

**NAVIPAC**

**LEGMON**

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# 1 Overview

## 1.1 Installation

LegMon is part of the NaviPac package.

### **Licence**

LegMon does not itself require a licence, but to use the full functionalities of NaviPac a licence should be requested from EIVA A/S.

# 2 Getting Started

## 2.1 Prerequisites

You do not need any other programs active to do the initial setup of LegMon, but you need the following information and permissions available:

- Data format and connection information for your monitoring system
- File-path and read/write access rights to a location where you can store the LegMon log-files.

## 2.2 NaviPac Guidelines

### **Legs**

Legs are added as offsets in NaviPac. They must be the first offsets added and they must be in numerical order, thus leg one will get NaviPac ID 801, Leg two will get NaviPac Id 802 and so forth.

### **GPS and RTK**

The GPS that is used as reference for the leg-offsets should be the primary one used by the vessel and you must have RTK available if you want reliable data.

### **Leg Depth and Pressure into NaviPac**

To get the depth and pressure values back into NaviPac you must add a Data Acquisition instrument of the type **Leg Penetration**. Add one for each leg and set them all to point to the same UDP port as specified in the LegMon setup under **Export -> NaviPac Depth Export**.

Note: Remember to change the **Leg no** in each property for each of the Leg Penetration instruments.

## 2.3 One-time Setup

Install NaviPac and browse to the folder C:\EIVA\NaviPac\Bin to start LegMon.exe.  
Open the dialog **Setup -> Settings..**

Hint: many of the properties in the setup dialog have help text, that becomes visible once you click on them.

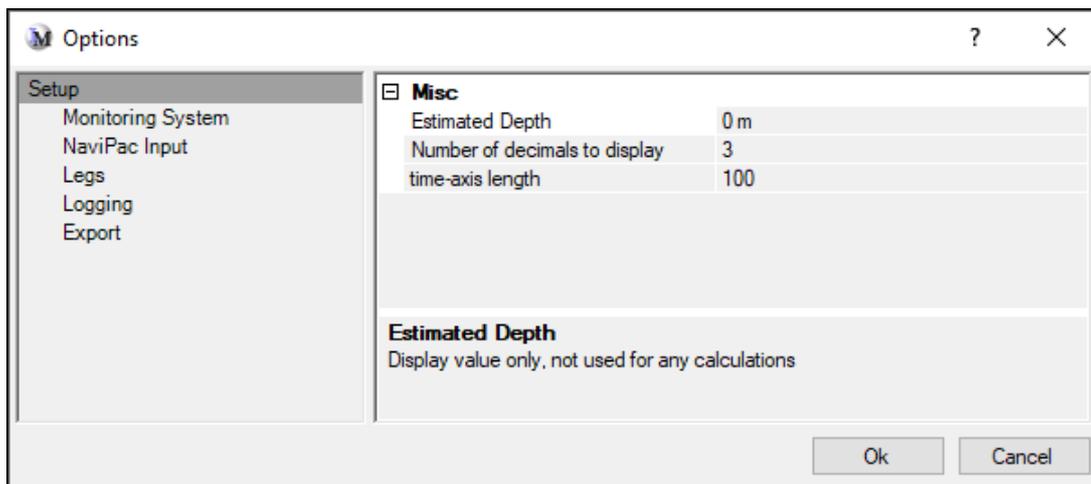


Figure 1 Setup

You can leave the **Estimated Depth** as it is for now or not set it at all.  
It is just a static value that will be displayed to the operator and will not be used in any calculations.

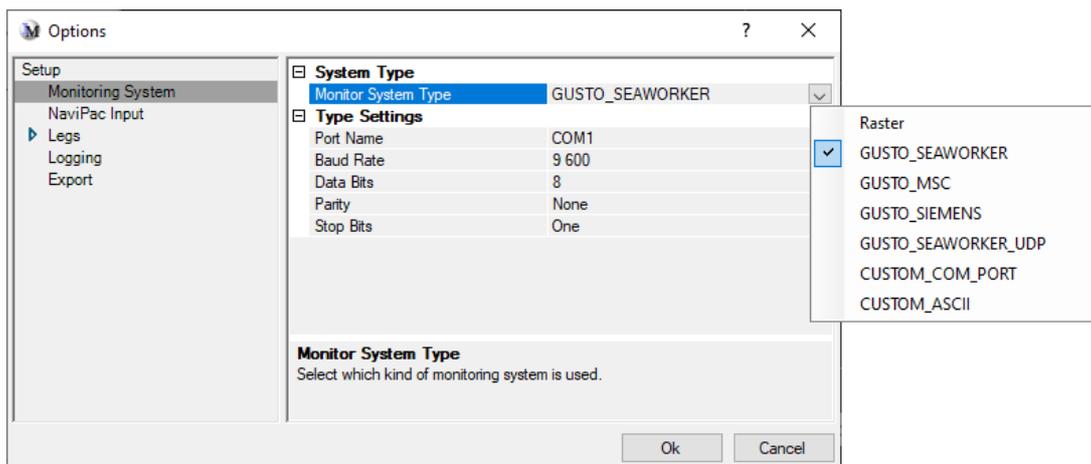


Figure 2 Monitoring System

Under monitoring system, you select the monitoring hardware that you are using and set up the communication details (e.g. IP or COM-port, etc).  
See chapter Monitoring System Formats for details in this document on which format to use.

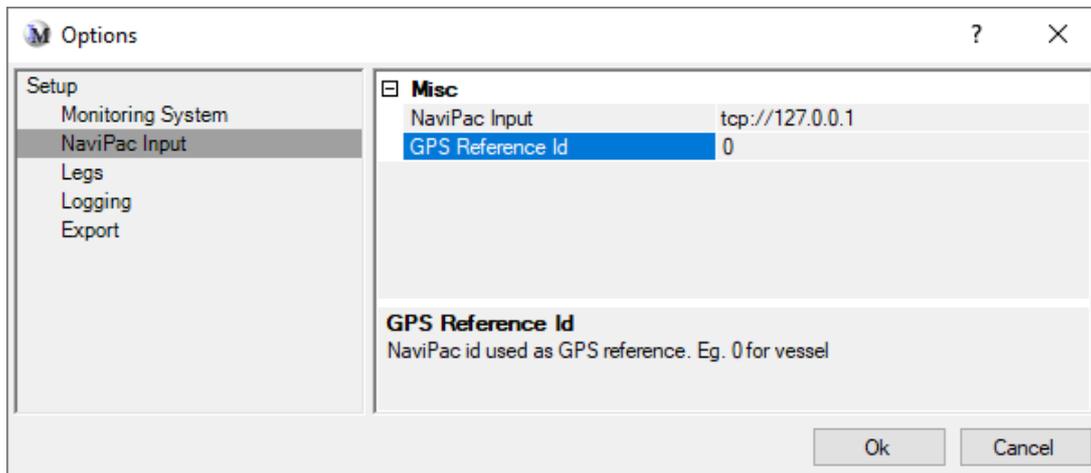


Figure 3 NaviPac Input

You can leave the properties in this topic alone, unless your vessel ID in NaviPac is DIFFERENT from zero. (Usually it always is zero.)

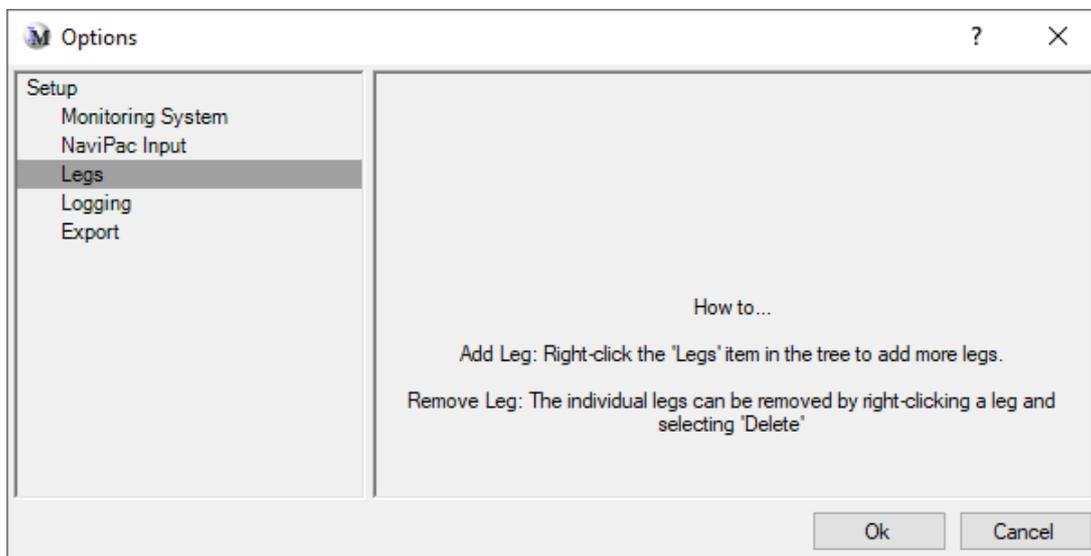


Figure 4 Legs

Add the number of legs your vessel have by right-clicking the **Legs** item in the tree and select **Add**. The added legs will show up as a sub-item to **Legs** in the tree.

ATTENTION: After adding or removing a leg you **MUST** always save the setup and then close and restart the LegMon application before the changes will take effect. (Remember to save the setup - using **Save As...** from the File menu - before restarting!)

Note: you can remove legs by right clicking the leg itself and select **Delete**.

Set up each leg by left clicking on them and change the properties

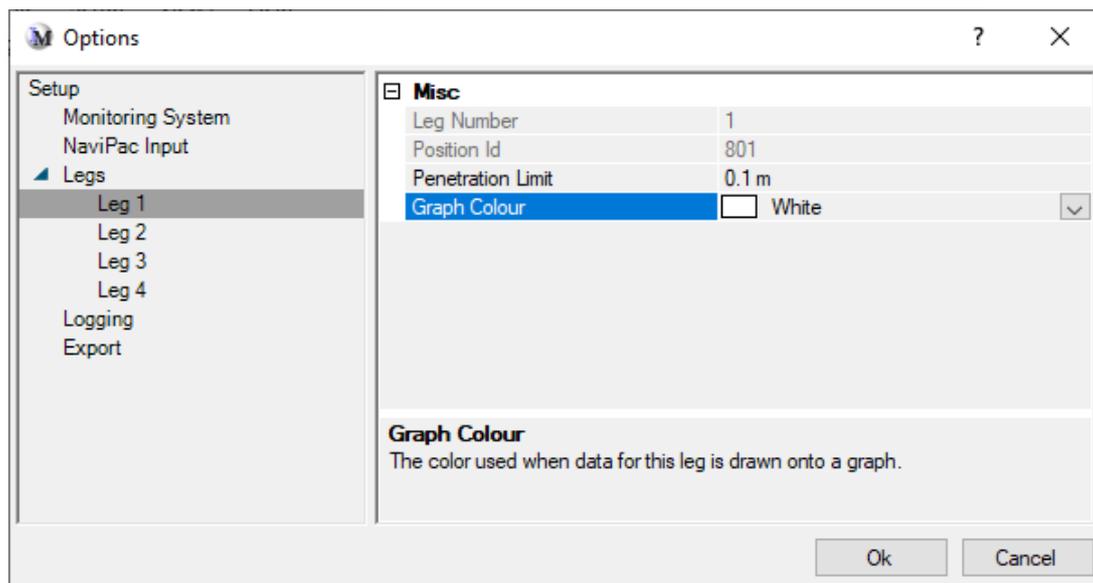


Figure 5 Legs added

Change the **Graph Color** to distinguish between the legs on the graphs in the user interface and in the pdf-prints.

Unless you are always using the same penetration limits you can leave it alone.

Note: The **Penetration Limit** is how much the foot of the individual leg is allowed to move horizontally away from its **Touchdown** depth.

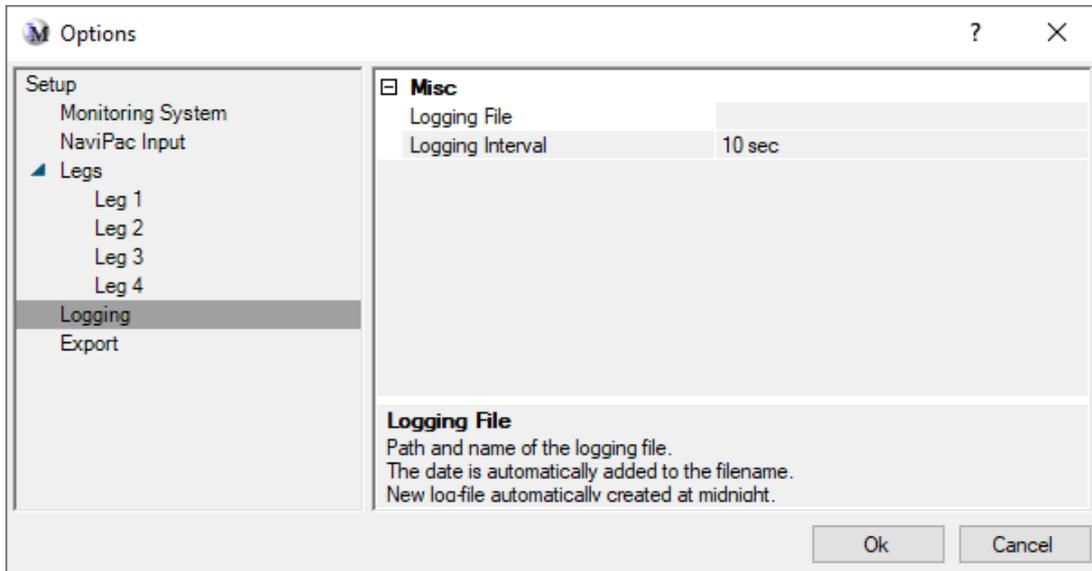


Figure 6 Logging

Enter the interval at which you want to log data. Data will also be logged if a penetration alert happens and when touchdown is set or reset.  
 Leave the **Logging File** as it is for now unless you always want to log to the same location.

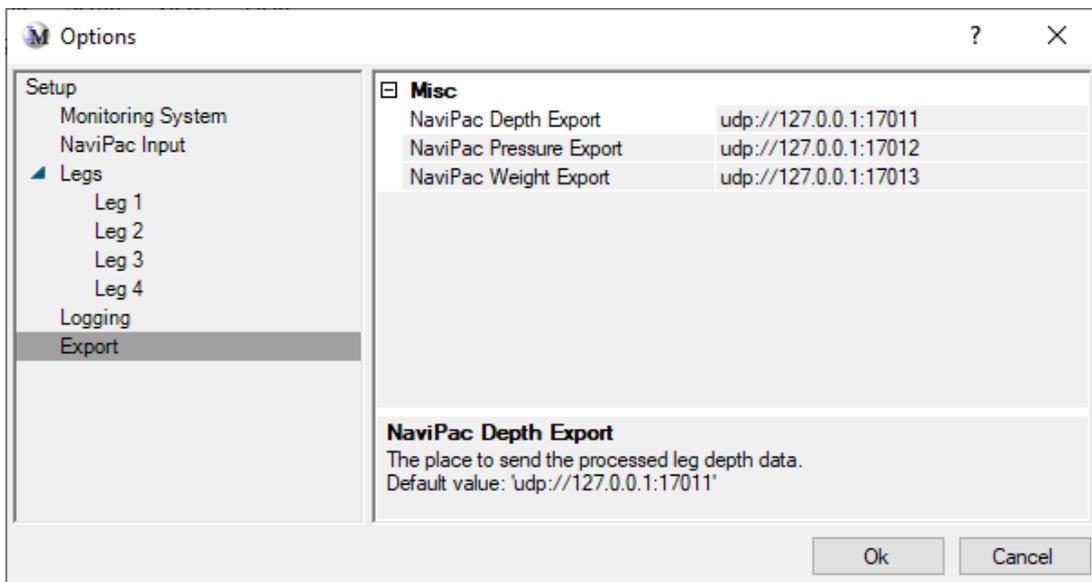


Figure 7 Export

If you set up NaviPac as recommended under NaviPac Guidelines you do not need to change anything here.  
 Otherwise make sure the ports fit the ones used in NaviPac:  
**NaviPac Depth Export** must match the port of the Data Acquisition instrument **Leg Penetration** in NaviPac.

Note: Remember to save the setup (**File -> Save As...**) before exiting the application.

## 2.4 User Interface Setup

Open the **Views** menu-item and add the views you need:

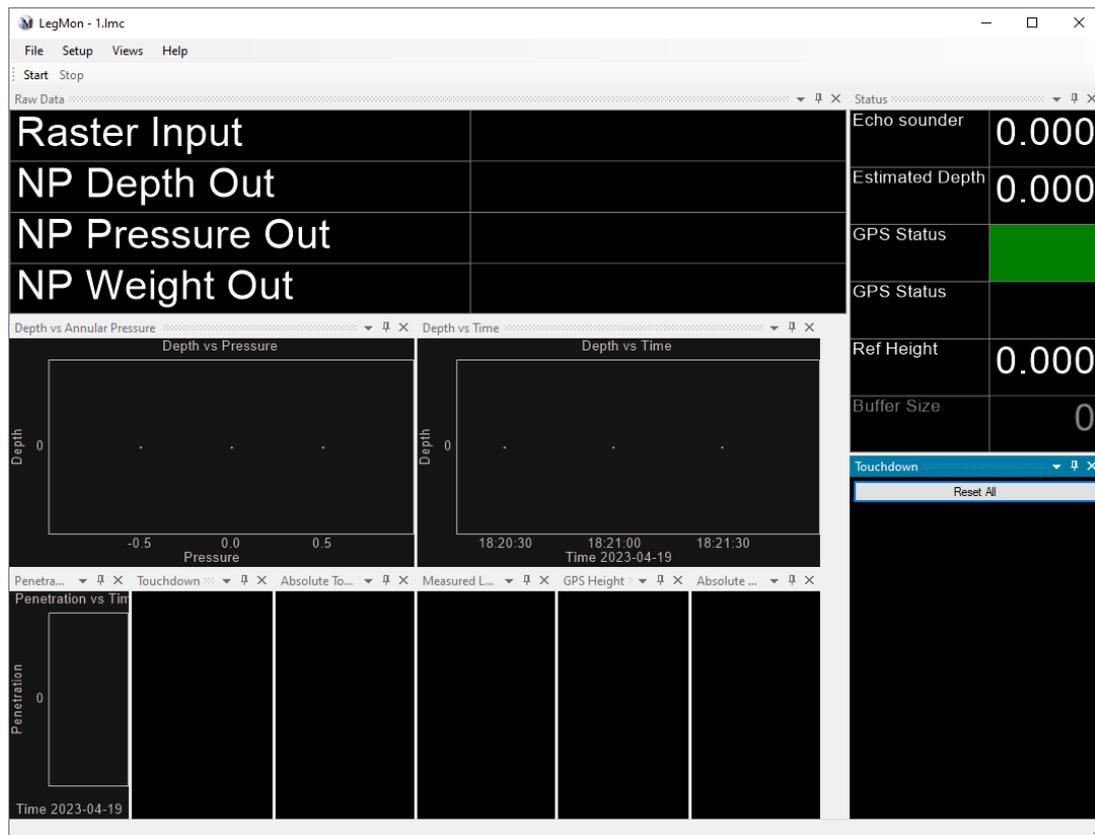


Figure 8 Views menu

Please note that several of the views might be all black or only contain limited information if you add views without having added any legs in the setup dialog. See chapter During Operation for detail on views.

## 3 Everyday use

### 3.1 Prerequisites

NaviPac must be running and all hardware connected. (Having green indicators in the IO Monitor of **NaviPac Online**)

## 3.2 Before Operation

Go into **Setup -> Settings...** and adjust the following properties as needed.

Note: You do NOT need to restart the application if you only change the properties listed here.

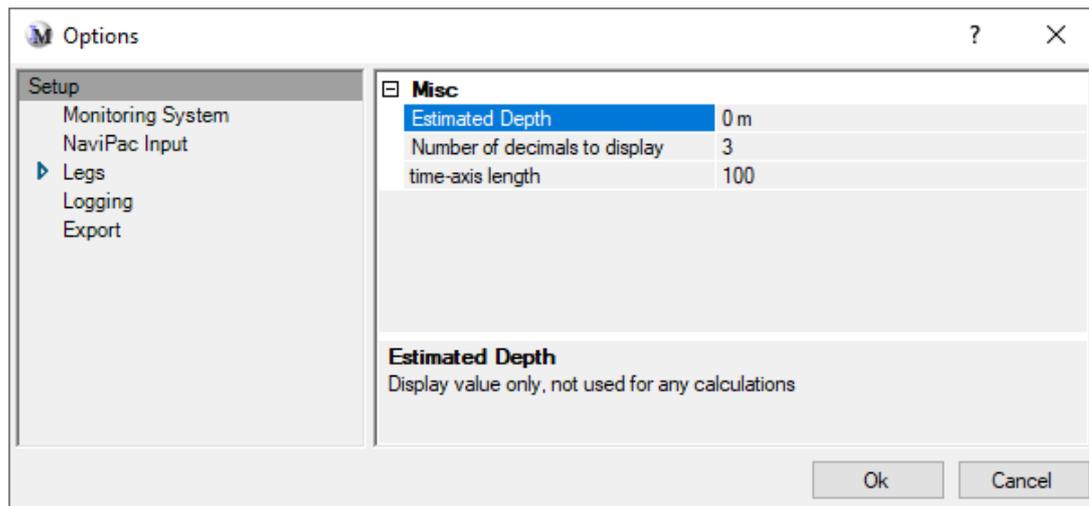


Figure 9 Setup New estimated Depth option

[Optional] Set the **Estimated Depth** to the depth you expect to encounter at the location (Can later be changed using **Setup -> Set Estimated Depth** if needed).

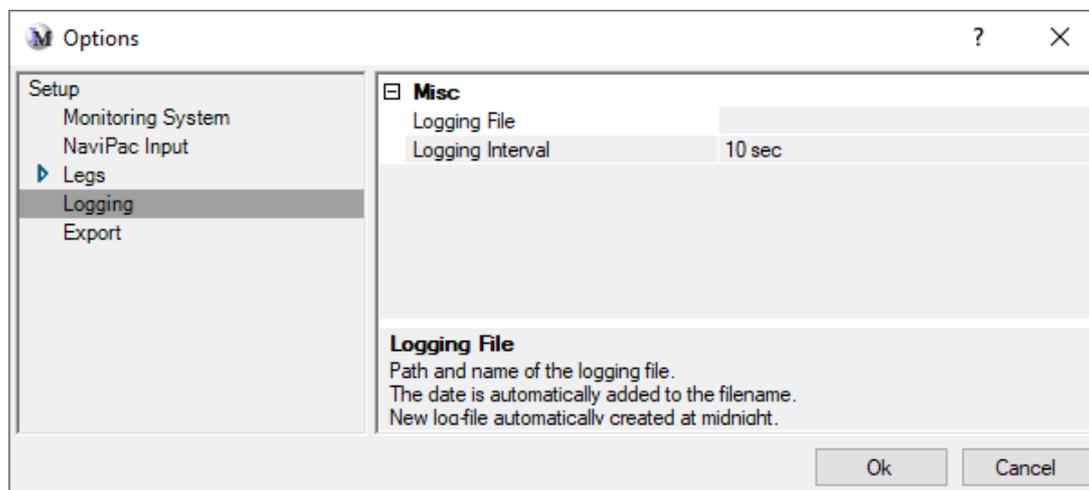


Figure 10 Logging

Select where you want to place your log-file. (Unless you always log to the same location.)

Note: The current date is automatically added to the log-file name.

Note: A new log-file is automatically generated (using the same name, but different date) at

midnight.

Click **Ok** and then save the settings using **File -> Save**.  
You are now ready to click **Start** on the toolbar of LegMon.

Once you click "Start" the logging will begin and you can use the touchdown buttons.

### 3.3 During Operation

LegMon will start to log data and monitor the system once you have clicked **Start**.

#### Penetration Alert and Touchdown

**ATTENTION: Penetration alerts for the individual legs will not be given until you specify a touchdown depth!**

The touchdown depth is to be set at the time when the leg touches the ground and/or when you do not expect the leg to penetrate any further.  
The touchdown depth for each leg can be **set** as many times as you like, but only the last one will be used.

You **set** the touchdown depth for a leg by clicking on its allocated button in the **Touchdown** view



Figure 11 Touchdown view

Status	
Echo sounder	67.69
Estimated Depth	0.00
GPS Status	
GPS Status	RTK
Ref Height	37.40
Leg1	
Leg2	
Leg3	
Leg4	

Figure 12 Status View

The status view displays the system status:

- The **GPS Status** lamp will turn red if you do not have RTK
- The LED-lamps will turn red if the related leg is outside its penetration limit (the limit is defined in Setup)
- Ref Height is the height of the reference GPS

## 3.4 Ending the Operation

Clicking **Stop** on the LegMon toolbar will stop logging and alarm monitoring. You cannot exit the application while logging and alarm monitoring is active.

# 4 Appendix

## 4.1 Monitoring System Formats

### 4.1.1 Data format: Raster

Example: \$PRLEG,120,200,300,470\*48<CR><NL>

Where each value is the depth for a leg sorted as: 1, 2, 3 and 4

#### 4.1.2 Data format: GUSTO\_SEAWORKER

\$SWLEG,1,+200.0,+050.0,+12.00<CR><LF>

Identification SWLEG of the data string (SEA WORKER LEG)

Integer 1, this is the number of the subject leg 1, 2 3 or 4

Number +200.0, this is the actual pressure at the full area side of the cylinder

Number +050.0, this is the actual pressure at the annular area side of the cylinder

Number +12.00, this is the actual leg length below the hull

#### 4.1.3 Data format: GUSTO\_MSC

\$LEG,1,+200.0,+050.0,+12.00, <CR><LF>

Identification LEG of the data string

Integer 1, this is the number of the subject leg 1, 2, 3 or 4

Number +050.0, this is the pressure

Number +12.00, this is the actual leg length below the hull

#### 4.1.4 Data format: GUSTO\_SIEMENS

First all four leg lengths (extensions) will arrive, then the four pressures

The layout of the leg extension data string for leg 1 is as follows:

LEX,1,0000000<CR><LF>

The layout of the leg pressure data string for leg 1 is as follows:

LPR,1,0000000<CR><LF>

## 4.2 Logging Format

Format of entries in the logging file:

#Format=\$<Reason for entry>,<timestamp>,<number of legs>,<#><leg number>,<gps height>,<leg length>,<absolute height of leg foot>,<absolute height of foot at touchdown>,<penetration>,<leg pressure(annular)>,<#><leg number>...

Example with four legs:

\$TimeInterval,2011-09-30 15:22:08,4,#1,0.00,0.00,0.00,0.00,0.00,0.00,  
#2,0.00,0.00,0.00,0.00,0.00,0.00,#3,-62.79,0.00,-62.79,0.00,0.00,0.00,  
#4,0.00,0.00,0.00,0.00,0.00,0.00

Possible reasons for entry:

- TimeInterval
- Touchdown
- TouchdownReset
- PenetrationAlert