DataTrac
Software for Leland Legacy®

Catalog No. 877-92

Operating Instructions

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Table of Contents

Indicates a premier feature of DataTrac software.

Indicates a reminder.

Indicates a warning.

Introduction
DataTrac Software for Leland Legacy

Features
- Program a sampling operation from a PC
- Calibrate pump flow to a primary standard
- Display the operating state including flow rate, temperature, atmospheric pressure, run-time, and battery status of the connected pump
- Create and save a sampling program without a pump connected to the PC
- Program a sampling operation of up to ten sampling sequences, each capable of different flow rates
- Download pump run time data and history to your PC
- Document sampling history using the sample setup feature
- Print a history file containing pump run time data
- Print a worker exposure profile containing run time data and pump history
- Document date of pump calibration

DataTrac System Requirements
- Any IBM-compatible PC with a 80486 processor or higher
- SVGA display system or better
- CD-ROM drive
- An available serial port (i.e., a port not used by a mouse, modem, personal digital assistant (PDA), or other device)
- A mouse
- Microsoft® Windows® 98 or higher

DataTrac Components
- DataTrac CD-ROM
- Interface box
- 9-pin (male to female) serial cable
- 9-pin male to 25-pin female serial adapter
- Operating instructions on CD

DataTrac Setup

Installing DataTrac Software

1. Close all applications

2. Put the DataTrac CD in the drive. It should autorun the CD when you close the drive. If it does not autorun the CD, then go to:
   - Start
   - Run
   - Browse for setup.exe on the CD drive

Note: If an existing version of DataTrac is already installed you may be required to remove that version before you can install the new one. If this is the case, follow the instructions in the Install Shield to remove DataTrac. Then resume from Step 1 to install.

3. Connect the DataTrac adapter to your PC serial port. The serial port is usually a 9-pin male connector. If it is a 25-pin male connector, use the 25-pin female adapter included in the DataTrac package. Connect the other end of the adapter cable to the pump's interface port (Figure 1).
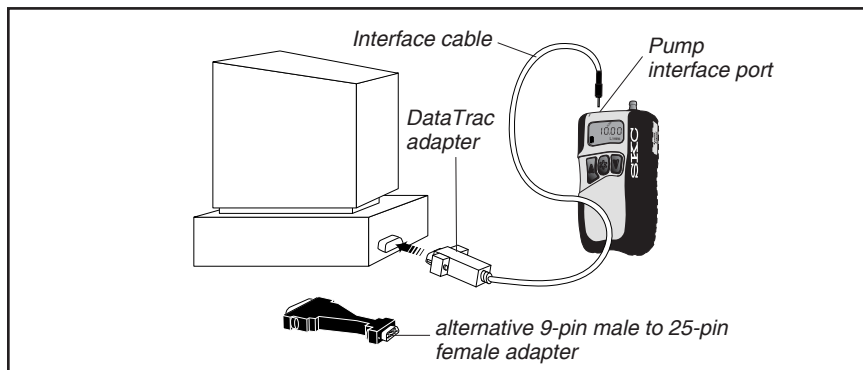

Figure 1. Hardware Setup

DataTrac has limited use without an active pump connected to the PC, however, a program can be set up and saved to a PC without a pump connected to the PC.

4. Activate the pump LCD by pressing any of the three buttons on the pump keypad.

5.   Launch DataTrac by double-clicking on the DataTrac icon. The program will display the QuickComm window (Figure 2).

6.   Select a communication port. Port selection will depend upon your computer type; most computers use Port 1 or 2. Click on the Open Port Button. An incorrect selection displays an error message. A correct selection will display a shaking-hands icon in the QuickComm window (Figure 2A).
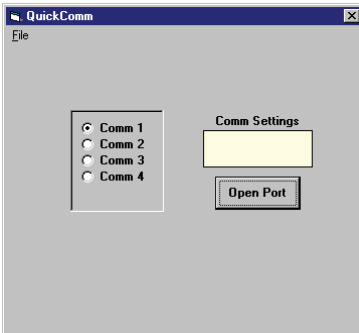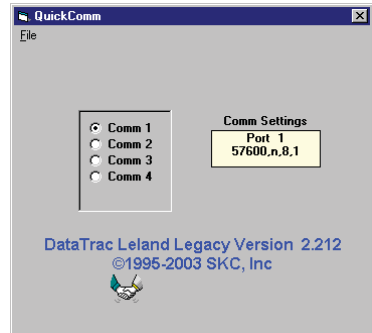

Figure 2. QuickComm Window

Figure 2A. Successful Communication

DataTrac will "remember" the communication port the first time the program is launched and will automatically select the proper port during subsequent launches.

7.   If the date and time settings on the PC and pump differ by more than 5 minutes, a Time Discrepancy Alert window will display (Figure 2B). Reconcile the date and time and click OK.

8.   DataTrac will load and display the SKC DataTrac Pump Manager window (see Figure 3, p. 4).
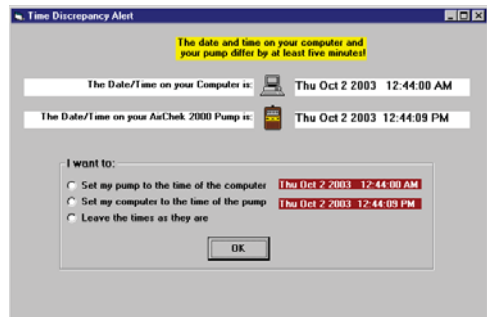

Figure 2B. Time Discrepancy Alert Window

Recommended for first time users: Connect a Leland Legacy pump to your PC and explore the features of DataTrac through the Real-time Monitor (p. 6).

SKC DataTrac Pump Manager

The SKC DataTrac Pump Manager window (Figure 3) is the first window that opens in DataTrac. All windows are accessible from this main window.
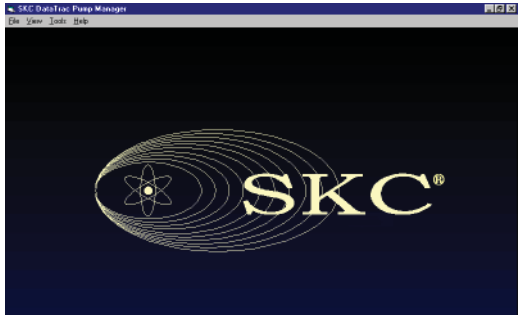

Figure 3. SKC DataTrac Pump Manager Window

SKC DataTrac Pump Manager Menus

File Menu

Exit................................exits the program and returns to Windows

View Menu

Pump Scheduler......... .opens the SKC Pump Scheduler window
STEL/Timed Run.........opens the STEL/Timed Run window
Sample Sheet................opens the Sample Sheet Setup window
Report ....loads a report file previously saved to a PC
Pump History ....opens the SKC Pump History window
Archive History ....loads a history file previously saved to a PC
Calibration Info ....opens Calibration Info window
Real-time Monitor ....opens the SKC Real-time Monitor window

Tools Menu

Set Date/Time...............opens the Set Date/Time for Pump window
                                        Temperature and Pressure
Calibration....................opens Temperature and Barometric Calibra-
                                        tion

Help Menu

About ....displays the PC and pump software version
                                        numbers, pump serial number, date of last full
                                        calibration, language, and information about
                                        downloading the latest version of DataTrac.
Online Manual.............displays DataTrac Software Operating Instruc-
                                        tions (Form #40085) in PDF format

SKC Real-time Monitor

The SKC Real-time Monitor window (Figure 4) directly controls the pump, allows calibration of flow rate, displays a real-time readout of pump operations, and displays the connected pump's serial number.
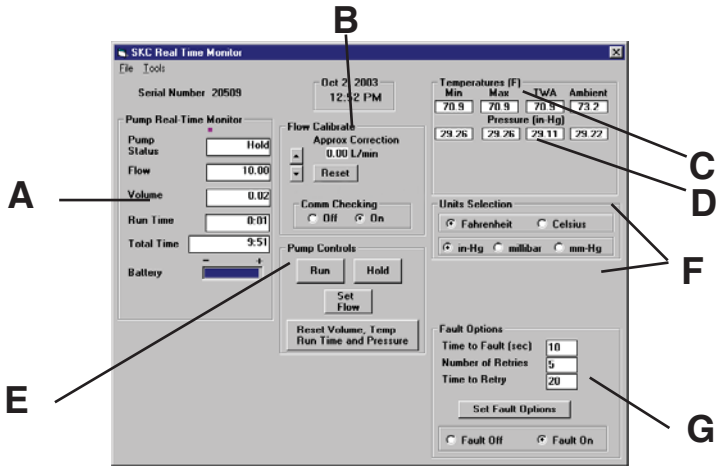

Figure 4. Real-time Monitor Window

    A. *Real-time Monitor Display (p. 6)*
    B. *Flow Calibrate Buttons (p. 7)*
    C. *Temperature Display (p. 9)*
    D. *Pressure Display (p. 10)*
    E. *Pump Controls Buttons (p. 10)*
    F. *Units Selection Buttons (p. 11)*
    G. *Fault Options (p. 11)*

Real-time Monitor Menus

File Menu

        Exit................................returns to the previous screen

Tools Menu

        Clear Schedule ....clears the programmed pump schedule from the pump
        Clear STEL/
        Timed Run....................clears programmed timed run from the pump
        Clear History**...............**clears the pump history

Real-time Monitor Display

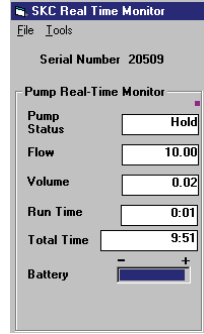The Real-time Monitor display (Figure 5) shows the operating status of the connected pump.

*Figure 5. Real-time
Monitor Display*

Pump Status

Cell Readout	Operating State of the Pump
Run:	pump in run mode
Hold:	pump in hold mode
Fault (Run):	pump in flow fault status while running
Fault (Hold):	pump in flow fault status and hold mode
Prog (Hold):	pump in hold mode while running a program
Prog (Run):	pump in flow mode while running a program
Prog (Sleep):	pump in sleep mode while running a program
Reset:	run time data has been zeroed
Sleep:	pump in sleep mode
User setup:	pump user interface accessed and user adjusting pump
Pre-Cal Flow:	single-point calibration mode; first calibration average, date, and time
Post-Cal Flow:	single-point calibration mode; final calibration average, date, and time

Timed Run:	pump running a preset sampling time (ST)
Low Bat:	battery depleted
Flow adjust:	pump flow rate or flow correction being adjusted by user

Flow Cell ....current pump flow rate in L/min

Volume Cell ....total volume of air pumped since reset

Run time Cell ....total run time of pump since reset

Total Time Cell ....total run time of pump since factory calibration

Battery Cell ....graphically displays battery life. The battery life is indicated by a colored bar with low (-) charge indicated on the left side and full (+) charge indicated on the right side. A long colored bar (closer to the + end) represents a battery near a full charge. A short colored bar (closer to the - end) represents a battery near depletion.

Data in the Real-time Monitor display cells is updated every 5 seconds.

Flow Calibrate Buttons

The Flow Calibrate buttons (Figure 6) are used to apply a correction to the pump flow rate during calibration to a primary standard

Figure 6. Flow Calibrate

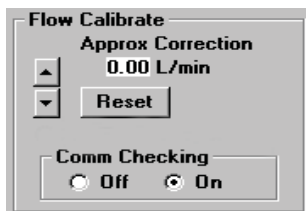| Controls	Function
▲	increases correction of pump flow rate
▼	decreases correction of pump flow rate
Reset	zeroes the value in the Approx. Correction cell
Comm Checking	turns the communication checking function on or off. This feature allows the user to unplug a pump and plug in another pump without causing a communication error.

Adjusting the Approximate Flow Correction

The Leland Legacy pump should be calibrated before each sample run.

1. Click the Reset button to reset the correction value to 0.00 L/min.

Changing the pump flow setting will also reset the correction value to 0.00 L/min.

2. Turn on the pump and connect the inlet port of the pump to primary standard calibrator. Read the flow displayed on the calibrator.

3. Click on the ▲ or ▼ buttons in the Flow Calibrate window until the calibrator displays the desired flow rate.

When adjusting the correction, the flow rate displayed on the calibrator changes, the flow rate displayed on the pump does not change. The range of flow correction is ± 2.5 L/min.

4. Repeat calibration after sampling to verify flow.

Example: The desired flow rate is 10 L/min.
Set the pump to 10 L/min. If the calibrator displays 9.7 L/min, click the ▲ button in Flow Calibrate until the calibrator displays 10 L/min. If the calibrator displays 10.5 L/min, click the ▼ button in Flow Calibrate until the calibrator displays 10 L/min. Repeat calibration after sampling to verify flow.

Comm Checking Buttons

The Comm Checking buttons (Figure 7) turn the communication checking function on or off. Comm Checking monitors the interface cable connection between the PC and the pump. The default value is On. If the interface cable becomes detached, an error message displays (Figure 8). Reconnect the pump and click on Retry. If Comm Checking is in the "off" position, the pump's real-time information will not be updated.

If programming more than one pump, turn Comm Checking off by clicking the Off Button. Turning Comm Checking off when programming multiple pumps will eliminate the error message that displays each time the pump is disconnected.
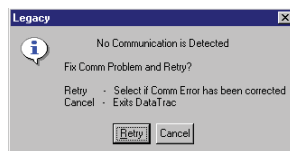
Figure 7.
Comm Checking Button

Figure 8.
Error Message

When Comm Checking is turned off, the pump will enter Sleep mode five minutes after the last interaction between the computer and the pump.

Temperature Display

The Temperature Display (Figure 9) shows the temperature of the air entering the connected pump.

| Cell	Readout
Min	minimum air temperature during the program run
Max	maximum air temperature during the program run
TWA	Time-Weighted Average (TWA) of all air temperatures
Ambient	current air temperature **Note:** The Temperature Display is not ambient air temperature. It reflects the temperature of the air within the pump.
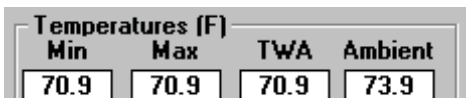
Figure 9. Temperature Display

The Min, Max, and TWA are calculated from the temperatures measured during the total run time of the pump. Unless reset, the temperature data will remain in memory and will be included in future Min, Max, and TWA calculations. Reset by clicking on the Reset Volume, Temp, Run Time, and Pressure button in the Pump Controls section of the Real-time Monitor (Figure 9A).
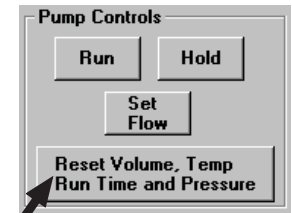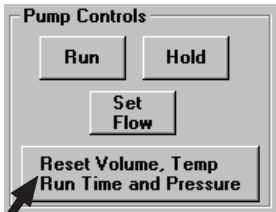

Figure 9A. Reset Volume, Temp, Run Time, and Pressure Button

Pressure Display

The Pressure Display (Figure 10) shows the atmospheric pressure of the air entering the connected pump.

Cell	Readout
Min	minimum atmospheric pressure during the program run
Max	maximum atmospheric pressure during the program run
TWA	Time-Weighted Average of all atmospheric pressure
Ambient	current atmospheric pressure
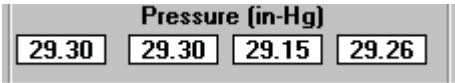
Figure 10. Pressure Display

The Min, Max, and TWA are calculated from the atmospheric pressure measured during the total run time of the pump. Unless reset, the pressure data will remain in memory and will be included in future Min, Max, and TWA calculations. Reset by clicking on the Reset Volume, Temp, Run Time, and Pressure button in the Pump Controls section of the Real-Time Monitor (Figure 9A).

Figure 9A. Reset Volume, Temp, Run Time, and Pressure Button

Pump Controls Buttons

The Pump Controls buttons (Figure 11) directly control the connected pump.

Control	Function
Run	places the pump in RUN
Hold	places the pump in HOLD
Set Flow	opens the Monitor Set Flow window (similar to Figure 23, p. 18)
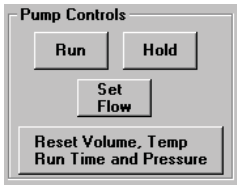
Figure 11. Pump Controls Buttons

Reset Volume, Temp, Run Time, and Pressure .... clears the accumulated data: volume, temperature (Min, Max, and TWA), time, and pressure (Min, Max, and TWA)

Units Selection Buttons

The Units Selection buttons (Figure 12) allow the user to select the temperature and pressure units of the connected pump.

Control	Function
Fahrenheit ....selects the Fahrenheit temperature scale
Celsius ....selects the Celsius temperature scale
in-Hg ....selects the atmospheric pressure display in units of inches of mercury
millibar ....selects the the atmospheric pressure display in units of millibar
mm-Hg ....selects the the atmospheric pressure display in units of millimeters of mercury

Figure 12. Units Selection Buttons
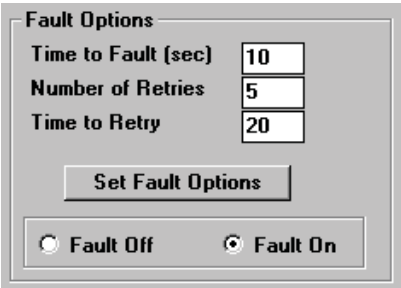
Fault Options

Figure 13. Fault Options

The Fault Options (Figure 13) allows the user to select the time the pump spends in flow fault mode and the number of times the pump attempts to restart.

Cell/Control	Readout/Function
Time to Fault (sec)	Click on the box and enter a number from 5 to 30. This value is the number of seconds the pump spends in Flow mode before going into Flow Fault Hold mode.
Number of Retries	Click on the box and enter a number from 0 to 25. This value is the number of times the pump attempts to restart once it goes into Flow Fault Hold mode.

Time to Retry (sec) ....click on box and enter a number from 5 to 600. This value is the number of seconds between when the pump goes into Hold after a flow fault and when it restarts.

Set Fault Options ....saves the chosen options

Fault On/Fault Off ....enables/disables Fault mode. When set to "off," no flow fault will occur.

STEL/Timed Run

The STEL/Timed Run window (Figure 14) allows the user to set a pump run for a predetermined length of time, eg., 15 minutes. Once the STEL/Timed Run is set, the user presses the ▲▼ keys on the pump simultaneously to start the run. After the timed run is completed, the pump will stop automatically.
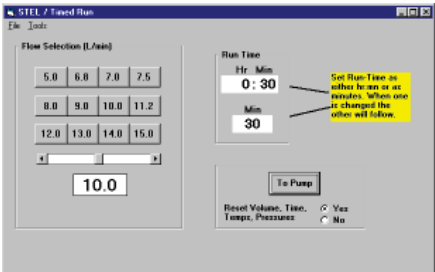
Figure 14. STEL/Timed Run Window

STEL/Timed Run Menus
File Menu
Exit............................exits the STEL/Timed Run window

Tools Menu
Clear STEL
in Pump ....cancels the programmed sampling time

Change Default
Flow Buttons............displays a text box reminder on how to change the default flow rates displayed on the Flow Selection buttons in the STEL/Timed Run window

STEL/Timed Run Buttons

Control	Function
Flow Selection (L/min) ....permits selection of pump flow rate
Run Time ....permits pump run time to be set in hours and minutes
To Pump ....sends settings to pump
Reset Volume, Run	
Time, Temps, Pressures ....resets min, max, and TWA values in Real-time Monitor

To program a sampling time, use the flow selection buttons and scroll bar to select a flow rate. Enter the duration of the sample run by clicking on the run time box and entering the run time. The sampling time can be set up to 99999 minutes.

Once the flow rate and sampling time have been set, click the To Pump button to program the connected pump.

SKC Pump Scheduler

The SKC Pump Scheduler window (Figure 15) is the DataTrac programming window. Programs can be created, sent to a pump, saved to a PC, loaded from a disk or a pump, and printed.
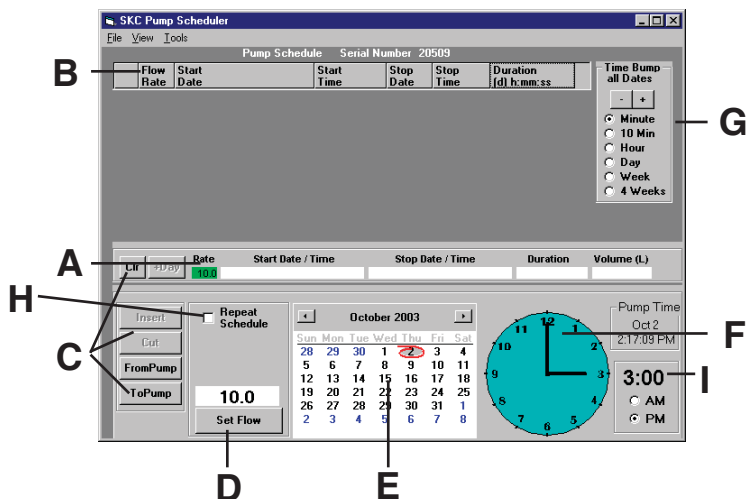
Figure 15. Pump Scheduler Window

    A. *Program Edit Bar (p. 15)*
    B. *Pump Schedule (p. 16)*
    C. *Programming Buttons (pp. 16-17)*
    D. *Set Flow Button (p. 18)*
    E. *Calendar (p. 19)*
    F. *Clock (p. 19)*
    G. *Time Bump All Dates Buttons (p. 20)*
    H. *Repeat Scheduler (p. 24)*
    I. *Digital Time Display (p. 20)*

Pump Scheduler Menus
File Menu
       Open......................opens a pump program previously stored on disk
       Save ....saves a pump program to a PC
       Print.......................prints the pump program schedule displayed on the
screen
       Exit........................exits the Pump Scheduler window

View Menu
       Cycle Scheduler...........opens Cycle Scheduler window.
       Preview Repeat
       Scheduler......................opens Repeat Scheduler window
       Scheduler Presets ....opens Scheduler Options window
       Clock Resolution ....sets the clock resolution

Tools Menu
       Clear Schedule.............clears the programmed pump schedule
       Clear History................clears the pump history
       Compare Pump Clock/
       PC Clock ....opens the time display window and allows the
                           pump and PC times to be synchronized (*see*
Figure   2B on p. 3)
       Comm Checking..........Enables/disables communication checking.
                           Indicated by ✓ on menu.

Program Edit Bar

Figure 16. Program Edit Bar

The Program Edit Bar (Figure 16) is where the user sets up a pump program. A program is set up by entering the Flow Rate, Start Date/Time, Stop Date/Time, and Duration to the cells of the Program Edit Bar.

A pump program contains these sampling parameters:

Parameter	Value
Rate	flow rate in L/min
Start Date	start date of the program
Start Time	start time of the program
Stop Date	stop date of the program
Stop Time	stop time of the program
Duration	total run time of the program in days: hours: minutes: seconds

To program the above parameters into the cells of the Program Edit Bar, click on the Programming buttons (p. 16) that select the value of the parameters, then click on the appropriate cell.

Pump Schedule

The Pump Schedule (Figure 17) contains pump programs (or Pump Schedules) set by the Program Edit Bar. The pump is programmed for a sampling operation by sending this list of programs to the pump's memory. The Pump Schedule is built by using the Programming buttons described in the next section.

	Flow Rate	Start Date	Start Time	Stop Date	Stop Time	Duration (d) h:mm:ss
1	9.0	Mon Nov 17 2003	8:00:00 AM	Nov 17	4:00:00	8:00:00
2	9.0	Tue Nov 18 2003	8:00:00 AM	Nov 18	4:00:00	8:00:00
3	9.0	Wed Nov 19 2003	8:00:00 AM	Nov 19	4:00:00	8:00:00
4	9.0	Thu Nov 20 2003	8:00:00 AM	Nov 20	4:00:00	8:00:00

Figure 17. Pump Schedule Containing Programs

Before entering a program into the Pump Schedule, go to the Scheduler Options window (Figure 33, p. 22) to reset data and pump history.

Programming Buttons

The Programming buttons (Figure 18) select the program parameters, insert programs into the Pump Schedule, write programs to the pump, and read programs from the pump.

Figure 18. Programming Buttons

Button　　　　　**Function**

Clr..........................erases the program in the Program Edit Bar

+Day ....adds one day to the program in the Program Edit Bar, which is useful for programming same start and stop times on consecutive days or use Repeat Scheduler (*see p. 24*).

Insert ....places the program displayed in the Program Edit Bar into the Pump Schedule

Cut..........................clears the selected (highlighted) program in the Pump Schedule and places it into the Program Edit Bar where it can be edited

FromPump ....reads the program stored in the pump and displays it in the Pump Schedule

ToPump ....writes the program displayed in the Pump Schedule to the pump

Insert Button

To insert the completed program from the Program Edit Bar into the Pump Schedule (Figure 17, p. 16), click on the Insert button (Figure 18). The Pump Schedule can hold over 50 programs. However, if a large number of programs are to be stored, consider using the Cycle Scheduler (*see p. 23*) or the Repeat Scheduler (*see p. 24*).

Cut Button

To clear the selected (highlighted) program from the Pump Schedule and place it into the Program Edit Bar, click on the Cut Button (Figure 18, p. 16). A program can also be cut by double-clicking the program number or the line number to the left of the rate column of the Pump Schedule (Figure 17, p. 16).

Clear the history either in the Scheduler Presets menu or in the Tools menu and set Scheduler Presets in the View menu before sending a program to the pump by clicking the ToPump Button.

ToPump Button

To write the Pump Schedule to the pump, click the ToPump button (Figure 18, p. 16). A dialog box will appear (Figure 19).

Click OK in the dialog box to send the program to the pump. A "Program Loaded" dialog box (Figure 20) will appear on screen to verify the operation.

An overwrite dialog box will appear if a program has already been sent to the pump. Click Yes if you wish to overwrite the program in the pump.
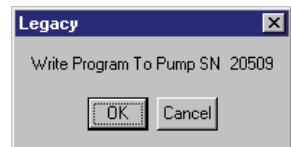
Figure 19. Confirmation Dialog Box

Writing a program to the pump will cause the PROG icon to appear on the pump LCD (Figure 21), which will remain active until all programs have run. The pump cannot be controlled manually until all programmed schedules have run.
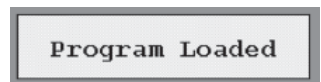
Figure 20. Program Loaded Dialog Box

Edit a Program

To edit a program displayed in the Pump Schedule, double-click on it. This will remove it from the Pump Schedule and place it in the Program Edit Bar. Any program already in the Program Edit Bar will be erased. Click insert once the program is edited to move it back to the Pump Schedule.
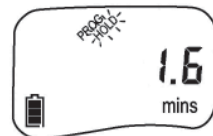
Figure 21. Leland Legacy with Program

FromPump Button
To display a Pump Schedule from a previously programmed pump, click on the FromPump button (Figure 18, p. 16).

Time Bump Buttons
To increase or decrease all program start and stop times in the Pump Schedule, click on the Time Bump buttons (Figure 30, p. 20).

Save a Program (File Menu)
To save information from the Pump Schedule to a PC as a program file, select the Save command from the File menu.

The default extension ".pgm" is used to indicate Pump Schedule files.

Open Program (File Menu)
To open a previously stored program, select Open from the File menu.

Print Program (File Menu)
To print the Pump Schedule information displayed on the screen, select Print from the File menu.

Set Flow Button
The Set Flow button (Figure 22) opens the Scheduler Set Flow window (Figure 23) to allow the user to set the pump flow rate.
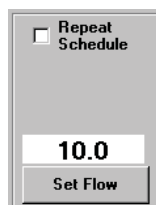
Figure 22. Set Flow Button

Scheduler Set Flow Window
The Scheduler Set Flow window (Figure 23) allows the user to select the pump flow rate using the numbered flow buttons and the scroll bar.

Select Flow Rate
To set the flow rate, click on the desired flow rate button. The new flow rate appears in the display cell.

Scroll Bar
To increase or decrease the displayed rate, use the scroll bar.

Enter Flow Rate
To enter the displayed flow rate into the Rate cell of the Program Edit Bar, click on OK.

Figure 23. Scheduler Set Flow Window

Previous Button
To reset the displayed flow rate to the previously set pump flow rate, click on the Previous button in the Scheduler Set Flow window.

Calendar

The Calendar (Figure 24) shows the time interval over which the pump can be programmed. Use the Calendar to select the start and stop dates for the scheduled sample run.

Figure 24. Calendar

Selecting a Date

To select a date, click on it then click on the Start Date/Time or Stop Date/Time cell in the Program Edit Bar to enter the date into that cell. Use the right and left arrows to select a different month.

Clock

The Clock (Figure 25) consists of a clock face, a digital display corresponding to the time on the clock face, AM and PM Buttons, and the current date and time. The clock face perimeter is divided into 10-, 15-, and 30-minute and 1- hour intervals depending on the selected clock resolution (Figure 26).
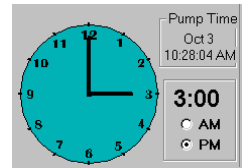
Figure 25. Clock

Clock Resolution

To change the Clock Resolution or time intervals to 10, 15, or 30 minutes or 1 hour, select the Clock Resolution command from the View menu (Figure 26). Clock Resolution can also be selected by clicking on the clock face perimeter between the digits.
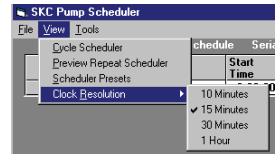
Figure 26. Clock Resolution

Selecting Time Using the Clock Face

To select the start or stop times, select the clock resolution (Figure 26), click on the clock face perimeter, the AM or PM button, and then click on the Start Date/Time or Stop Date/Time cell of the Program Edit Bar.

Example: To set the time to 4:15 PM, select "15 minutes" from the Clock Resolution menu (Figure 26), click on the clock perimeter at 4:15 (Figure 27), and click on the PM button.
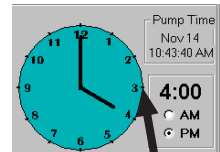
Click here

*Figure 27.
Select 4:15*

Selecting a Time Using the Digital Time Display

The Digital Time display (Figure 28) can also be used to select the time, especially outside the clock resolution settings. Double-click on the time display to highlight it (Figure 29), then key in the desired time (including the colon). One or more numbers can be individually selected by clicking and dragging across the digit to be changed. Click on the appropriate time cell in the Program Edit Bar to enter the time into that cell.

*Figure 28.
Digital Time
Display*
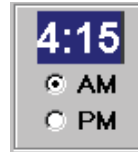
*Figure 29.
Select Time
Display*

Time Bump all Dates Buttons

The Time Bump all Dates buttons (Figure 30) add or subtract the selected time interval to all program Start Time and Stop Time in the Pump Schedule.

*Figure 30.
Time Bump All
Dates Buttons*

Time Interval
Click on the desired time interval.

Minus (-) Button
To subtract the selected time interval from all programming steps, click on the - button.

Plus (+) Button
To add the selected time interval to all programming steps, click on the + button.

Date/Time Display

To access the Date/Time Display window (Figure 31), go to the Tools menu and select Compare Pump Clock/PC Clock. This feature allows the time and date of the PC and the connected pump to be synchronized.
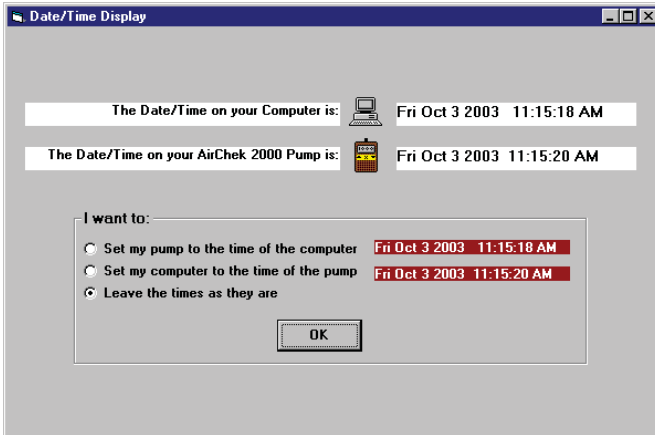
Figure 31. Date/Time Display Window

! *Resetting the pump time will issue a Clear History Message (Figure 32). The pump history must be cleared before the pump time can be reset.*
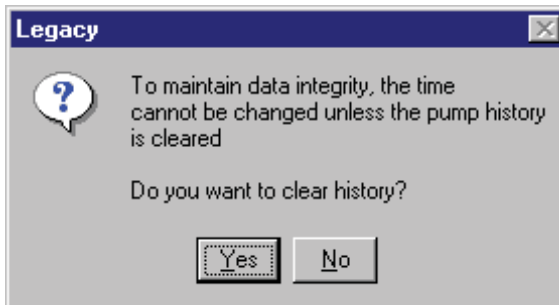
Figure 32. Clear History Message

Scheduler Options

To access the Scheduler Options window (Figure 33) in the SKC Pump Scheduler, go to the View menu and select Scheduler Presets. The Scheduler Options window includes User Lock Out, Clear History, and Reset Volume, Time, Temperatures, and Pressures. The Scheduler Options take effect when the Pump Schedule is sent to the pump's memory from the SKC Pump Scheduler window (*see p. 14*).
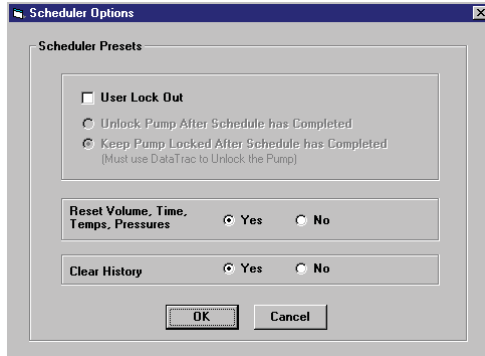
Figure 33. Scheduler Options

Button	Function
User Lock Out	Click on the box to activate (a checkmark will appear) or click again to remove checkmark and deactivate; User Lock Out will prevent anyone from altering the pump operating parameters once a schedule has been sent to the pump. However, the operator will still be able to scroll through the data display. Select "Unlock Pump After Schedule has Completed" for automatic deactivation or choose "Keep Pump Locked..." for continued security (unlock in DataTrac).
Reset Volume, Time, Temps, Pressures	Click on Yes to activate or No to deactivate; Yes will reset the accumulated volume pumped, time dura-tion, minimum and maximum temperatures, and pres-sure data to zero (0).
Clear History	Click on Yes to activate or No to deactivate

To set the values and return to the previous window, click the OK Button.

All activated options will take effect when the ToPump button (Figure 18, p. 16) is clicked. The ToPump button sends the information in the Pump Schedule (Figure 17, p. 16) to the connected pump.

Cycle Scheduler

To access the Cycle Scheduler window (Figure 34) in the Pump Scheduler, go to the View menu and select Cycle Scheduler. The Cycle Scheduler window allows the user to program intermittent (repeated start/stop) sampling cycles that will run over several days in a minimal number of steps. *See pp. 25 to 28 for an example schedule.*
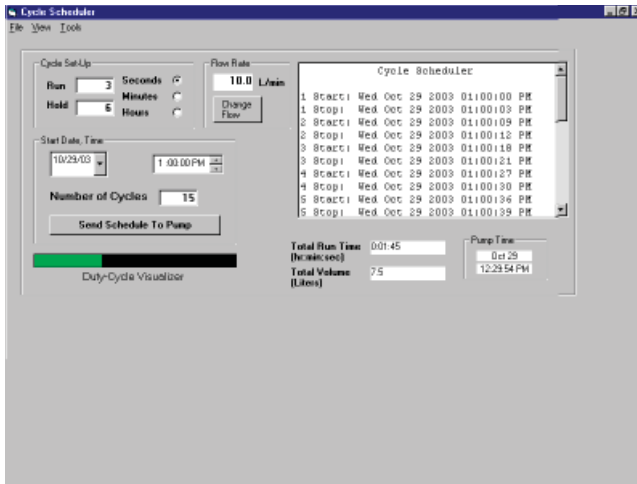
Figure 34. Cycle Scheduler

Cell/Button	Readout/Function
Cycle Setup Run cell	enter time that each cycle is to run
Cycle Setup Hold cell	enter time between each cycle
Seconds, Minutes, Hours buttons	select time increment for Run and Hold
Flow Rate cell	enter pump flow rate in L/min
Start Date, Time cell	enter starting date and time of first cycle
Number of Cycles cell	enter total number of cycles to run
Cycle-Scheduler Times	DataTrac automatically compiles the cycle schedule based on the user input and summarizes it in this cell. Total Run Time and Total Volume are also calculated and displayed
Duty-Cycle Visualizer	bar graph indicates how much of the time the pump will be running
Send Schedule to Pump button	sends the cycle program to the attached pump

Repeat Scheduler

To activate the Repeat Scheduler (Figure 35), go to the Repeat Schedule cell in the Pump Scheduler window and click in the box until a check mark appears. Click on the desired time frame (daily or weekly) and enter the desired number of cycles in the Execute Count cell. Enter the desired flow rate in the Set Flow cell or click the Set Flow button. Click the ToPump button. Go to the View menu and select Preview Repeat Scheduler. A summary including total run time and volume will appear. The Repeat Scheduler allows the user to repeat a pump schedule over many weeks. The schedule can vary from day-to-day. *See pp. 25 to 28 for an example schedule.*

There must be a Pump Schedule in place to take advantage of this feature.

Figure 35. Repeat Scheduler

Cell/Button   Readout/Function
Repeat Schedule cell ....click to activate the Repeat Schedule (checkmark)
Daily/Weekly buttons ....click desired repeat interval
Execute Count cell ....enter number of intervals schedule is to repeat
Set Flow cell and button ....enter or select pump flow rate in L/min

Example Scheduler Program

This example program demonstrates step-by-step how to use the SKC Pump Scheduler window (p. 14) to set a program.

A sampling operation requires the Leland Legacy to sample at a constant flow of 10 L/min from 8:00 AM to 4:00 PM daily for one work week. Enter the parameters as follows.

To Reset Volume, Time, Temperature, and Pump History

To set the flow rate:
Click on the Set Flow button. The Scheduler Set Flow window opens. Click on the 10.0 Button then click on OK. "10.0" now appears in the Rate cell of the Program Edit Bar.
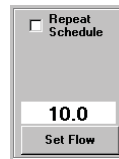
To set the start/stop date:
Click on any Monday in the Calendar (do not select a date already past). The date is now highlighted. Click on the Start Date/Time cell in the Program Edit Bar. The date now appears in the cell. Click on the Stop Date/Time cell to enter the same date into the Stop Date cell.

To set the start time:
Click on the Clock at 8. The clock hands will now point to 8:00 and it also appears in the digital display next to the Clock. Click on the AM button, then click on the Start Date Time cell of the Program Edit Bar; 8:00 AM now appears in the cell.

Click here
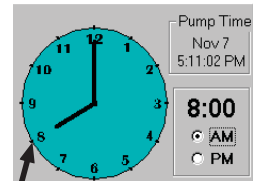
To set the stop time:
Click on the Clock at 4. The clock hands will now point at 4:00 and it also appears in the digital display next to the Clock. Click on the PM Button, then click on the Stop Time cell of the Program Edit Bar; 4:00 PM now appears in the cell. The Duration cell now displays 8 hours, which is the length of the programmed operation.
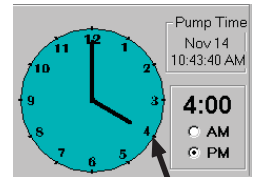
Click here

Example Scheduler Program

To insert the program into the Pump Scheduler:

Click on the Insert button. The program appears in the Pump Schedule. Note that the program is still displayed in the Program Edit Bar. The Pump Schedule now has a program that tells the pump to run at a constant flow of 10 L/min from 8:00 AM to 4:00 PM on Monday. The same operating parameters must be entered for each day of the week.

To add extra days to the program schedule:

Click on the +Day button. This will add one day to the Start Date and Stop Date in the Program Edit Bar. Click on Insert to place the program into the Pump Schedule.

Repeat the procedure to add an additional day to the Pump Schedule until Friday has been entered.
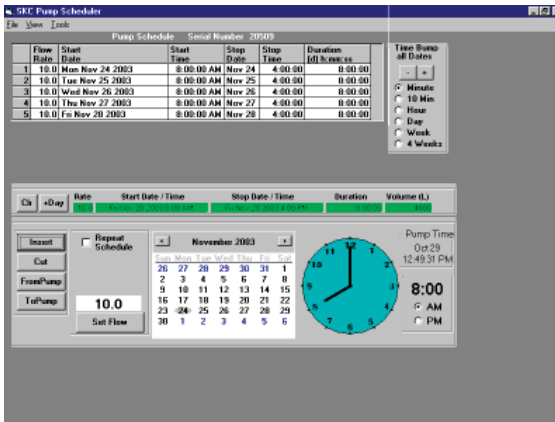
The Repeat Scheduler

If the user wishes to repeat the example schedule for the next 10 weeks, the Repeat Scheduler could be used to save entry time (*refer to Figure 35, p. 24*).

1. In the Pump Scheduler, set up a regular program (*see pages 14 to 22*).

2. At the bottom of the window, click on the Repeat Schedule box (a checkmark should appear).

3. Click on the Weekly button.

4. Click in the Execute Count box and enter the number 10.

5. Click on the ToPump Button to send the program to the pump.

The Cycle Scheduler

To set up the same scenario in the Cycle Scheduler, follow this procedure (*refer to Figure 34, p. 23*):

1. In the SKC Pump Scheduler, go to the View menu. Select Cycle Scheduler.

2. Go to the Start Date, Time section and select the start date of Nov. 24. Click in the Time box. Use the ▲▼ keys to select 8:00 a.m. or highlight the digit to be changed, and type in the desired number.

3. Move to the Number of Cycles box, highlight the current entry, and type in 5.

4. Go to the Cycle Setup section. Click in the Run box and highlight the current entry. Type in 8. Click in the Hold box, highlight the current entry, and type in 16 (time between runs). Choose hours as the unit of time.

5. Go to the Flow Rate section and click on the Change Flow button. Select a flow rate of 10 L/min and click OK.

6. Verify that the schedule is correct by reviewing the Cycle-Scheduler Times window. The horizontal Duty-Cycle Visualizer bar graph at the bottom of the window can be used as a visual cue as to how much of the time the pump will be running.

7. Once the schedule is verified, click on the Send Schedule to Pump button.

Example Scheduler Program

To set the desired Scheduler Options:
Select Scheduler Presets from the View menu and click on the desired
Scheduler Options (p. 22).

To write the program to the Pump:
Click on the ToPump button. DataTrac will now write all steps contained
in the Pump Schedule to the pump.

To save a pump program to a PC:
Select the Save command from the File menu. The program displayed
in the Pump Schedule will be saved as a program file (.pgm). Programs
can be saved for future use or editing.

To print the pump program:
Select the Print command from the File menu; this prints the contents of the Pump
Schedule.
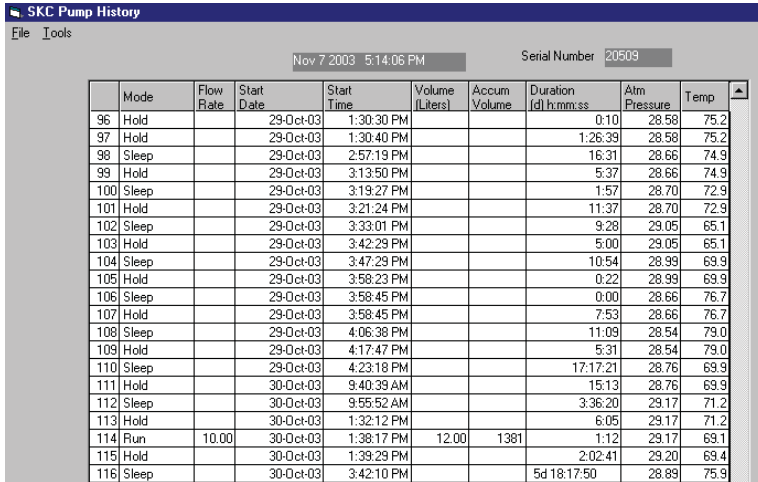
To erase the contents of the Pump Schedule:
Select Clear Schedule from the Tools menu; this will erase the   contents of the
Pump Schedule displayed on screen and in the connected pump's memory.

SKC Pump History

The SKC Pump History window (Figure 36) displays a record of all operations the pump has performed. Approximately 300 histories can be stored in the pump's memory. This window can also be saved to a PC or printed.

Figure 36. SKC Pump History Window

SKC Pump History Menus

File Menu

Print History ....prints the current history

Save History ....saves a history file to a PC. Can be viewed using Archive History (p. 32)

Save as Comma-separated Text..............saves history file as a text file (.txt)

Exit ....exits the SKC Pump History window and returns to the previous screen

Tools Menu

Clear History ....clears the pump history displayed on-screen and in pump memory

Options ....provides history display and sample interval options

Reload History............reloads existing history

Clear Pump History
To clear the pump history, select Clear History from the Tools menu.

Change Options*
To change display and sample interval pump history options, select Options from the Tools menu.

(!)   *Changes to these parameters will also be reflected on the pump LCD.*

Reload History
To reload existing pump history, select Reload History from the Tools menu.

Print Pump History
To print the pump history file displayed on-screen, select Print from the File menu (p. 29).

Save Pump History
To save a pump history to a PC, select Save from the File menu. The pump history is saved to a PC as a history file (.hst).

Save Pump History as Comma-separated Text
To save a history file as a text file (.txt), select Save as Comma-separated Text from the File menu.

Pump History Display
Data displayed in the Pump History window (Figure 36) shows the record or history of all operations performed by the pump. A history will remain on-screen and in pump memory until it is cleared. If more than 300 history operations have occurred since history was cleared, they will roll over in memory so that the 300 most recent operations will be displayed. A history includes the following data:

Pump Status Mode.....

Readout	Operating State of the Pump
Run:	pump in run mode
Hold:	pump in hold mode
Fault (Run):	pump in flow fault status while running
Fault (Hold):	pump in flow fault status and hold mode
Prog (Hold):	pump in hold mode while running a program
Prog (Run):	pump in flow mode while running a program
Prog (Sleep):	pump in sleep mode while running a program
Reset:	run time data has been zeroed
Sleep:	pump in sleep mode

User setup:	pump user interface accessed and user adjusting pump
Pre-Cal Flow:	single-point calibration mode; first calibration average, date, and time
Post-Cal Flow:	single-point calibration mode; final calibration average, date, and time
Timed Run:	pump running a preset sampling time (ST)
Low Bat:	battery depleted
FullCal:	full (multiple-point) calibration mode
Flow adjust:	pump flow rate or flow correction being adjusted by user

Flow......................................flow rate in L/min

Start Date..............................start date of the program

Start Time ....start time of the program

Volume (Liters)...................flow rate multiplied by the duration

Accum. Volume ....sum of all previous volumes (Liters) on the history page

Duration ....total running time of the program

Archive History

The Archive History window loads and displays a pump history file that was saved to a PC. This window is empty until a history file is opened.

Archive History Menus

File Menu

Open......................................opens a saved history file
Print.....................................prints the displayed history file
Exit......................................returns to the previous window

Open a History

To open a history file, select Open from the File menu. Browse to and select the desired .hst file.

Print a History File

To print a history file, select Print from the File menu.

Reports

DataTrac allows reports or worker exposure profiles to be printed or saved as text and imported into word processing software or a text editor. These files combine the setup data (information denoting sampling media, methods, location, etc.) from the Sample Sheet Set-up window (Figure 37) and a pump history (p. 27).

File menu

Open......................opens a saved report file
Save as Text ....saves report as text (.txt) that any word processor or text editor can read
Print.......................prints the displayed worker exposure profile
Exit.........................exits the worker exposure profile

Sample Sheet Setup

The Sample Sheet Setup window (Figure 37) saves setup data pertaining to the sample run. All data displayed on the screen can be printed or saved as a setup file (.stp), or user-selected data can be saved as a template file (.tpl).

Figure 37. Sample Sheet Setup Window

Sample Setup Menus
File menu

New ....clears all data cells in the Sample Sheet Setup window
Load Setup ....loads a setup file
Save Setup ....saves a setup file

Load Template .....loads a template file
Save Template ......saves a template file
Print......................prints the current sample sheet data displayed on screen
Exit........................exits the Sample Sheet Setup window and returns to the previous window

Option Menu

Merge Pump ....writes the pump history from the connected pump memory to the displayed sample sheet setup and creates a worker exposure profile

Merge File.............writes the pump history from a previously stored history file to the displayed sample sheet setup, and creates a worker exposure profile

Clear Sample
Sheet......................clears all entered data from cells

Setup Files

The Sample Sheet Setup window (Figure 37, p. 33) contains a list of information (in data cells) that will be printed in a report. The displayed sample sheet setup can be saved to a PC as a setup file (.stp). A setup file consists of all the information contained in all data cells.

Enter Data into Sample Sheet

To enter the information into the data cells, click on the cell then type the data using a keyboard. The Tab key can be used to move from one cell to the next.

Save Setup

To save all entered data, select the Save Setup command from the File menu. The Save Setup command saves all data as a setup file (.stp).

Template Files

The displayed sample sheet setup can also be saved to a PC as a template file (.tpl). A template file reduces the need to repeatedly type data that rarely changes. A template file contains only the information included in the data cells that have an active check-box (the small square button before the data cell as shown in Figure 38). To activate a check-box, click on it until a checkmark appears.

*Figure 38. Close-up of the Sample Sheet
Setup Window Showing Active Check-boxes*

Save Template

To save only the information contained in data cells with active check-boxes, select Save Template from the File Menu. The Save Template command saves the checked data as a template file (.tpl).

Print

To print the displayed sample setup or template, select Print from the File menu.

Worker Exposure Profile

A worker exposure profile contains a sample sheet setup file and a pump history. A worker exposure profile can be created using the connected pump's history or a history file (.hst) saved to a PC.

Worker Exposure Profile created with Pump History

To create a worker exposure profile containing the sample sheet displayed on-screen and the history of the connected pump, select Merge Pump from the Options menu of the sample sheet. The worker exposure profile will be saved to a PC as an ".rpt" file and will also appear on-screen.

Worker Exposure Profile created with History File

To create a worker exposure profile containing the sample sheet displayed on-screen and a history file saved to a PC, select Merge File from the Options menu. The worker exposure profile will be saved to a PC as an ".rpt" file and will appear on-screen.

Print Worker Exposure Profile

To print the worker exposure profile displayed on-screen, select Print from the File menu.

CalChek Full Calibration Data Display and Verification
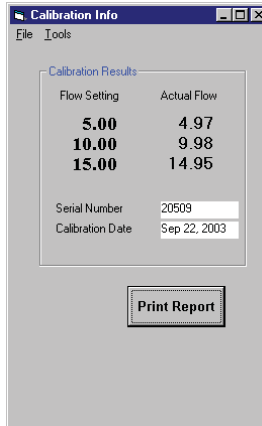
Figure 39.
Calibration Info Window

Viewing CalChek Full Calibration Data

🛇 *Caution: Full calibration completely clears DataTrac, run time parameters, and the Pump Schedule.*

Full calibration data can be viewed and printed by going to the DataTrac Pump Manager window and clicking on the View menu. Choose Calibration Info (Figure 39). This window will display calibration results, pump serial number, and date of the last full calibration.

Calibration Info Window
The Calibration Info window displays the results of a full calibration after using Cal-Chek, allows data to be printed, and provides a means of validating printed data.

File Menu
Print......................prints the current calibration data
Exit........................exits the Calibration Info window and returns to the Pump Manager window

Tools Menu
Confirm Validation
Code ....allows the user to enter calibration data from a printed report to determine if printed information has been tampered with

Validating CalChek Full Calibration Data

To confirm printed calibration data, open the DataTrac Pump Manager window and click on the View menu. Choose Calibration Info (Figure 39, p. 36). Click the Print Report button. Go to the Tools menu and choose Confirm Validation Code (Figure 40). Enter the calibration date shown on the printed report, enter each actual flow, and then enter the validation code. Click on the Check Validation Code button. The box to the right of the button will display red and "invalid" if the data has been entered incorrectly or tampered with. A green bar with the word "valid" will display if data entered is valid.

Figure 40.
Calibration Info Window with Confirm Validation Code

Clearing the history will not clear full calibration data. This data can only be cleared by performing another full calibration.

Caution: When entering data to confirm the validation number, enter the date in the following format: mmm dd, yyyy (e.g., Aug 18, 2003).

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