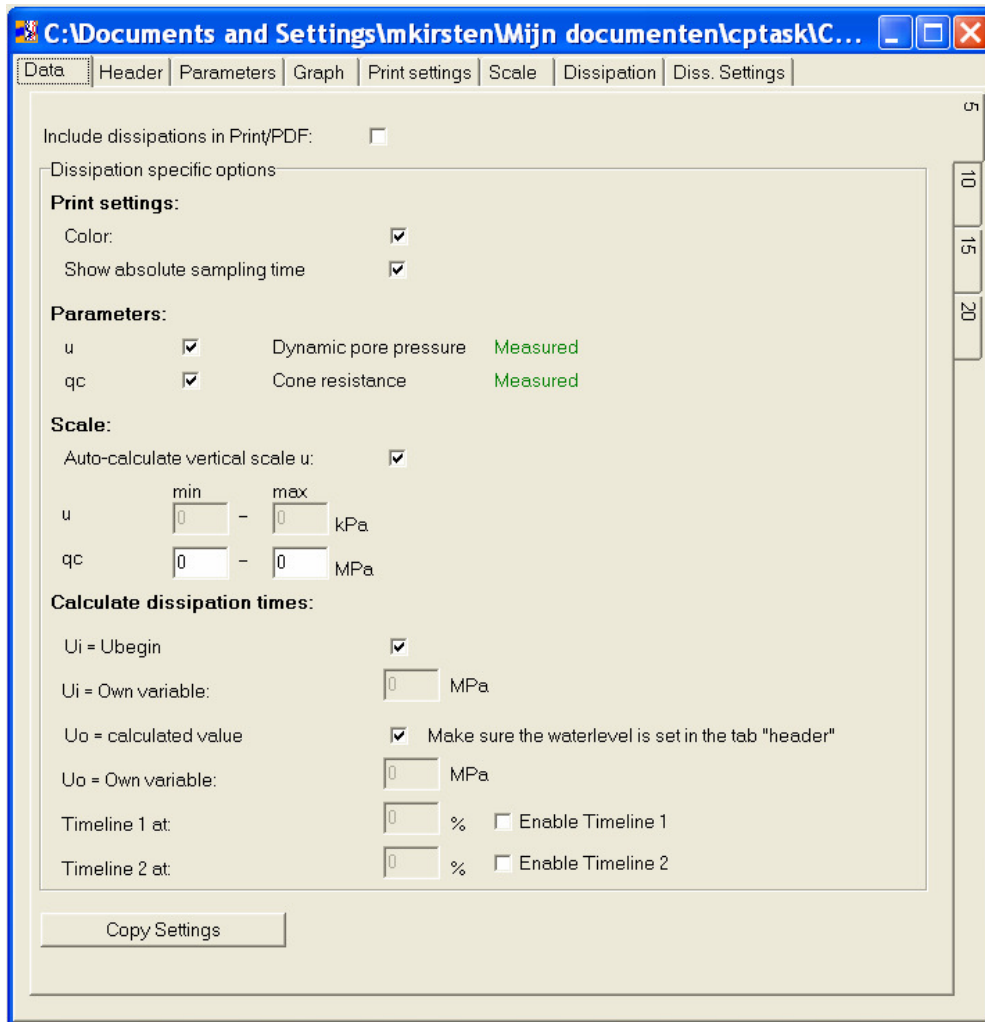
Viewing dissipation tests

When working with GME files, CPTask offers a simple way to include additional dissipation tests into your sounding plot. If a GME file is opened, the “*Add dissipation to sounding*” button on the header tab allows you to add a dissipation test to your sounding file. Added dissipation tests become immediately available in CPTask.

When saving a GME file to the Gef file format, the incorporated dissipation test are automatically linked to the Gef file. This way, when reopening the Gef file, the dissipation tests are also opened.

5.1 Dissipation options

Dissipation plots can be customized to adjust them to your specific needs. This can be done on the “Diss. Settings” tab. All options can be set on a per dissipation basis, providing maximum flexibility.



Customizing your dissipation plots

The following options can be adjusted to customize your dissipation plots:

- **Color** (switch between color plots and black / white plots)
- **Include dissipation in Print/PDF** (includes your dissipation plots in your print and export)
- **Parameter** (switch available signals on / off in the plot)
- **Scale**

In this section both scales can be manually specified. The scale of the Dynamic pore pressure can be automatically calculated by checking the “Auto-calculate vertical scale u” checkbox.

➤ **Ui and U0**

Both the begin value of the Dynamic pore pressure and the u0 values can be changed. By checking “*Ui = Ubegin*” and “*U0 = calculated*” both values will be directly derived from the dissipation data. By unchecking them you are able to specify these values manually.

➤ **Timelines**

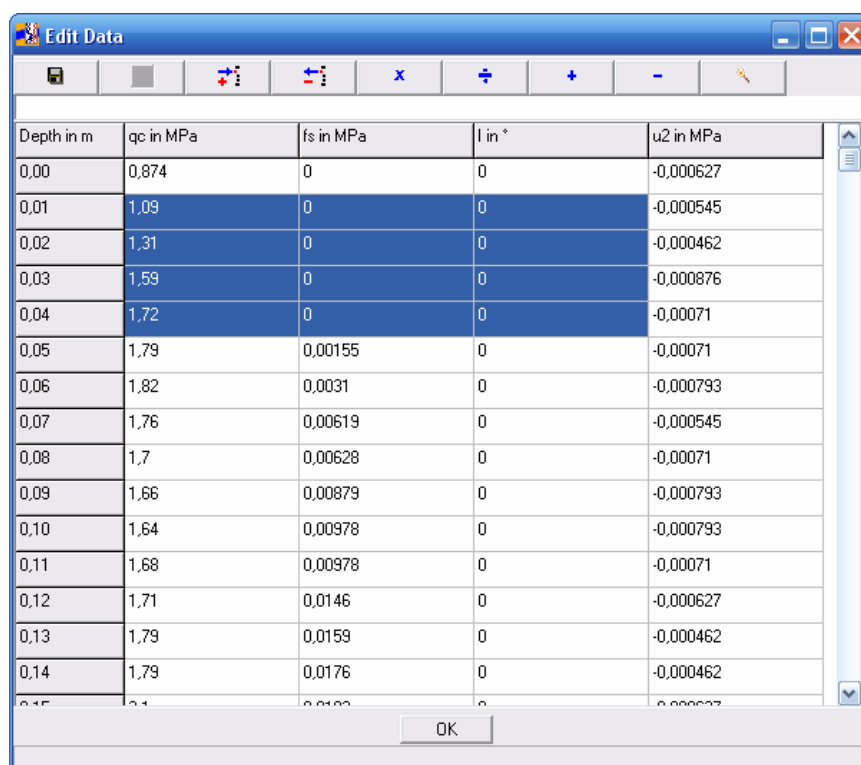
You can specify two percentages of the active dissipation. These percentages will be explicitly shown in your dissipation plot. (i.e. you can specify 50 and 70. This way the time a dissipation is 50% complete and 70% complete will be shown explicitly in the plot.).

6 Editing files

Although most properties of sounding files are specified in the field, CPTask offers ways to change practically all these properties. Both the obtained data values from the field as well as the header data containing information about the actual sounding, can be edited.

6.1 Editing Data

CPTask offers facilities to edit the original data you receive from the field and adjust it to your likings. You can edit the data in a opened file by selecting the “Data” tab on your sounding form. If you right click on the shown data you can access the edit screen by clicking on “Edit data”. You can also use the button next to the shown data in the sounding form.



Depth in m	qc in MPa	fs in MPa	I in °	u2 in MPa
0,00	0,874	0	0	-0,000627
0,01	1,09	0	0	-0,000545
0,02	1,31	0	0	-0,000462
0,03	1,59	0	0	-0,000876
0,04	1,72	0	0	-0,00071
0,05	1,79	0,00155	0	-0,00071
0,06	1,82	0,0031	0	-0,000793
0,07	1,76	0,00619	0	-0,000545
0,08	1,7	0,00628	0	-0,00071
0,09	1,66	0,00879	0	-0,000793
0,10	1,64	0,00978	0	-0,000793
0,11	1,68	0,00978	0	-0,00071
0,12	1,71	0,0146	0	-0,000627
0,13	1,79	0,0159	0	-0,000462
0,14	1,79	0,0176	0	-0,000462
0,15	2,1	0,0183	0	-0,00037

Screenshot of CPTask data editing screen

This editing screen can be fully operated using the mouse buttons. Various shortcut buttons reside on the top menu bar.

Selecting data is done by using the left mouse button. Whole columns or rows can be selected by clicking on the fixed column / rows on the top / left of the edit screen. This way, whole columns or rows can be selected without dragging the mouse.

Operations defined on the data are:

- Deleting and inserting rows to remove / create new data
- Mathematical operators like: addition, subtraction, multiplication and division
- Linear interpolate a given range of values over a certain amount of selected rows

Editing results can be made final by clicking on the “Save” button in the menu bar.

If you accidentally make a mistake during editing, the “Undo” button can be used to return to the previous state of your data.

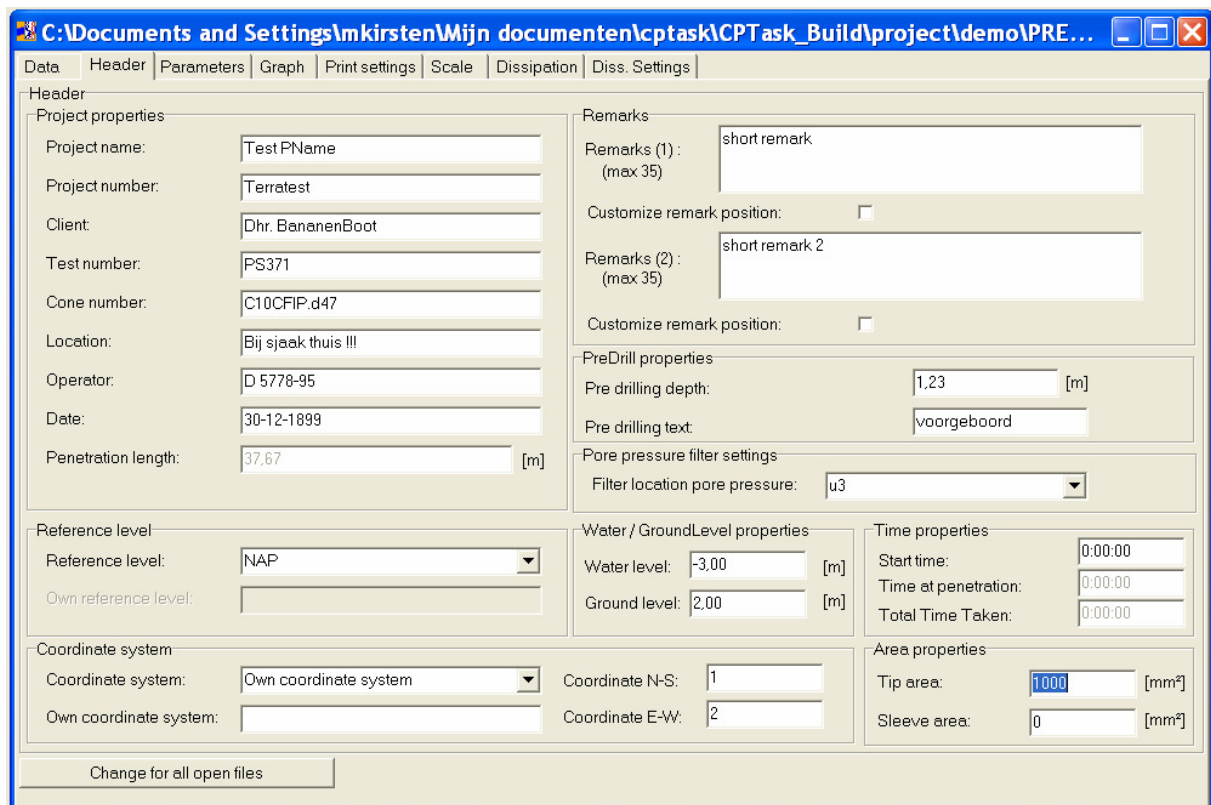
!! Note that you can only undo the last ten changes you made.

6.2 Editing Header data

Header data can be changed by clicking on the header tab of your sounding. All values, except for the penetration length, can be changed, and will be saved to either the GEF file or the CPTask settings file.

The following general header data can be adjusted:

- Project name
- Project number
- Client
- Test number
- Cone number
- Location
- Operator
- Date
- Start time



Editing your header data

The penetration length cannot be adjusted, but is directly derived from the actual number of data samples and the sample interval. This way no inconsistencies can occur between the actual depth and the specified penetration length.

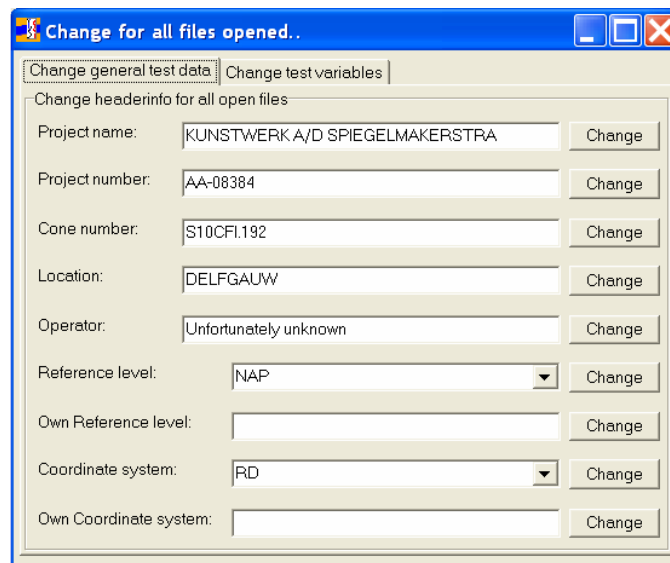
Besides specifying general project data the following things can also be specified in the header tab:

- Reference level
- Coordinate system
- North – South coordinates and East – West coordinates
- Location of the pore pressure filter
- Water level
- Ground level
- Timing properties
- Cone area properties
- Pre drill values
- Pre drill text (text to be displayed in a plot when pre drilling occurred)

Finally, CPTask offers the possibility to define two user defined remarks which are displayed in the plots. You can specify the text to display as well as the coordinates to display the textbox. The coordinates are to be specified in depth (in *m*) and x coordinate (in *cm*) from the left of the plot. If the remark positions are not specified, the remark(s) will be plotted on the bottom of the plot.

6.2.1 Editing multiple files at once

When working with multiple files simultaneously or working with projects, header data can be changed for all opened files at the same time by clicking on the “*Change for all open files*” button in the header tab.



Editing multiple files simultaneously

Both general project data as well as various test variables can be specified and propagated to all opened files by using the associated “*Change*” buttons.

6.3 Pasting sounding files

Besides editing the data of a opened sounding file, it is also possible to paste another sounding at the end of a opened sounding. Doing this will basically result in the opened sounding extended with the data of the pasted sounding. The header data will remain that of the already opened sounding. Pasting sounding require caution, since pasting totally different soundings can result in unrealistic results.

!! Pasting sounding files requires that both files contain exactly the same set of signals.

7 Settings the print parameters

Besides working with physically measured variables, CPTask offers the possibility to derive a wide array of signals from these measured values. These derived signals can also be plotted in CPTask. Several calculations of these signals depend on both measured data and constants. The constant values used in these calculations can be adjusted in the “*Settings/ Factors*” menu (see chapter 8.3). The equations used to calculate the derived signals can be found in Appendix A.

Depending on the printing standard used, CPTask offers different ways to specify the signals to plot. By clicking on the “*Parameter*” tab on the sounding form you can specify the signals to plot.

Both standards offer the possibility to propagate the parameter settings to all opened sounding files by clicking on the “*Change for all open files*” button on the bottom of the screen.

7.1 Parameter settings in the Dutch standard

Signals can be plotted by checking them in the “*Parameter*” tab. In the second column CPTask shows which signals are physically measured and which can be derived. If a checkbox next to a signals is inactive this means that this signal was not measured or cannot be derived from the measured signals.



Parameter	Checked	Type
qc	<input checked="" type="checkbox"/>	Measured
fs	<input checked="" type="checkbox"/>	Measured
Rf	<input checked="" type="checkbox"/>	Derived
I	<input checked="" type="checkbox"/>	Measured
u	<input checked="" type="checkbox"/>	Measured
uo	<input checked="" type="checkbox"/>	Derived
w/qc	<input checked="" type="checkbox"/>	Derived
qt	<input checked="" type="checkbox"/>	Derived
qe	<input checked="" type="checkbox"/>	Derived
qn	<input checked="" type="checkbox"/>	Derived
δ u	<input checked="" type="checkbox"/>	Derived
σ v,z	<input checked="" type="checkbox"/>	Derived
σ v,z'	<input checked="" type="checkbox"/>	Derived
Bq	<input checked="" type="checkbox"/>	Derived
qnorm	<input checked="" type="checkbox"/>	Derived
fnorm	<input checked="" type="checkbox"/>	Derived
soil id	<input checked="" type="checkbox"/>	Derived
Φ	<input checked="" type="checkbox"/>	Derived
Dr (cons)	<input checked="" type="checkbox"/>	Derived
Dr (over-cons)	<input checked="" type="checkbox"/>	Derived
Su	<input checked="" type="checkbox"/>	Derived
Ic	<input checked="" type="checkbox"/>	Derived
N60	<input checked="" type="checkbox"/>	Derived
Qst	<input type="checkbox"/>	Measured
Qt	<input type="checkbox"/>	Measured
vs	<input type="checkbox"/>	Measured
L_Ec	<input type="checkbox"/>	Measured
U_Ec	<input type="checkbox"/>	Measured
Average_Ec	<input type="checkbox"/>	Measured
Average Smp	<input type="checkbox"/>	Measured
Upper Smp	<input type="checkbox"/>	Measured
Lower Smp	<input type="checkbox"/>	Measured
FFD	<input type="checkbox"/>	Measured

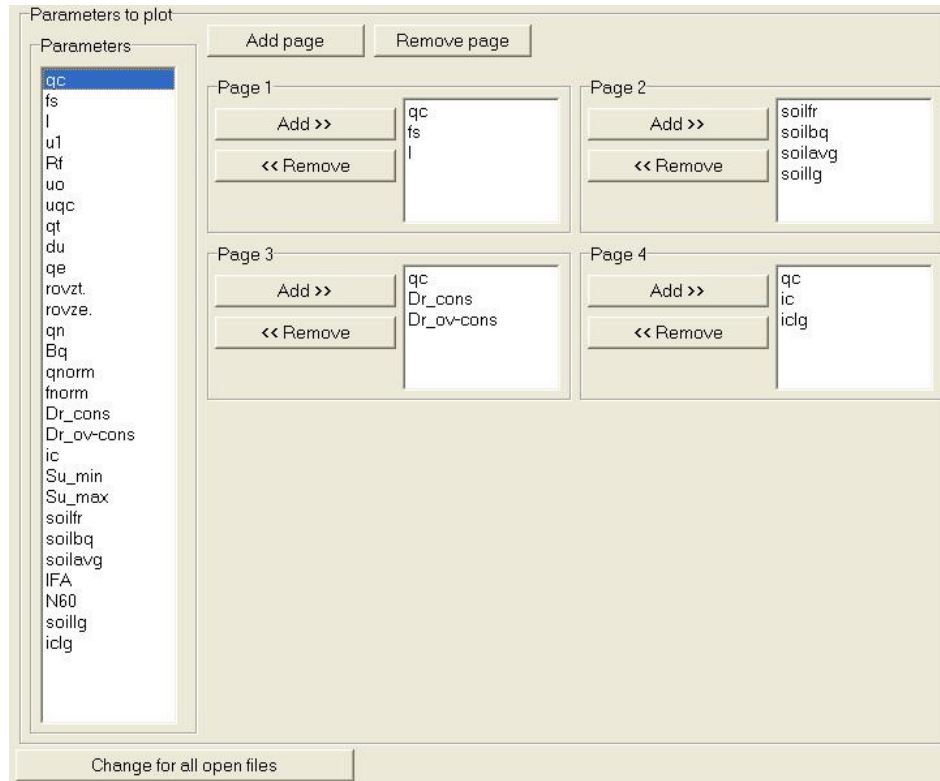
Settings signals to print in the Dutch standard

By clicking on the “*Select all*” button all active signals will be selected.

Note !!! In the Dutch standard, signals are automatically assigned a place in the plot.

7.2 Parameter settings in the international standard

The international standard offers a more flexible way of specifying the manor in which the various signals are printed in the eventual plot. Up to eight pages of plots can be specified using the international standard. Additional pages can be added by clicking on the “Add page” button. By clicking on the “Remove page” button the last page will be removed. Both buttons reside on the top of the screen.



Settings signals to print in the international standard

Signals can be added to pages by selecting them in the left list and clicking on the “Add” button at the page you want the signal to be plotted. Removing signals from a particular pages is done by selecting the signal to remove and clicking on the “Remove” button corresponding to that page.

On the bottom of the signal list, at the left side of the screen, two signal parameters (*soillg* & *iclg*) are available which do not correspond to concrete signals. These *signals* correspond to the legenda of the soil classification and the soil behaviour index respectively. These signals can be treated as regular signals and can therefore be added to the plot.

8 Customizing CPTask

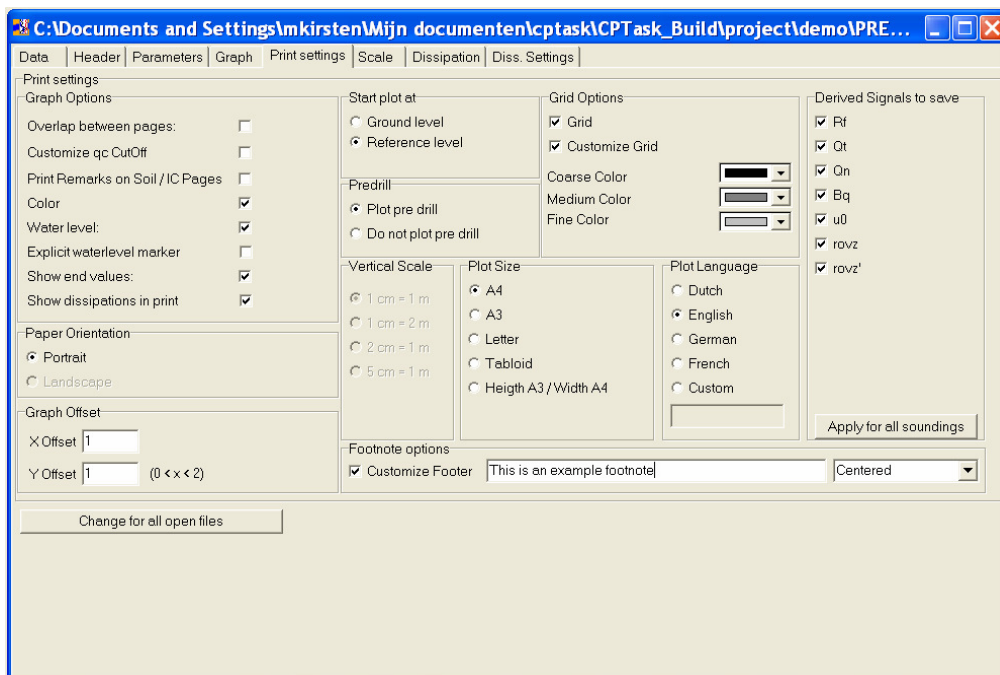
To allow for a more flexible way to display your plots, CPTask offers a extensive collection of options to customize your plots. Both the way your plots are printed as the scales used to plot your graphs can be customized in CPTask. Finally the options which are used to customize the whole application are discussed.

8.1 Customizing print options

One way to customize your plots is to adjust aspects regarding the appearance of your plot. These can be specified on the *Print Settings* tab. The follow plot properties regarding the way a graph is plotted can be specified:

!! Note that some options are only available in one of the plotting standards

- Overlap between adjacent pages
- Cut off of qc signals (Dutch plot only)
- Allow specified remarks to be printed on pages containing soil classification and IC plots
- Colour or Black / White plot
- Water level plotted
- Showing the end values of signals at the end of the plot
- Start level of the plot (ground or reference)
- Plotting pre drill
- Optional foot note (and alignment) printed at the bottom of each page
- The granularity of the grid the graphs are plotted on
- The colour of the gridlines
- The vertical scale of the graph (Int. standard only)



Customizing your plots

Besides plot related options a number of print paper related options can be specified:

- The orientation of the plot (portrait / landscape (Int. standard only))
- Paper size
 - A4
 - A3
 - Letter
 - Ledger
 - Height A3 / Width A4 (Dutch standard only)
- X and Y Offset of the graph

This screen also provides the option of storing a variety of derived signals in the eventual gef file. The signals that can be stored are all defined by the gef standard.

Finally, the language in which the graph need to be plotted can be chosen. Here, a customized translation file can be selected (see Chapter 9).

!! Note that the plot language only translates the plots and not the application.

8.2 Customizing scale settings

When plotting signals their horizontal scale can be manually adjusted. When no changes are made, CPTask uses default settings for these scales. By clicking on the “*Scale*” tab, all scales can be customized by specifying the range of the scale (requiring a min and a max value).

Scale	min	max	
qc,qt,qe,qn	0	20	in MPa
fs	0	5	in MPa
Rf	0	10	in %
$\delta u,u,u_o$	-2	2	in MPa
$\sigma v,z, -v,z'$	0	500	in MPa
u/qc	-1	4	-
Bq	-2	8	-
Φ (IFA)	0	50	in °
Ic	0	5	
Su	0	1000	in kPa
Dr	0	100	in %
N60	0	50	
qnorm	0	500	-
fnorm	0	10	in %
I (inclination)	0	15	in °
Qst,Qt	0	50	in kN
FFD	0	5	in mV
L_Ec	0	3	in mS/m
U_Ec	0	3	in mS/m
A_Ec	0	3	in mS/m
Smp	0	5	-
Upper_Smp	0	100	-
Lower_Smp	0	100	-

Quantity

MPa = Mega Pascal

% = Percentage

- = Not defined

kN = kilo Newton

mV = milli Volt

mS = milli Siemens

Change for all open files

Customizing the scales used in your plots.

Once again, the adjusted scales can be propagated to all other opened files by clicking on the “*Change for all open files*” button on the bottom of the screen.

8.3 Customizing program settings and factors

Besides customizing file dependant options, CPTask contains numerous application wide options which, once specified, apply to all files opened in CPTask.

The Settings / Factors screen can be accessed by selecting the menu option:

Settings → Settings / Factors

Besides adjusting the various settings and factors, you can also save and load you customized settings for later use. This way you can easily switch between different settings.

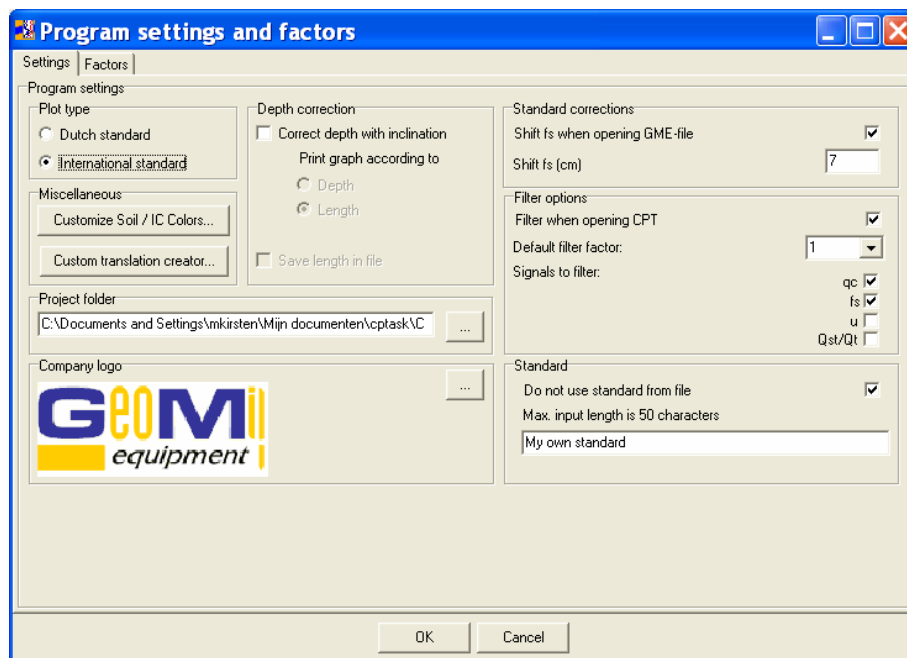
Saving and loading settings can be done by using the menu options:

Settings → Save settings and *Settings → Load settings* respectively.

8.3.1 Settings

First of all the plotting standard as described in section 1.4 can be specified at the top of the screen. Several options regarding standard corrections and application wide parameter can be adjusted:

- Shift of the fs signal
- Default filter factor
- Signals to filter
- The company logo which is printed on each plot (aspect ratio is preserved)
- The currently active project directory
- Overwriting sounding standards specified in the file



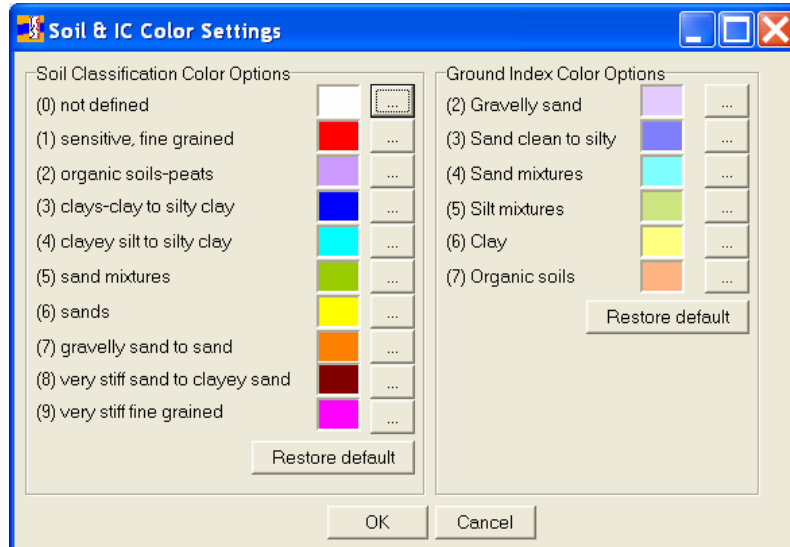
Customizing your program settings

When the inclination is known you can decide to correct the depth of the sounding according to the inclination. This adjusted depth can also be saved to file. Plots can be plotted according to the original depth or the adjusted depth.

!! Note When files are opened which don't contains a inclination values, all signals are automatically plotted according to their original depth.

Custom plot translation can be created using the “*Custom translation creator*” button.
See chapter 9 for a detailed description of this feature.

Finally the color schemes used for plotting the soil classification and the soil behavior index can be fully customized by clicking on the “*Customize Soil / IC colors*”. All colors can individually be adjusted. By using the “*Restore default*” button the original default values for that signal is reloaded. When exiting CPTask the specified color schemes are saved.



Customizing your color schemes

8.3.2 Factors

By selecting the “*Factors*” tab in the settings screen, you can adjust the constant factors used in the signal calculations. The formulas (in which these factors are used) can be found in Appendix A.

Program factors

Cone factors

Alpha tip

Friction ratio -> Gamma dry (kN/m3)	Friction ratio -> Gamma saturated (kN/m3)
0 - 0.6 % <input type="text" value="19"/>	0 - 0.6 % <input type="text" value="21"/>
0.6 - 0.8 % <input type="text" value="18"/>	0.6 - 0.8 % <input type="text" value="20"/>
0.8 - 1.1 % <input type="text" value="17"/>	0.8 - 1.1 % <input type="text" value="20"/>
1.1 - 1.4 % <input type="text" value="16.5"/>	1.1 - 1.4 % <input type="text" value="20"/>
1.4 - 2.0 % <input type="text" value="18.5"/>	1.4 - 2.0 % <input type="text" value="20"/>
2.0 - 3.0 % <input type="text" value="18"/>	2.0 - 3.0 % <input type="text" value="19"/>
3.0 - 4.0 % <input type="text" value="16"/>	3.0 - 4.0 % <input type="text" value="20"/>
4.0 - 5.0 % <input type="text" value="14"/>	4.0 - 5.0 % <input type="text" value="14.5"/>
5.0 - 10.0 % <input type="text" value="13"/>	5.0 - 10.0 % <input type="text" value="13"/>
> 10.0 % <input type="text" value="11"/>	> 10.0 % <input type="text" value="11"/>

Dr values according to: $Dr = 1/C2 * LN(qc / (C0 * \sigma_v' / C1))$ (calculated for zones 5 to 7 of soil classification only)

Consolidated	Over-consolidated
C0 <input type="text" value="157"/>	C0 <input type="text" value="181"/>
C1 <input type="text" value="0.55"/>	C1 <input type="text" value="0.55"/>
C2 <input type="text" value="2.41"/>	C2 <input type="text" value="2.61"/>

Su values according to: $Su = (qc - \sigma_v') / Nk$ (calculated for zones 1 to 4 of soil classification only)

Nk(min)
Nk(max)

Phi values according to: $\Phi = ARCTAN(a + b * LN(qc / \sigma_v'))$ (calculated for zones 5 to 7 of soil classification only)

a
b

Ic values according to: $Ic = \sqrt{(a - \log Q_{norm})^2 + (\log F_{norm} + b)^2}$

a
b

SPT N60 according to: $(qc / pa) / (8.5 * (1 - Ic / 4.6))$

Reference stress (pa):

Ok Cancel

Customizing factors for signal calculation

8.3.3 Language options

Besides the language in which the graphs are plotted (see chapter 8.1), the language of CPTask itself can also be changed. By using the menu option: *Language* and selecting the desired language the application itself will be translated.

Currently the following language are supported by CPTask:

- English
- Dutch
- German

!! Note that the application language and the plot language are independent of each other.

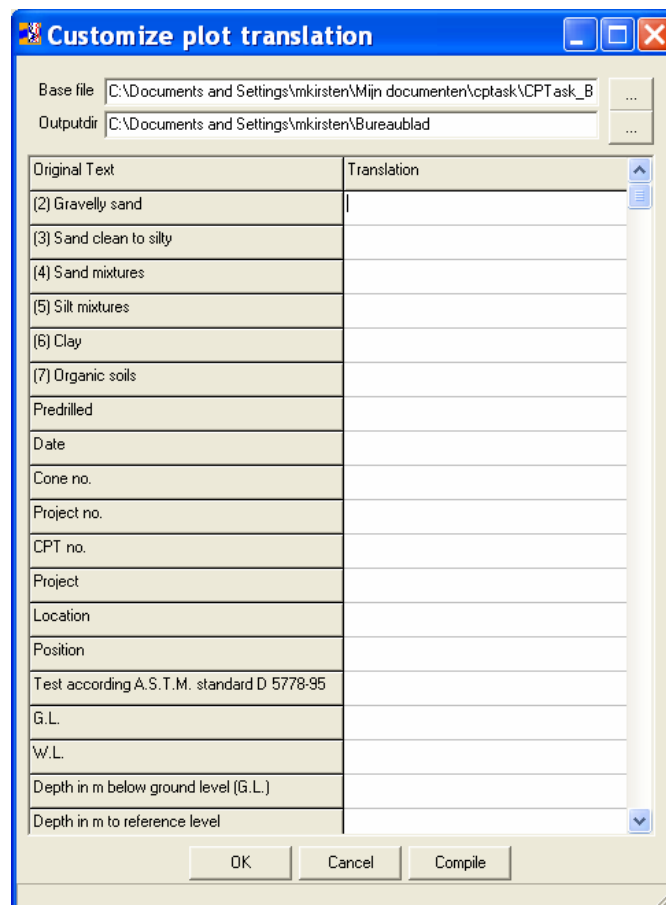
9 Customizing your plot language

CPTask offers a simple way to customize the language used in your final plots.

By using the “*Custom translation creator*” button in the option screen the translation creator screen is opened. By selecting the base translation file (containing the expressions to be translated, typically found in the ...\\CPTask\\Custom Translations directory) and specifying an output directory the custom translation file is set up.

By providing a translation for each expressions a custom translation file can be compiled by using the “*Compile*” button. Note that translation of all expressions is mandatory.

After providing a filename for the custom translation the a new compiler translation file is saved in the specified output directory.



Creating a custom plot translation

After a custom translation file is created, this file can be selected by using the “*Custom*” language option in the print settings screen of a specific sounding.

!! We advise to create a special directory containing the customized translation files.

Appendix A Equations

Depending on the measured parameters, the following equations are used to calculate derived signals.

Signal	Name	Calculated by	Unit
Q_c	Cone resistance	Measured parameter	MPa
F_s	Local friction	Measured parameter	MPa
R_f	Friction ratio	$\frac{f_s}{q_c} * 100\%$	%
I	Inclination	Measured parameter	°
$U_{(1,2,3)}$	Dynamic pore pressure	Measured parameter	MPa
u_0	Equilibrium pore pressure	$p_{water} * (\text{depth-waterlevel})$	MPa
U / q_c	Dynamic pore pressure ration	$\frac{u_2}{q_c}$	-
Q_t	Corrected cone resistance	$q_c + (1 - \alpha_s) * u_2$ $\alpha_s \approx 0.81$	MPa
Δu	Excess pore pressure	$u_2 - u_0$	MPa
Q_e	Effective cone resistance	$q_t - u_2$	MPa
$\sigma_v; z$	Total vertical stress	$\sum \gamma_{dry} + \sum \gamma_{wet}$	kPa
$\sigma_v; z'$	Effective vertical stress	$\sigma_v; z - u_0$	kPa
Q_n	Net cone resistance	$q_t - \sigma_v; z'$	kPa
B_q	Pore pressure ratio	$\frac{\Delta u}{q_n}$	-
Q_{norm}	Normalized cone resistance	$\frac{q_n}{\sigma_v; z'}$	-
F_{norm}	Normalized local friction	$\frac{f_s}{q_c} * 100\%$	%
Soil ID	Soil classification	Classification according to Robertson (1990)	-
Dr	Relative density	$\frac{1}{C_2} * LN \frac{q_c}{C_0 * \sigma_v; z'^{C_1}}$ Consolidated: $C_0 \approx 157, C_1 \approx 0.55$ $C_2 \approx 2.41$ Over-consolidated: $C_0 \approx 181,$ $C_1 \approx 0.55, C_2 \approx 2.61$	%
Φ	Internal friction angle	$ARCTAN(a + b * LN(\frac{q_c}{\sigma_v; z'}))$ $A \approx 0.105, b \approx 0.16$	°
S_u	Undrained shear strength	$\frac{q_c - \sigma_v; z}{N_k}$ $N_k(min) \approx 12, N_k(max) \approx 20$	kPa
I_c	Soil behavior type index	$\sqrt{(a - \log q_{norm}) + (\log f_{norm} + b)}$ $A \approx 3.47, b \approx 1.22$	
N_{60}	Equivalent SPT N60 value	$\frac{q_c}{pa} / \left(8.5 * \left(\frac{1 - I_c}{4.6} \right) \right)$	

		$p_a \approx 100$	
Q_{st}	Total friction	Measured parameter	kN
Q_t	Total force	Measured parameter	kN
S_{mp}	Soil Moisture Probe	Measured parameter	mS
F_{fd}	Fuel Fluorescence Detector	Measured parameter	mV

Appendix B CPTask Menu Structure

