



**Kuster Company**  
2900 E. 29th Street  
Long Beach, CA USA 90806  
Telephone 562-595-0661 Fax 562-426-7897  
<http://www.kusterco.com>

---

# **KUSTER ELECTRONIC GAUGES**

**SOFTWARE OPERATION MANUAL**

---

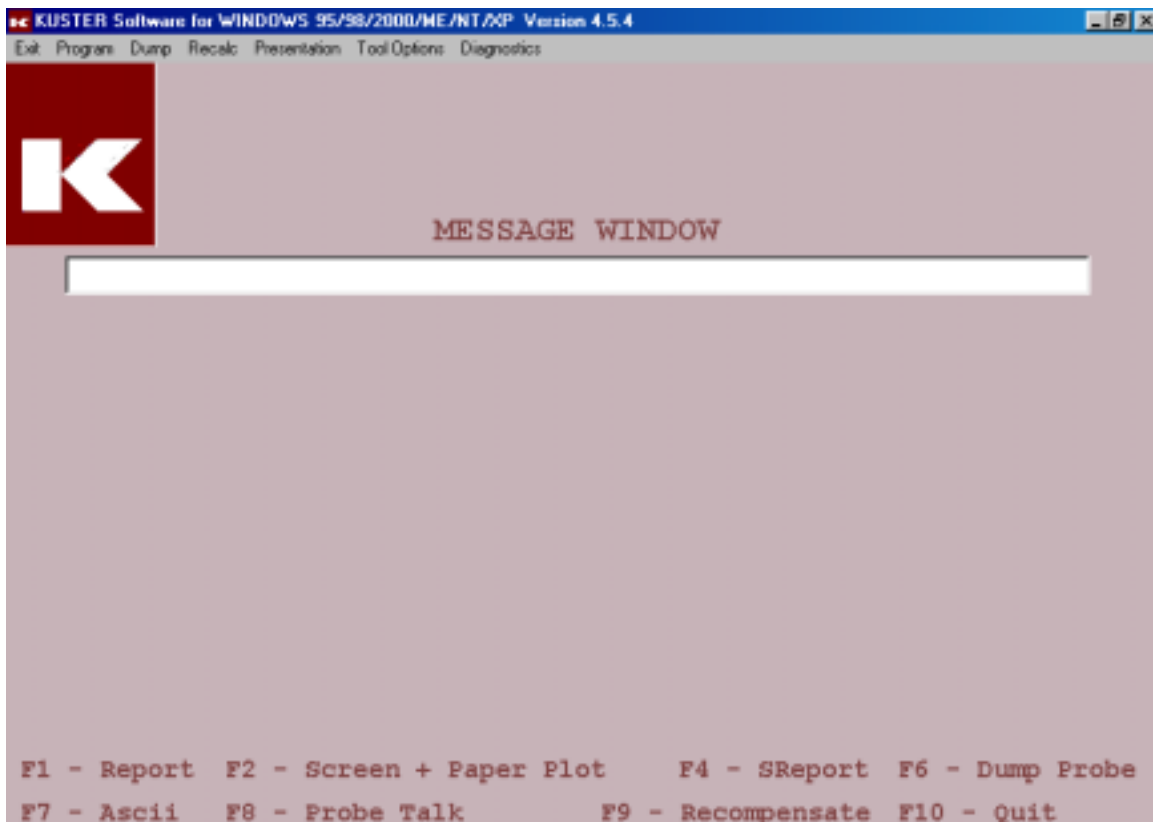
The purpose of the manual is to provide detailed instructions on how to program, recover data and make a presentation of the data recovered from Kuster electronic tools.

The list of the tools includes: K8 EMR 25, K8 EMR 39QUARTZ, K4 EMR 3/4", K8 EMR Geothermal, Kuster SRO gauge and K8 Surface Unit gauge.

## CHAPTER 1: K8 EMR 25, K8 EMR 39 QUARTZ, K4 EMR 3/4", K8 EMR Geothermal

All these gauges have the same procedures for programming, recovering and presenting the data. The software commands can be activated by using either the pull down menus at the top of the screen or by using the F keys listed on the bottom of the screen. Below is a brief description of the menu and F key functions.

Main Screen



### 1. PROGRAM AND F8 – PROBE TALK

These options give you the different programming options. These options will be detailed later.

## 2. DUMP AND F6 – DUMP PROBE

These options are used to retrieve the binary data from the recorder. The binary data will be stored in the c:\pressure\data directory.

## 3. RECALC AND F9 - RECOMPENSATE

These options are used to re-compensate data that has already been dumped and is stored in a binary data format in c:\pressure\data directory. Program is automatically re-compensate data, and convert .bin file into a .cmp file, when you first dump the recorder. But when data needs to be recalculated in units different from those used in the previous compensation or to recalculate old .bin file using a new calibration RECALC option is irreplaceable. The RECALC command will use the calibration file that has the same name as the serial number of the tool.

## 4. PRESENTATION

This option is used for viewing and graphing the data to either the screen or a printer and for comparison data files. It also gives you an opportunity to convert .cmp format files into ASCII format files

## 5. TOOL OPTIONS

You will need this option if you're going to use Kuster surface box in conjunction with meter tube and external RTD to measure flow rate of natural gas real time. Also it's used for downloading data from Multi Media card on hard drive and when you need to set-up Permanent and E-line SRO.

## 6. DIAGNOSTICS

This option opens up a pull down menu with different diagnostic tools, which will be detailed later.

## 1. PROGRAM

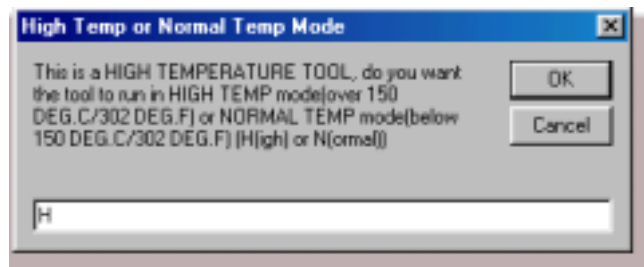
There are three programming modes for Chapter 1 gauges available: Fixed Rate, Programmable and View Program on Tool.



### A. Fixed Rate.

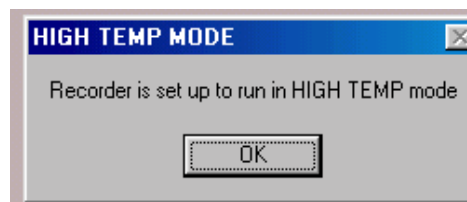
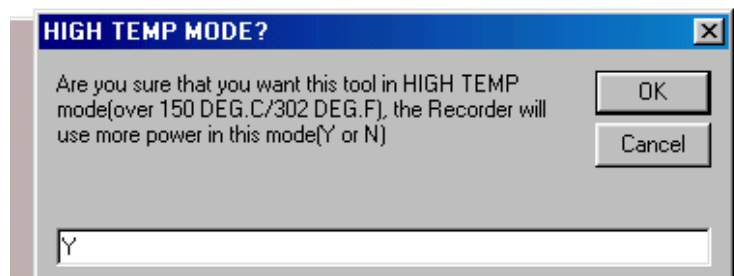
This mode is for programming the recorder to run for single sample rate until the memory is full. In order to program the instrument in fixed rate you must select it from the Program selection as shown above.

If you're using a gauge rated more than 150C, the first dialog box pops up asking about mode selection. If you are expecting to see well bore temperatures in excess of 150C, type "H" and click on the OK button. If you are confident that the temperatures are 150C and below, type letter "N" and OK button.

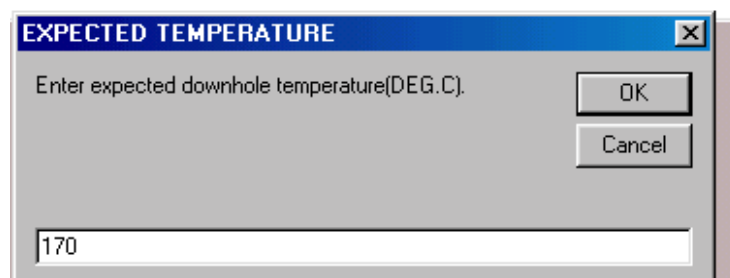


The second dialogue box will be a verification of your previous selection. This dialogue box will not be present if you have previously selected normal mode. If you have made the correct selection, type "Y" and OK. If not, type "N" and OK button.

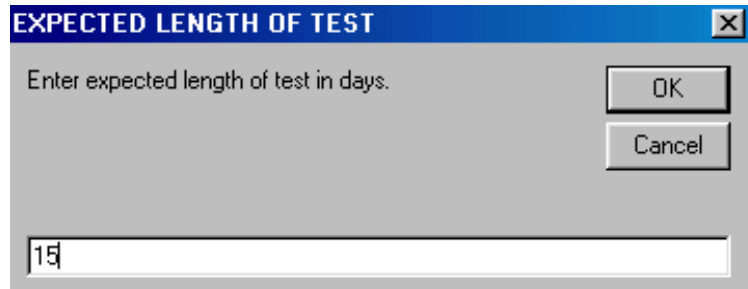
If you have made the selection that you want this instrument to be in High Temp Mode, you will receive a follow on dialogue box to let you know that this has been accomplished. Click the OK button.



The next dialogue box will be the Expected temperature. The program will ask for the expected maximum temperature. The program uses this figure to calculate the total amp hours the program will use. Enter the expected maximum temperature in Celcius and click OK button.



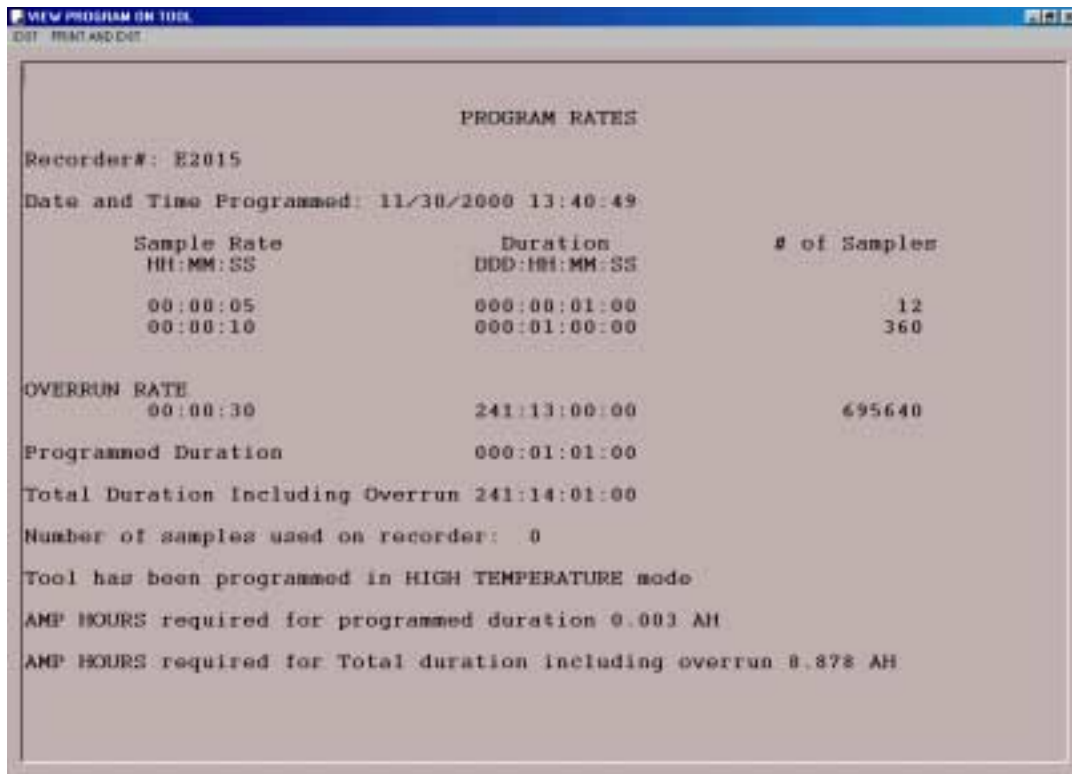
The next dialogue box will be the Expected Length Of Test selection. The program also uses this total to calculate the total amp hours required. Enter the Expected Length Of Test in days and click OK button.



The next dialogue box is for the rate at which the instrument will record samples. Enter desirable intervals and click Program Tool.

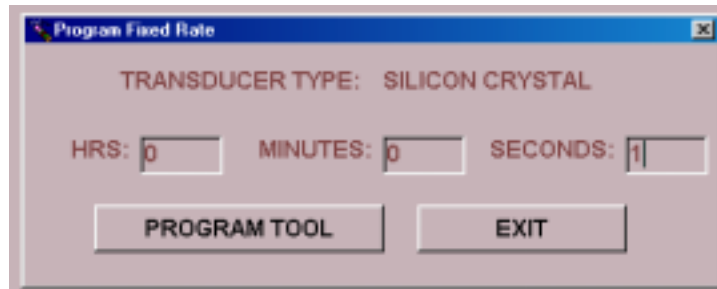
**CAUTION:**

Do not unplug tool or shut off interface box until the page showing how the recorder has been programmed appears.



After printing the Program Rates out the program returns to the Main Menu, which will indicate that the tool is programmed and ready to run.

If you're using gauge rated 150C, the program won't ask you about the temperature ranges, but redirect you straight to the Program Fixed Rate window

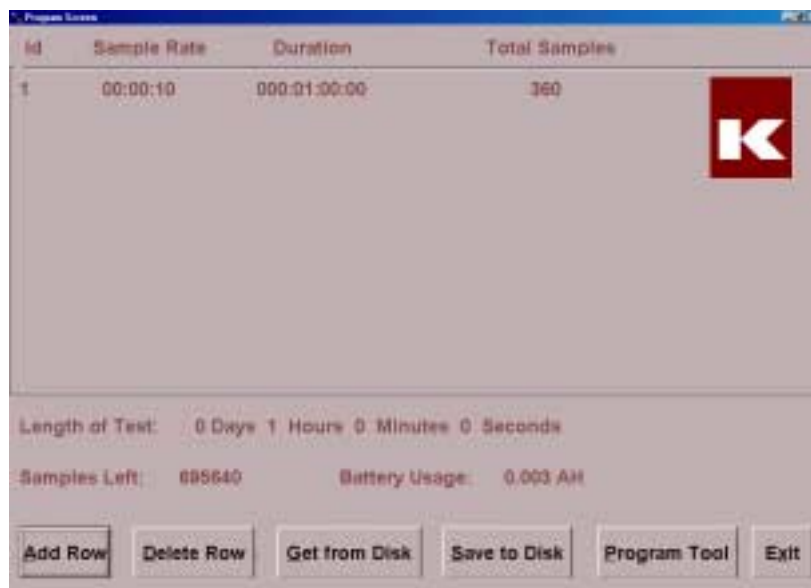


Enter desirable rate and click Program Tool.

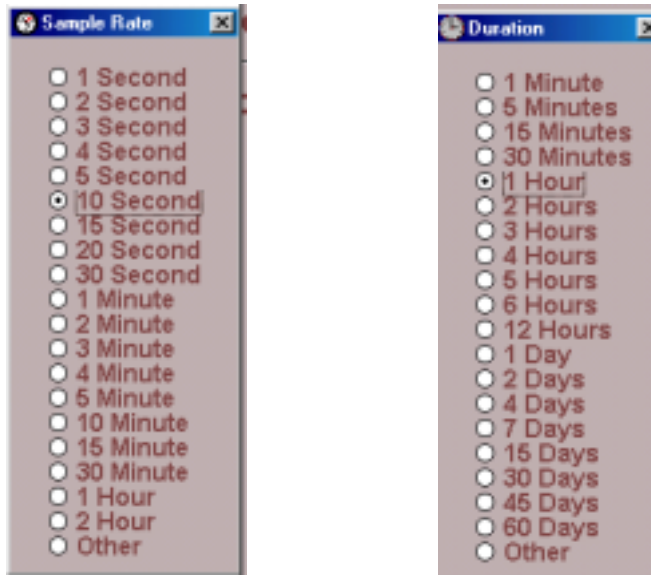
#### B. Programmable.

This is for running up to 15 different Sample rates during the test. You will be able to set the Sample rate and the Duration the tool will run at the specified Sample rate.

To begin, select the Programmable option from the Program selection. As with the Fixed rate mode, if you're using high temperature tool (rated above 150C), the High or Normal Temp Mode, and Expected temperature dialog box will appear.. The next screen displayed will be a blank program screen shown below.

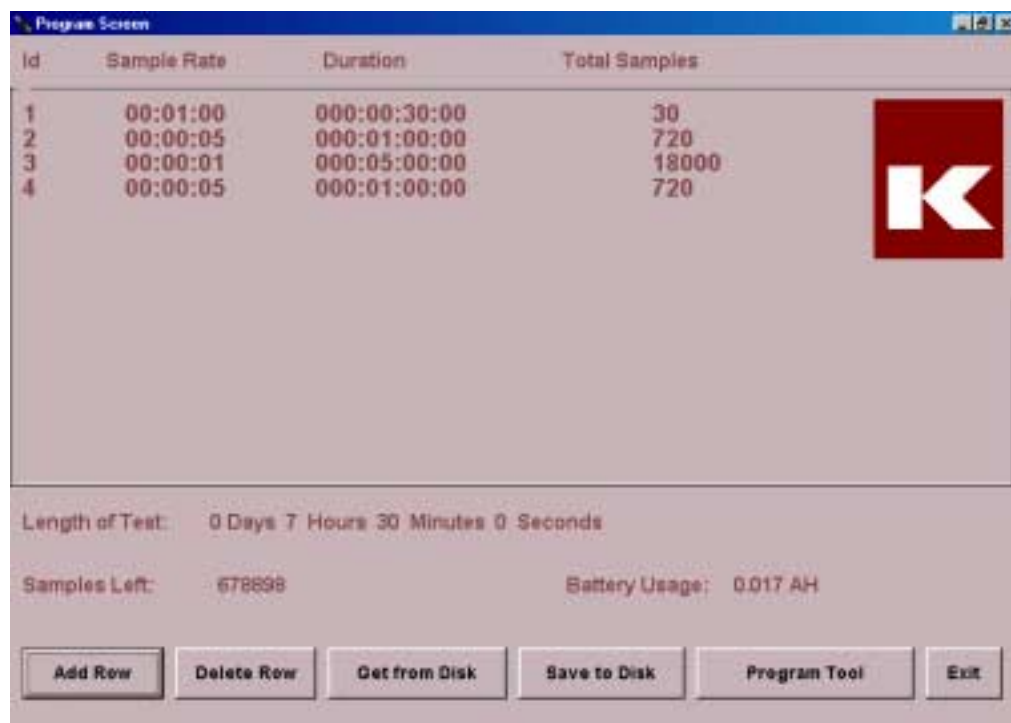


To begin writing your program, select the Add Row function. This will bring up the Sample Dialog box. Select one of the available sample rates and press Enter key. This will bring up the Duration dialog box. Select one of the available durations, making sure that the duration is longer than the sample rate and press the Enter key.

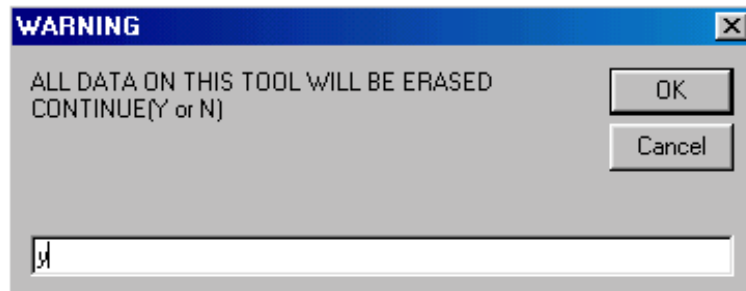


To set another Sample Rate, select Add Row again and repeat the above steps. Continue with this until you have entered all of your Sample Rates. If there are still samples left that have not been used, the program will default the remaining samples to a 30 second sample rate.

When all program intervals have been entered, the program screen will look similar to the one below. If you are satisfied with the program, that you've written, select Program Tool button.

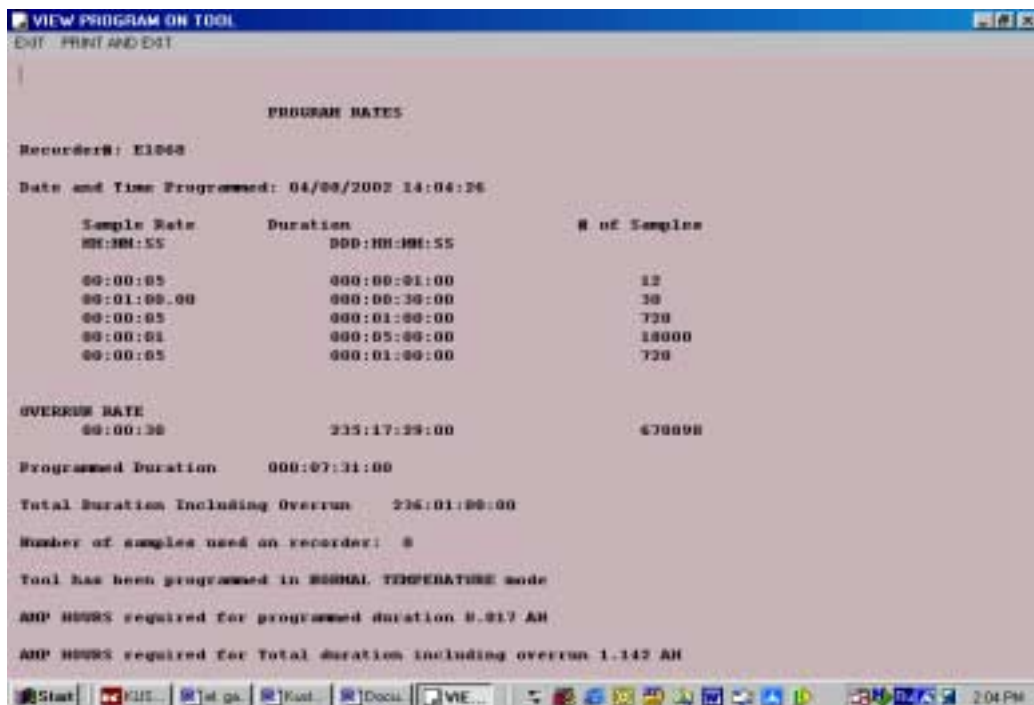


You will receive an advisory warning to let you know that all data within the tool will be erased asking you if you wish to continue. If you wish to continue, type "Y" and OK



The very last dialogue box will be the View Program On Tool. It is displayed after the tool is programmed and then read back to the computer. It contains valuable information and it is always recommended that it be printed and kept with the well survey run sheet. This information includes:

- Recorder serial number
- Date and time programmed as well as the program itself
- The overrun rate should the time down hole exceed the programmed time
- Programmed duration
- Total duration including overrun
- Number of samples used on recorder
- Whether or not the tool is in High Temperature mode
- Amp hours required for the program
- Amp hours required for total duration



After printing the View Program On Tool screen, the program returns to the Main Menu and message is resident in the message window indicating that the tool is programmed and ready to run.

### C. Surface Read Out Mode

In case you have Kuster Surface Read Out Mode gauge, you will need this function to program your tool. More detailed about this option in chapter 2.

### D. View Program on Tool

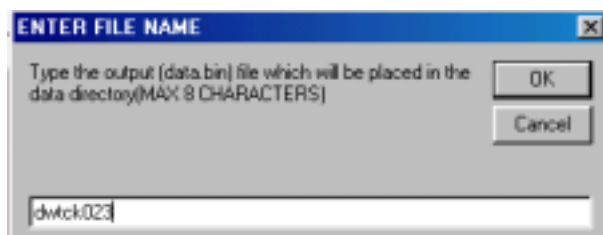
This will read the program currently stored on the tool and display it on the screen. You then have the option to Print the program or Exit the screen.

## 2. DUMP

### THE DOWNLOADING PROCESS

- Make sure that the communication box is connected to the serial port on the computer.
- Start the program if it is not already running.
- Connect the gauge to the communication cable.
- Turn on the communication box.
- Click on the Dump selection from the tool bar.

After selecting Dump a screen will appear asking for a file name. This will be the name that you will use to find the file later. After you enter a file name, the program will check if that file already exists or not. If the file already exists you will be given the option to overwrite the file, which will destroy any previous data stored in that file, or enter a new name. If you chose to enter a new name you will have to reselect dump. If you chose to overwrite the file you will go forward with the dump.

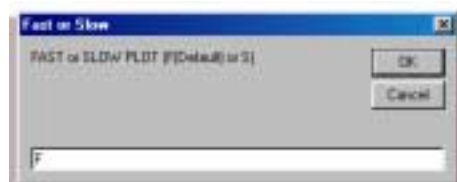


After you select the file name, you will enter the start date and time as shown below. This is the moment that the batteries were connected to the gauge. Then click the Done button.



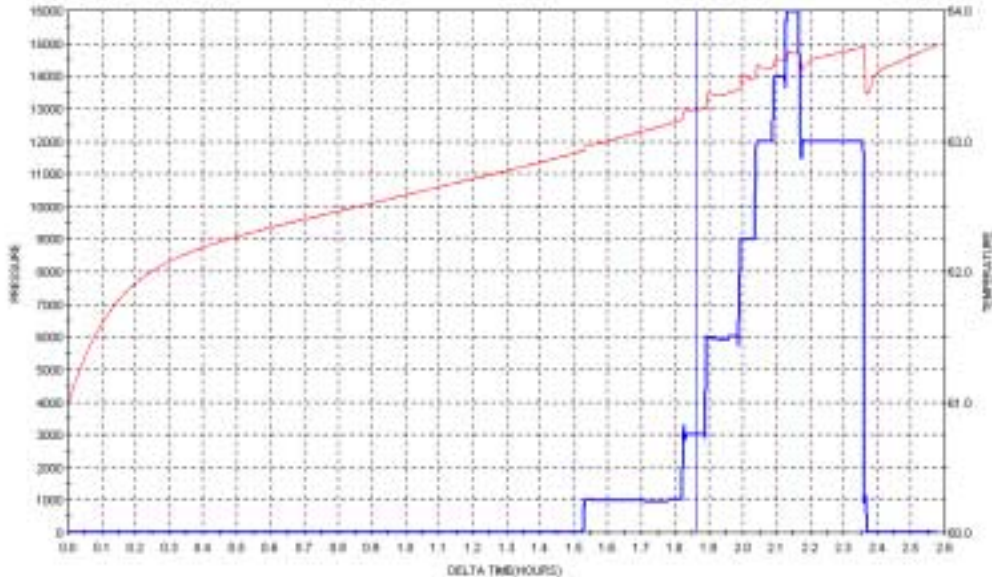
You will be able to observe in the message window, the program downloading the binary file (\*.bin), as it counts down the number of samples. As well as when the compensating occurs. During compensation, the binary file is converted to real pressure and temperature numbers through the use of the calibration coefficients

After the compensation is finished a dialogue box will appear asking if you want a fast or slow plot. If there is more than 20000 samples the fast plot will shrink the data down to 20000 samples and show the plot. The slow plot will plot every sample. In nearly every case, you will want to select fast, and then click on the OK button.



The program will then display a pressure and temperature plot versus time.

<b>Max Time</b>	<b>Min Pressure</b>	<b>Max Pressure</b>	<b>Min Temperature</b>	<b>Max Temperature</b>
2.578333	1.920 psig	15995.630 psig	60.998 F	63.739 F
<b>Real Time</b>	<b>Delta Time</b>	<b>Sample#</b>	<b>Pressure</b>	<b>Temperature</b>
11/30/2000 10:51:42	1.8617	1119	2996.61	63.238
11/30/2000 10:51:48	1.8633	1120	2997.06	63.239*
11/30/2000 10:51:54	1.8650	1121	2996.87	63.240



### 3. RECALC

If you want to take an existing binary file and re-compensate the data. An example for doing this is if the file had been sent to you by modem or e-mail.

Select Recalc or F9 and a window showing all of the binary files in the C:\PRESSURE\DATA directory.

Select the file you want to re-compensate.

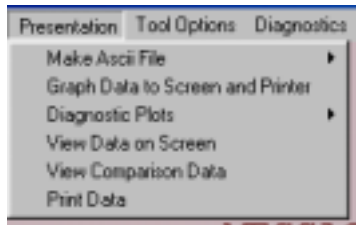
A window will appear showing the serial number for the tool used in the test.

If the serial number is correct select OK and if the serial number is incorrect type in the correct serial number and select OK. You will see the samples count down in the message window as they are compensating. After the compensation is finished a window will appear asking if you want a fast or slow plot. If there is more than 20000 samples the fast plot will shrink the data down to 20000 samples and show the plot. The slow plot will plot every sample.

## 4. PRESENTATION

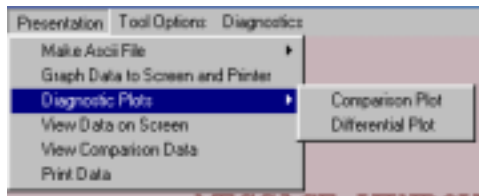
Note:

To use any of the functions within this menu, the data must have been recovered from the instrument and a compensated (\*.cmp) file must exist.



Description of commands

- A. Make Ascii File (F7 – Ascii) – Selecting this will make and ASCII (.asc) file from a compensated (.cmp) file.
- B. Graph Data to Screen and Printer – This selection will present the user with the pressure and temperature versus time plot.
- C. Diagnostic Plots – This selection presents the user with an additional pull down menu consisting of a Comparison Plot and a Differential Plot.



- D. View Data on Screen – this will allow you see all data in tabular form
- E. View Comparison Data – This will allow you to compare how two recorders are running against each other.
- F. Print Data (F1 – Report) – This selection will print the compensated data in a tabular format.

### A. Make Ascii File

Select Make ASCII File or F7

A window showing all of the compensated files in the C:\PRESSURE\DATA directory will appear.

Select the file you want to make an ASCII file for.

After you have selected the file another window will appear asking where you want the ASCII file to go. The default directory is C:\PRESSURE\DATA.

You can copy the file to a floppy disk if there is enough room. 60,000 samples is approximate equal to 1.44 Mb.

## B. Graph Data to Screen and Printer

Select Graph Data to Screen and Printer

A dialogue box will appear asking if you want a fast or slow plot. If there is more than 20000 samples the fast plot will shrink the data down to 20000 samples and show the plot. The slow plot will plot every sample. In nearly every case, you will want to select fast, and then click on the OK button.

A second dialogue box will open, showing a list of compensated (\*.cmp) files from which to choose. Choose the file you want to graph, and click the OK button, and the graph will appear.

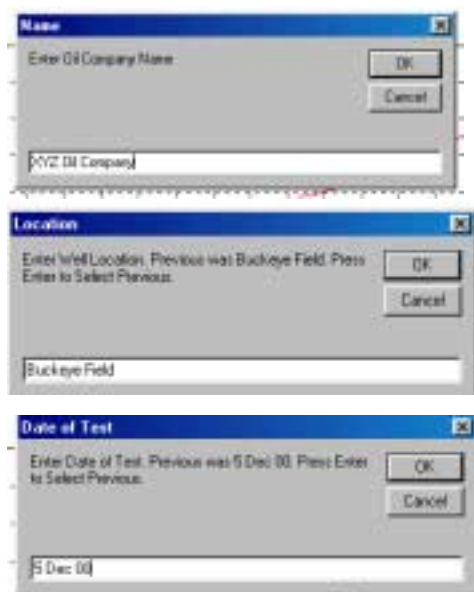
1. Exit. Selecting the exit command returns you to the main menu.

2. Print.

Note: This program will use the printer that is designated as the Windows default printer.

a) Select PRINT from the toolbar.

b) A series of dialogue boxes will appear asking you to enter the Oil Company Name, Well Location, and Date. By entering in this information, it will be printed on the plot.



c) Following the last screen, the plot will automatically be sent to the printer.

### 3. Set Scale

a) The scale of the plot can be set by first selecting the SET SCALE option from the toolbar.

b) A dialogue box will appear and parameters can be adjusted editing values and then clicking on the DONE button.

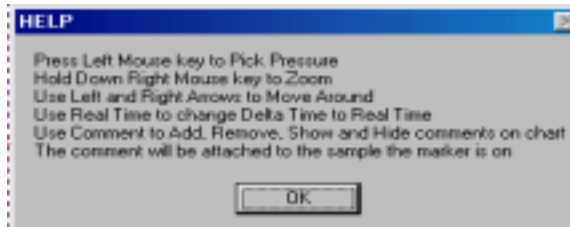


### 4. Unzoom

If you have zoomed in on the graph, selecting the Unzoom function will return the graph to its original scale.

### 5. Help

To access help functions, click on the HELP button on the tool bar and the following dialogue box will be displayed.



### 6. Remove Pressure/Add Pressure

This is simply a toggle switch to remove and add the pressure curve from the plot. By clicking on this button the pressure curve may be added or removed.

### 7. Remove Temperature/Add Temperature.

This is simply a toggle switch to remove and add the temperature curve from the plot. By clicking on this button the temperature curve may be added or removed.

### 8. Real Time/Delta Time

This is simply a toggle switch to display either real time or delta (elapsed) time in the X-axis of the plot. This is accomplished by clicking on this button on the tool bar

## 9. Comment

This allows you to add, remove, show and edit comments on the plot.

Note: you must have previously selected to plot in slow mode (S) to use this function.

### a) Add

- (1) Select a point on the chart that you wish to highlight and select Comment from the tool bar. A drop down menu will appear
- (2) Select Add
- (3) Next a dialogue box will appear and you will be asked to enter a comment



### b) Remove

- (1) Move to the data point where the comment is located
- (2) Click on the Remove selection from the Comment drop down menu
- (3) The following dialogue box will appear, enter Y for yes or N for no and OK button

### c) Show on Plot/Hide

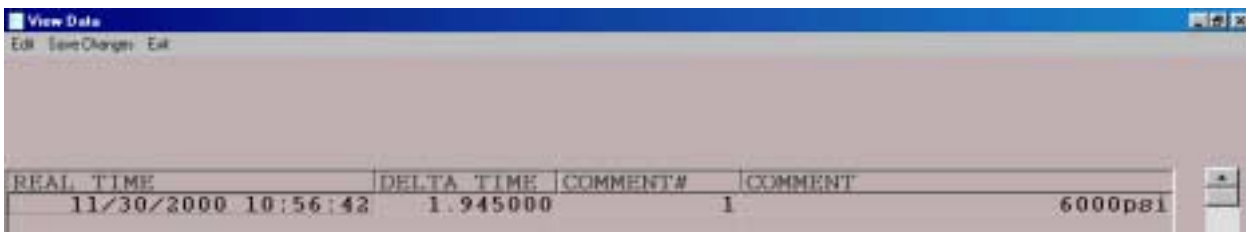
To show comments on plot, click on the Show on Plot selection from the Comment drop down menu.

If comments are visible on the plot and you want to hide them, click on the Hide selection from the Comment drop down menu.

### d) View and Edit

Select View and Edit from the Comment drop down menu

A screen will appear listing in tabular form all the comments that you have entered



REAL TIME	DELTA TIME	COMMENT#	COMMENT
11/30/2000 10:56:42	1.945000	1	6000psi

Click on Edit from the toolbar

A dialogue box will appear asking you what comment you want to edit. Enter the numerical value of the comment you wish to edit and click on the OK button



Another dialogue box will appear asking you to enter new text for your comment. Enter the information that you wish and click on the OK button.



Click on the Save changes button on the toolbar.

Click on the Exit button and you will be returned to the previously displayed graph.

#### e) Load Previous Markers

Clicking on Load Previous Markers from the Comment menu to make all previously saved comments will be active

#### f) Position Markers

To change position markers for comments, select Position Markers from the Comment drop down menu. Note that this selection does not appear until after comments have been added.

Next, a dialogue box will appear asking you to select a position marking from one of the following cardinal direction. Enter in the desired direction and click the OK button.

Next, a dialogue box will appear asking you to select a numerical value for offset, or distance from data point. Enter in the desired value and click the OK button.

### 10. Gradient

Allow you to add, remove, show and edit Gradient Depths on the plot

- a) Select a point on the chart and Select Gradient
- b) A drop down menu will appear
- c) Select Add and you will be asked for a Depth
- d) If you want to remove a Depth, select Remove and box showing the comments will appear one at a time. You will be asked if you want to remove the Depth.

- e) If you select Show on Plot, numbers will appear on the graph pointing to the Depths that you picked.
- f) If you want to have a print out with the Gradient on it you must select Show on Plot.
- g) If you want to view the Gradient, first select View. This will bring up a screen listing all of the Depths, Pressures, Temperatures, Gradient values and Real Times. If you have selected Show on Plot and are printing the Gradient, you will be asked to enter the Point before Fluid. If you enter the correct reading number then the program will calculate a Fluid Level.

### C. Diagnostic Pots

1. Comparison Plot
2. Differential Plot

### D. View Data on Screen

From presentation selection on the Main Menu toolbar select View Data on Screen. This will show data in tabular form.

Page-Up	Page-Down	Up-Arrow	Down-Arrow	Home	End	F10 to Exit
REAL TIME		DELTA TIME	SAMPLE#	PRESSURE		TEMPERATURE
11/30/2000 09:00:05		0.001389	1	4.040		60.998
11/30/2000 09:00:10		0.002778	2	4.039		61.009
11/30/2000 09:00:15		0.004167	3	4.040		61.021
11/30/2000 09:00:20		0.005556	4	4.040		61.032
11/30/2000 09:00:25		0.006944	5	4.040		61.043

### E. View Comparison Data

This will allow you to compare how two recorders are running against each other.

Note: The files that you select must have the start times entered in them to use this feature.

Select View Comparison Data and a window showing all of the compensated files in the C:\pressure\data directory will appear.

Select one of the files you want to compare.

The window will appear again asking you select the second file.

After you have selected both files the screen below will appear showing the comparison.

#### **D. Print Data**

Select Print Data and a window showing all of the compensated (\*.cmp) files in the C:\pressure\data directory will appear. Select the file you want to print.

A window will appear asking if you want to print the whole test or not. If all you only want to print a small portion of the data select no.

You will be asked to enter the hour to start the print. Then you will be asked to enter the hour to end the print. If the test is 100 hours long and you want to print the data between 10 and 20 hours. 10 hours will be the start hour and 20 will be the end hour. If you had said yes to print the whole report, this step would be skipped.

Next you will be asked PRINT 1 EVERY HOW MANY READINGS. If you enter 1 then you will be asked if you want to print every reading. If you select no you will have to start again.

If you had entered 10 the program would print every 10<sup>TH</sup> reading.

Next you will be asked for the OIL COMPANY NAME, LOCATION and RUN DEPTH.

### **5. TOOL OPTIONS**

#### **A. AGA Flow Settings**

The Kuster Surface Box can be used to measure the flow rate of natural gas real time, when in conjunction with a meter tube, external RTD and optionally for best accuracy a differential pressure meter. AGA Flow Settings will allow you to change orifice settings.

#### **B. Multi Media card**

This option will allow you to bring data from the Surface Box to the office computer by the means of Multi Media card. It will allow you to setup a password for viewing, downloading and also clearing of the Multi Media card.

FlashPath® software should be installed on your computer in order to download data from Multi Media card to your computer.

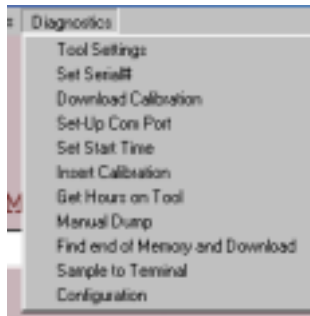
#### **C. Permanent SRO**

This option allows you to set-up permanent SRO mode and change Permanent storage rate.

#### **D. E-line SRO**

This allows you to erase SRO memory, memory depth entry and also run depth encoder.

## 6. DIAGNOSTICS



Tool Settings – this will display the tool's parameters

Set Serial Number – this is used to insert the serial number into the tool. This is not an operator or user function. Do not use this function

Download Calibration – this is used to download the calibrations from the tool into the C:\pressure\calb directory

Set-up Com Port – this function allows to set-up a communication port

Set Start Time – this allows you to change the start time in a binary file. It is useful if the wrong start time was entered when the recorder was originally dumped.

Insert Calibration – this is used to insert a new calibration from the C:\pressure\calb directory into the tool. This is not an operator or user function. Do not use this function.

Get Hours on Tool – this displays how many hours are on the tool

Manual Dump – this allows you to download more or less readings that the tool shows. This is useful if the tool has been damaged and you don't feel it is showing the correct number of samples.

Find End of Memory and Download – this function is looking for the end of the memory before downloading the file

Sample to Terminal – this allows you to monitor how the tool is operating. It will show you the pressure and temperature graph in the live mode. Select done when finished. This will return you to the Main Screen. This function does not work with the K8 EMR 39.

Configuration - this allows you to change the program to meet your needs.

## CHAPTER 2: KUSTER SRO BOX

### Connecting SRO Box to E-line

SRO Box is connected to the e-line via a BNC connector on the left hand side of the box. Included in the kit are 3 adapters that are commonly used on wireline trucks RCA-BNC, UHF-BNC and BNC-BNC. By attaching these to the end of the supplied BNC cable the operator should find it easy to hook up the SRO box to his e-line.

The E-line is attached to the downhole tool via a standard GO-connector. The DHI GO-connector adapter is used to attach the GO-Connector where the battery barrel is usually placed. Inside the DHO GO connector adapter is the SRO Transmitter that allows the tool to talk to the SRO box on the surface.



Downhole Tool, SRO Transmitter, GO to Recorder Adapter and GO Cable Head

The center conductor on the GO-Connector where the E-line is attached should be protected from the oil. Standard practice in North America is to use a layer of Capton Tape, followed by Electric tape, then 3M-rubber tape. Then the whole thing is wrapped with wax string to keep the tape from peeling back in the heat. The rubber boot sometimes used with the go adapter does not work as well as the tape.

If you have a poor connection to the GO adapter on the cable head you will not have enough voltage for the gauge to operate right. Normally on a short wire it should be 11-12 volts (From the center conductor to the case on the tool). If its not - you have a wiring problem.

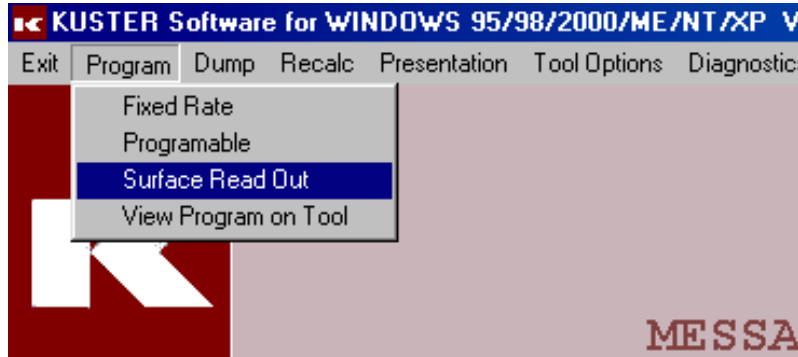
### Programming E-Line SRO

When you program the gauge for SRO mode it first programs the downhole tool, then the SRO Box. The reason is the calibration file is stored in the SRO box for that tool. This allows the data to be display with the correct temperature and pressures and allows the data to be downloaded from the SRO box with all the information needed to compensate the bin file like it was a downgole tool.

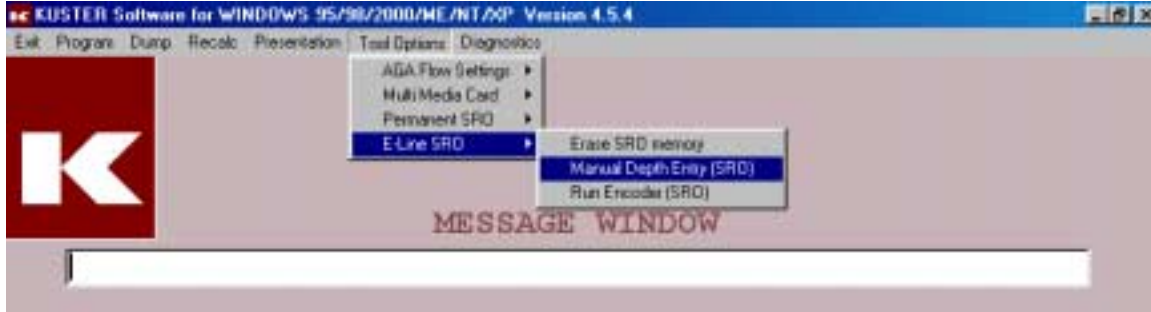
For example, you CANNOT program the SRO for one tool (say 80016) and use it with (80017) without reprogramming it again since the calibration will be WRONG FOR THAT TOOL. The data will be wrong in the SRO box.

Only version 4.2.5 or higher will program the SRO system.

- 1) attach the downhole probe that is being used in Surface Read Out (SRO) Mode via interface box
- 2) under the Menu Program choose Surface Readout



- 3) program the gauge for the sample rate you want. As long as the sample rate is larger than one second, the data will also be saved in the downhole tool as a backup. You cannot change the sample rate when it running downhole from the surface, so use the fastest you need.
- 4) You will be asked to attach the SRO box to the computer. Press OK.
- 5) Disconnect the Serial or USB connection from the Interface Box and attach it to the SRO box. Then press OK.
- 6) At this point the calibration file will be transferred to the SRO box, so that the correct pressure can be viewed on the LCD display. If you use a different downhole tool and don't reprogram the SRO box, it will display bad data.
- 7) Attach the downhole gauge to the E-line
- 8) Attach the SRO box to the E-line
- 9) At this point you should see the data on the SRO box LCD within a minute depending on your sample rate. If your sample rate is 2 minutes it will take over two minutes to the first sample
- 10) If you do not see the pressure come up make sure your connections are good
- 11) If you want to Graph the pressure data in real time attach your computer to the SRO box via the USB or serial port. Then choose Sample to Terminal under the Diagnostics Menu. As the data is received to the Box it will be displayed on the graph.
- 12) The SRO box can keep track of the depth if its hooked up to a computer. Under Tool options is Manual Depth Entry. You can enter the depth here and it will be logged and displayed on the SRO box.

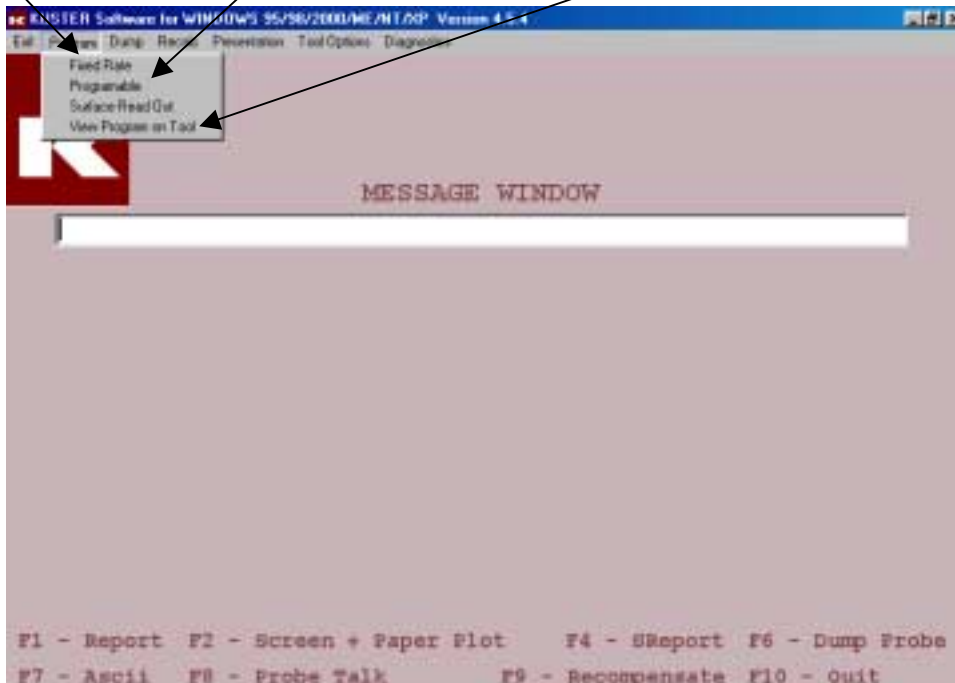


13)Download the SRO box like any other downhole tools via the Dump menu.

## CHAPTER 3: KUSTER K8 SURFACE BOX

### 1.0 PROGRAMMING

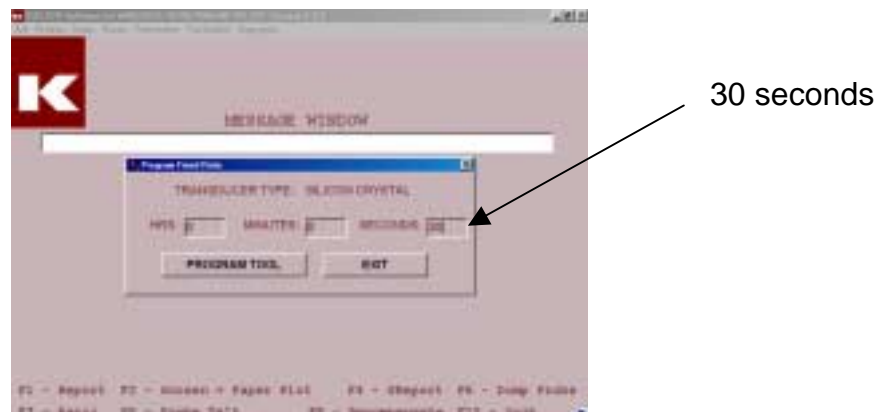
Fixed rate      Programmable      View program on Tool



Using the **F8** key will bring up the 3 same options that the pull down menu shows.

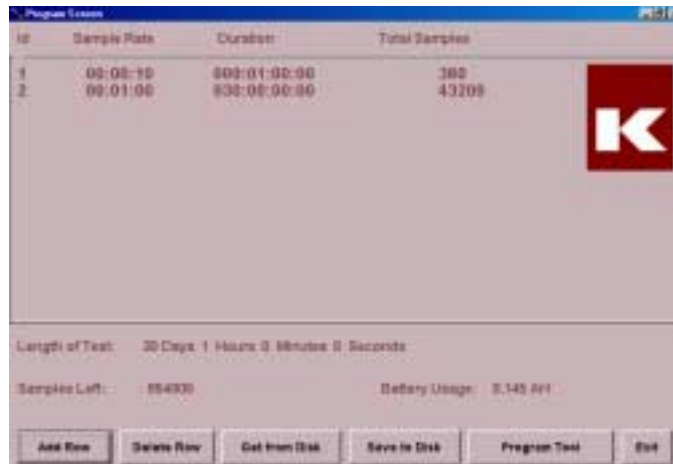
#### 1.1 FIXED RATE

This is for programming the recorder to run for 1 sample rate until the memory is full. Enter the sample rate in one of the following: seconds, minutes or hours. Below is a **correct** example of a 30 Second Sample rate. Press program tool after proper sample rate has been entered. Do not unplug tool or shut off interface box until the page showing how the recorder has been programmed appears. The software always programs the first 12 readings at a 5 second rate. This way there isn't a long wait to see pressure samples after Surface box has been started.



## 1.2 PROGRAMMABLE

This is for running up to 15 different Sample Rates during the test. You will be able to set the Sample Rate and the Duration the tool will run at the specified Sample Rate. The sample screen below shows a Sample Rate of 10 Seconds for 1 Hour and a second Sample Rate of 1 Minute for 30 Days. The columns show the Sample Rate number, Sample Rate, Duration and Total accumulated samples. Below it displays Length of Test, Samples remaining to be programmed and Battery Usage.



ID	Sample Rate	Duration	Total Samples
1	00:00:10	00:01:00:00	360
2	00:01:00	00:00:00:00	43200

Length of Test: 30 Days 1 Hour 0 Minutes 0 Seconds  
Samples Left: 85430      Battery Usage: 0.140 Ah

Buttons: Add Row, Delete Row, Get from Disk, Save to Disk, Program Tool, Exit

### 1.2.1 ADD ROW

To set up a multiple sample program select Add Row and a column will appear with multiple selections for the Sample Rate. Select one of the Sample rates and press the enter key. Next another column will appear with multiple selections for Duration of the Sample Rate. Make sure that the Duration is longer than the Sample Rate. To set another Sample Rate select Add Row again and repeat the above steps. Continue with this until you have entered all of your Sample Rates. If there are still samples left that have not been used the program will default the remaining samples to a 30 Second Sample Rate. If the sample rate or duration you require is not visible, select **Other** to enter a different rate.

### 1.2.2 DELETE ROW

If you enter a sample wrong you can use Delete Row to remove the row.

### 1.2.3 GET FROM DISK

This will retrieve a previously stored program.

### 1.2.4 SAVE TO DISK

This will save the program that you have just generated to a file in the **C:\PRESSUREPROGRAM** directory.

### 1.2.5 PROGRAM TOOL

After you are satisfied with the program you have set up pressing Program Tool with insert the program into the tool. The software always programs the first 12 readings at a

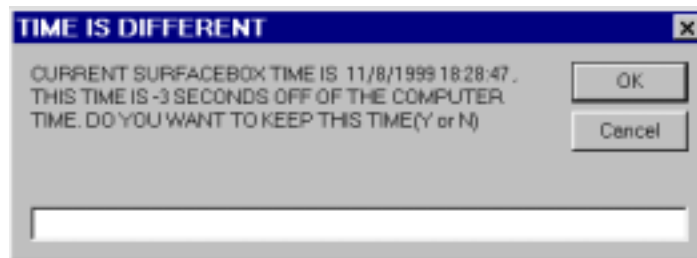
second rate. This way there isn't a long wait to see pressure samples after Surface box has been started.

### 1.2.6 EXIT

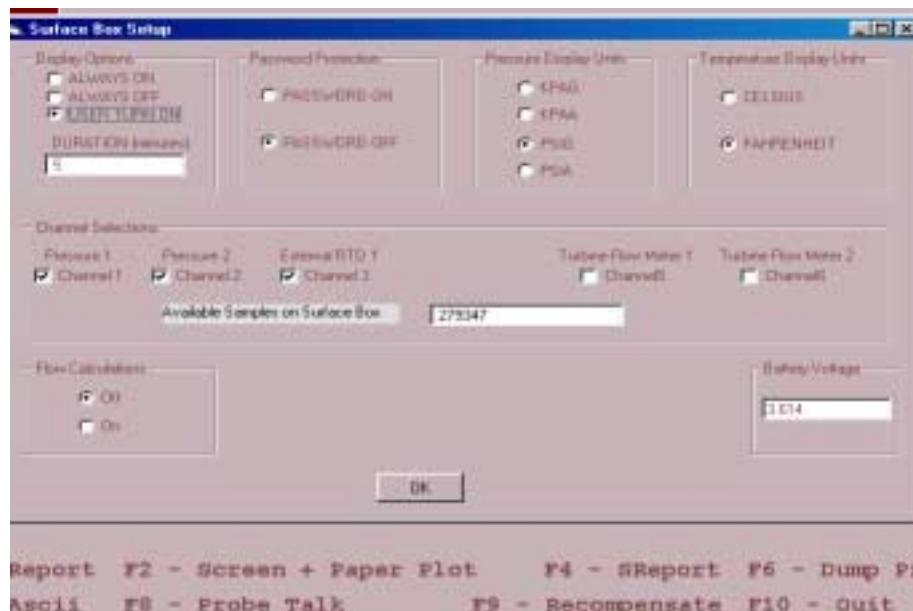
This will exit this screen and return you to the Main Screen without programming the tool.

## 1.3 SURFACE BOX TIME

After you have selected Program Tool in either the Fixed Rate or Programmable Window you will be asked if you are sure you want to erase all of the memory and reprogram the tool. Next you will be told how the clock on the Surface box compares with your computer clock. If you select (Y)es then the Surface box time will remain the same. If you select (N)o then the surface box clock will be reset to match your computer time.



## 1.4 SURFACE BOX SETUP



After you have set the time on the surface box, the above screen will appear. Selecting OK after selecting options will program the surface box.

### **1.4.1 DISPLAY OPTIONS**

ALWAYS ON	Display remains on all of the time
ALWAYS OFF	Display shows no pressures or temperatures
USER TURN ON	Display turns on when the button is pushed and stays on for length of time entered in box below

### **1.4.2 PASSWORD PROTECTION**

PASSWORD ON	Sets password protection for downloading and reprogramming. User will be asked if they are sure they want password protection. They will then be asked for a four digit password. You will be asked to confirm the four digit password.
PASSWORD OFF	No password protection.

### **1.4.3 PRESSURE DISPLAY UNITS**

Sets the units that the surface box will display. These units can't be changed until the box is reprogrammed.

### **1.4.4 TEMPERATURE DISPLAY UNITS**

Sets the units that the surface box will display. These units can't be changed until the box is reprogrammed.

### **1.4.5 CHANNEL SELECTIONS**

Sets the channels the surface box will use for the test  
Channel 1 is Pressure and Internal Temperature  
Channel 2 is Pressure and Internal Temperature  
Channel 3 is External Temperature

### **1.4.6 BATTERY VOLTAGE**

Shows battery voltage of box. This can be used to determine if batteries are ok or not.

## **2.0 DUMPING SURFACE BOX**

### **2.1 DUMP**

After selecting Dump a screen will appear asking if you want the surface box to stop sampling. If you select (Y)es then the surface box will stop sampling, if you select (N)o then the box will resume sampling after the interface box is disconnected. You will lose the time that the interface box was plugged in. Next you will be asked for a file name. This will be the name that you will use to find the file later. After you enter a file name, the program will check if that file already exists or not. If the file already exists you will

be given the option to overwrite the file, which will destroy any previous data stored in that file, or enter a new name. If you chose to enter a new name you will have to reselect dump. If you chose to overwrite the file you will go forward with the dump. Next you will be shown the time the Surface box was started. You can use this time by answering (Y)es or enter your own time by entering (N)o. This is the time that the Surface box was started. After the start time has been entered the recorder will start uploading the binary data to the computer. You will see the samples count down in the message window. After all of the samples have downloaded the program will begin to compensate the binary data. You will see the samples count down in the message window as they are compensating. After the compensation is finished a window will appear asking if you want a fast or slow plot. If there is more than 20000 samples the fast plot will shrink the data down to 20000 samples and show the plot. The slow plot will plot every sample. You will then be asked if you want to plot Channel-1 or Channel-2. The program will plot the channel you selected. To view the other channel's plot, go to Presentations and Select Graph to Screen and Printer. Select the file you just downloaded and when asked, select the other channel.

### **3.0 STARTING THE SURFACE BOX**

After the Surface Box has been programmed, the display will show the number 5.00. Press the button 5 times in 3 seconds to start the Surface Box. If the number 5.00 reappears the Surface box isn't running, push the button 5 times until you see pressure's or temperature's displayed. You can toggle between pressure and temperature by pressing the button.

### **4.0 Connecting Communication box to Computer and Recorder**

Plug the 9-pin connector into the communication port on the back of your computer. You need to know which communication port that you are connecting to. This is needed when you configure the program for your computer. Plug the 6 pin LEMO connector into the connector on the face of the Surface Box. Turn the switch on top of the communication box to the on position. You are now setup to communicate with the recorder.

### **5.0 Multi Media Card (MMC)**

When you download data from the Kuster surface box you have two options. First you can download it directly to laptop computer. Second you can download data to the Multi Media Card (MMC) first and then download data from the card to any computer you would like to.

In order to download data from Kuster surface box to MMC you need:

1. Unscrew the Red Protective cover
2. Push the button, unless the date screen comes up to the display
3. Insert MMC into the slot
4. You will get message "box busy", and then "box done"
5. Take MMC out

In order to download data from MMC you need:

1. Insert MMC into the MMC adapter, which has a shape of a regular 1.44Mb disk.
2. Download data to the hard drive

Computer has to have FlashPath® software to be installed. Read manual before use of MMC adapter.

MMC, FlashPath® software, MMC adapter and its manual are supplied along with Kuster surface box.