P/ACE™ MDQ
Basic Training Workbook

For 32 Karat™ Software
Version 5.0

715091 AA

August 2001

Beckman Coulter, Inc.
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Foreword

Welcome

Welcome to the basic phase of the Beckman Coulter training program for P/ACE™ MDQ hardware running 32 Karat™ Software. During this phase, our engineer will guide you through the basic operation of the system, review safety and maintenance guidelines, and review optional accessories that provide optimum performance for your system.

The purpose of basic training is to introduce you to the system and ensure that you are able to perform basic functions. However, the training is not intended to include creating custom applications. For advanced training options, please contact your sales office.

The following prerequisites have been defined to ensure a successful basic training:

1. The operator must be available without interruption for the entire training session.
2. No more than two operators will be trained as part of the installation.
3. Operators must possess a fundamental knowledge of computers and Microsoft® Windows NT™ 4.0 operating system, including the following:
   - Use of a mouse, i.e., point and click, click and drag, etc.
   - Use of windows (open and close, minimize and maximize, sizing, movement)
   - Use of drop-down menus and context-sensitive menus
   - Use of scroll bars
   - Creating, opening, saving, editing, moving, and copying files
   - Cutting and pasting

Training Overview

The training is organized in thirteen sections. Your instructor will guide you through each section. At the end of most sections, a skill check is provided to help you evaluate your progress. A map of these modules is shown on page viii, and a highlighted map precedes each module to indicate learning progress. Please take a moment to familiarize yourself with the training map before we begin.

Section 1: System Overview

- Overview
- Hardware Terminology
- Software Terminology

Section 2: Safety

- Safety Features
- Safety Notices
- Chemical and Biological Safety
- Electrical Safety
- Electrostatic Discharge

Section 3: Preparing for File Management

- Windows NT Explorer

Section 4: Software Setup and Initialization

- Accessing 32 Karat Software
- Configuring 32 Karat Software
- Starting the Instrument
- Skill Check

Section 5: Reviewing Detectors

- UV Detectors
- PDA Detectors
- LIF Detectors

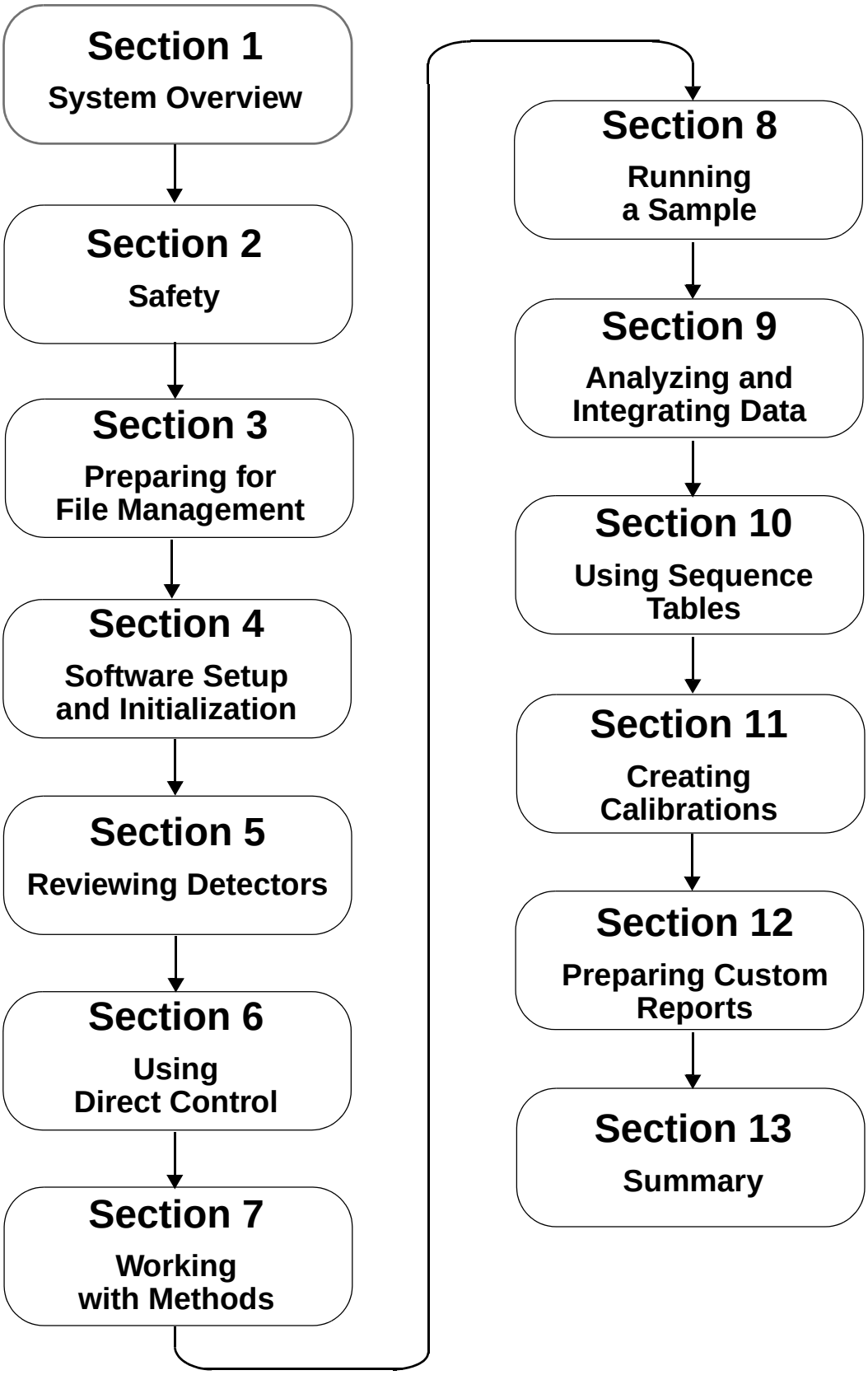
Section 6: Using Direct Control

- Accessing Direct Control
- Using Direct Control Screens
- Skill Check

Section 7: Working with Methods

- Using the Method Wizard
- Creating a Method
- Saving a Method
- Editing a Method
- Printing a Method

Training Map



Section 1-System Overview

Overview

This section describes the hardware components of P/ACE MDQ system. You will learn the operation considerations for each module and terms commonly used for the software and hardware.

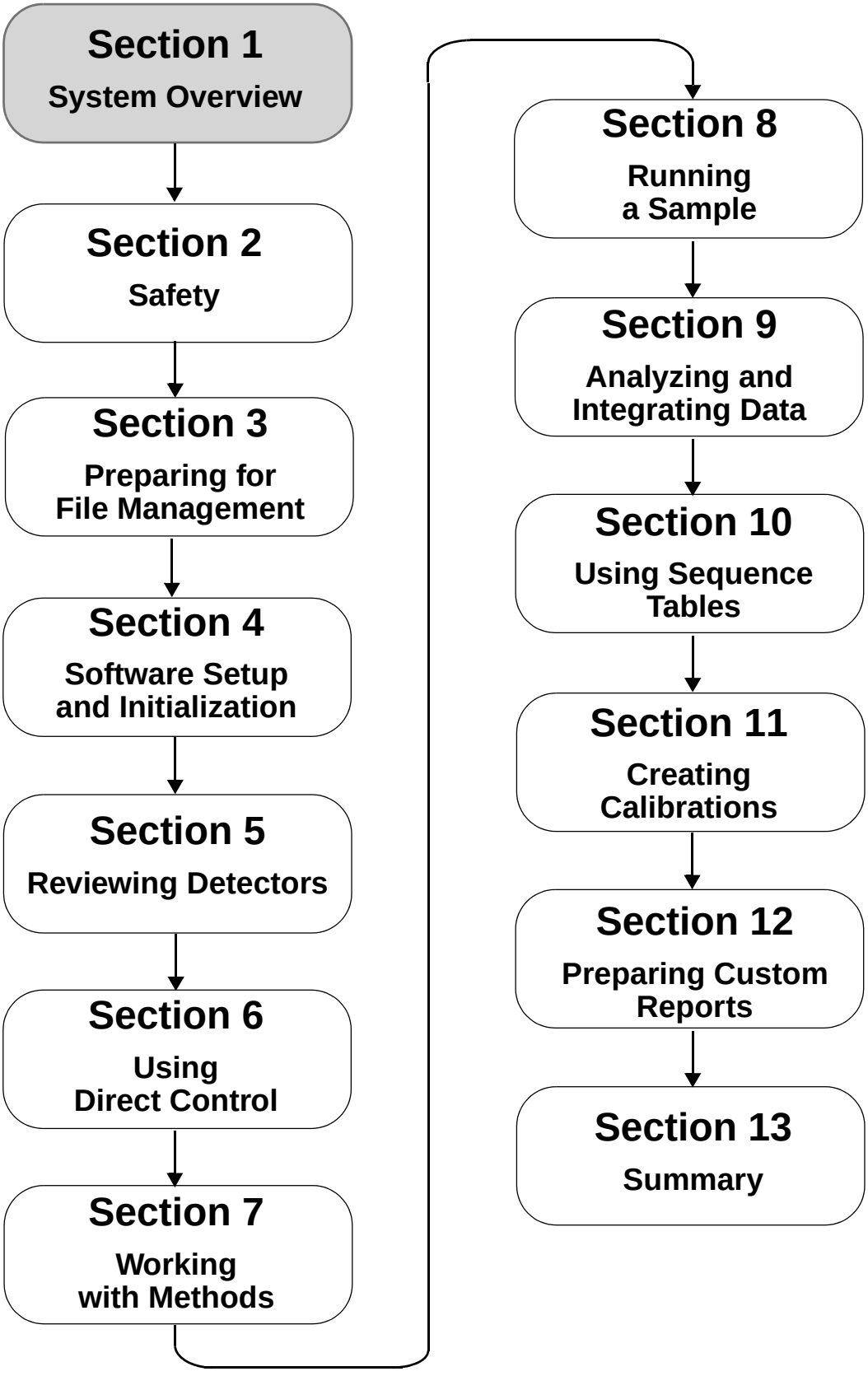

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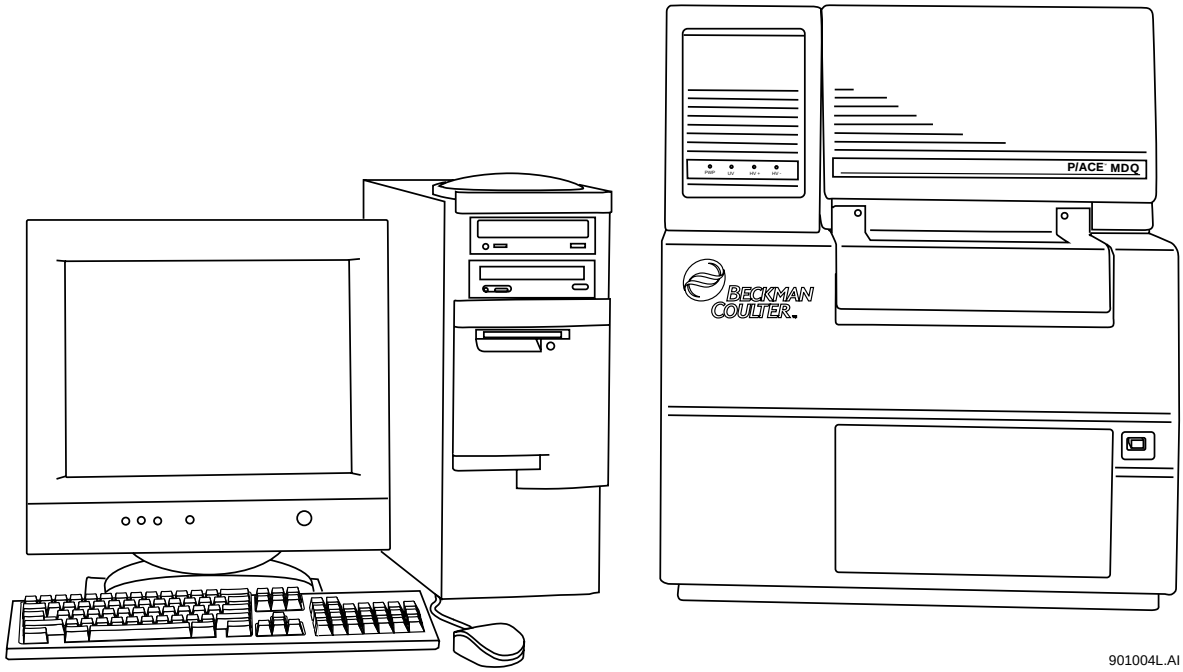
Figure 1 P/ACE MDQ System



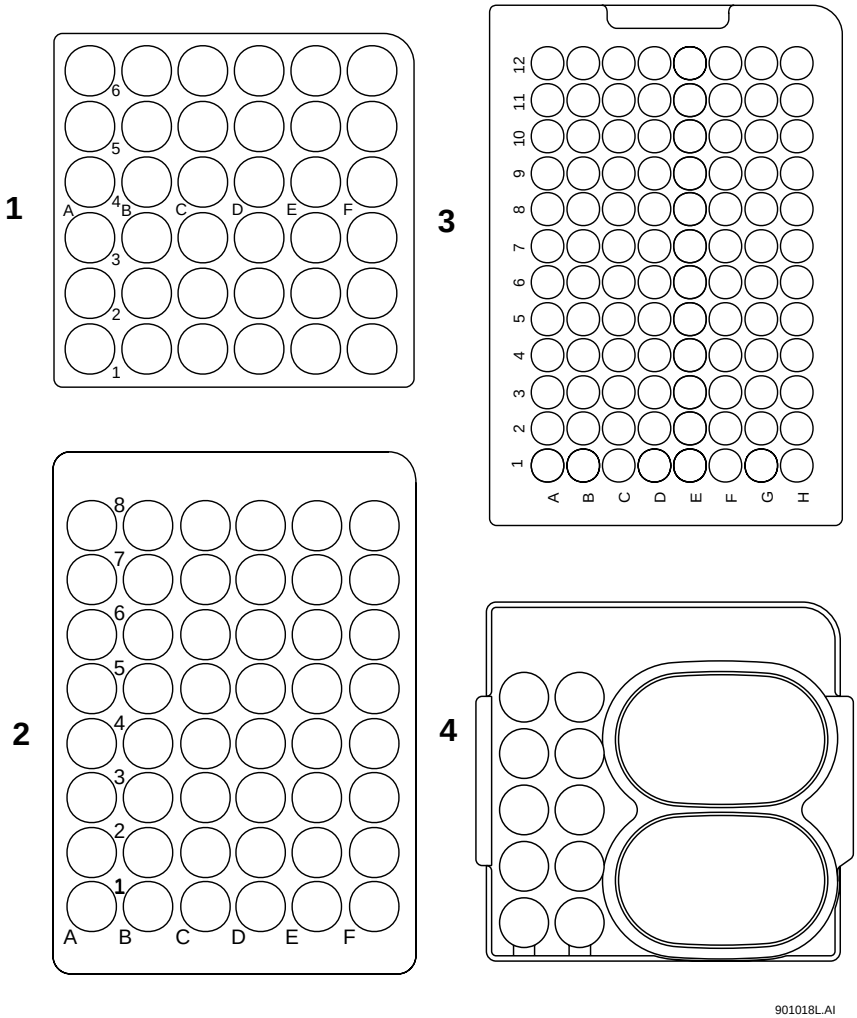
Hardware Terminology

System

- ❑ Power Switch
- ❑ Front Panel LEDs and Indicator lights
- ❑ Communications cables
- ❑ Remote hook-ups
- ❑ Other detectors
- ❑ Spare parts and consumables list

Trays

- Tray Cover and Capillary Cartridge Cover
- Tray Racks
- Sample Tray and Sample Cooling
- Tray Name and Format



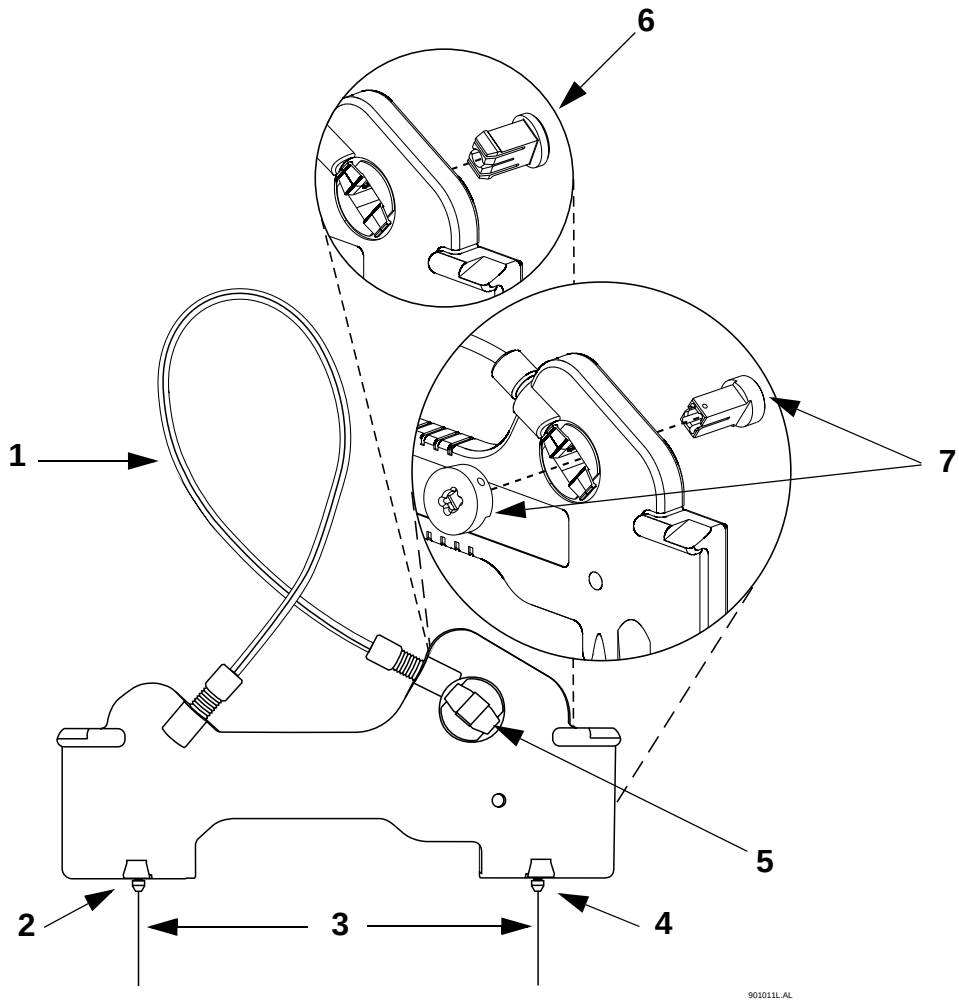
1) Buffer Tray

2) 48 Vial Sample Tray

3) 96 Position Sample Tray

4) Large Volume Buffer Reservoir

Capillary Cartridge



1) Coolant tubing with capillary inside

2) Inlet Side

3) Capillary

4) Outlet Side

5) Detector Window and Aperture

6) Aperture for UV and PDA cartridge

7) Aperture and Stabilizer Plug for LIF cartridge

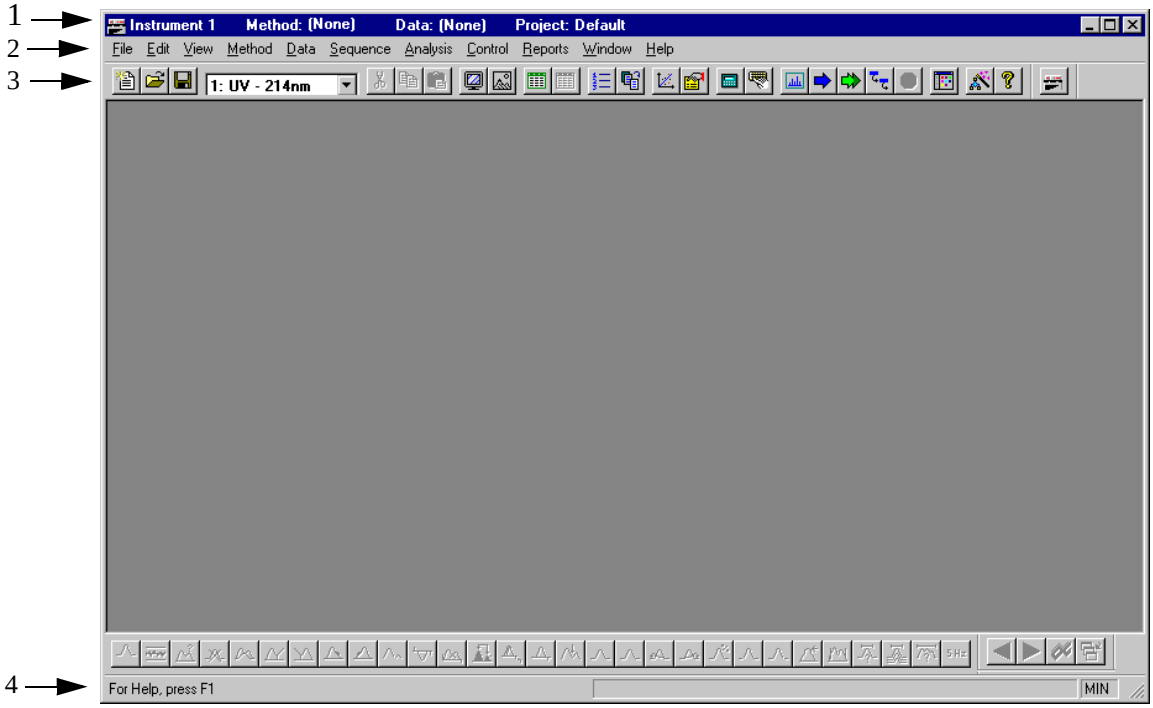
Detectors (UV, PDA or LIF)

Lamp

- ❑ Hours
- ❑ Change procedure
- ❑ Diagnostics

Software Terminology

Window



1) Title Bar

2) Menu Bar

3) Toolbar

4) Status Line

Main Menu

- New Instrument
- System Configuration
- Interface Configuration
- Online/Offline System Administration

Summary

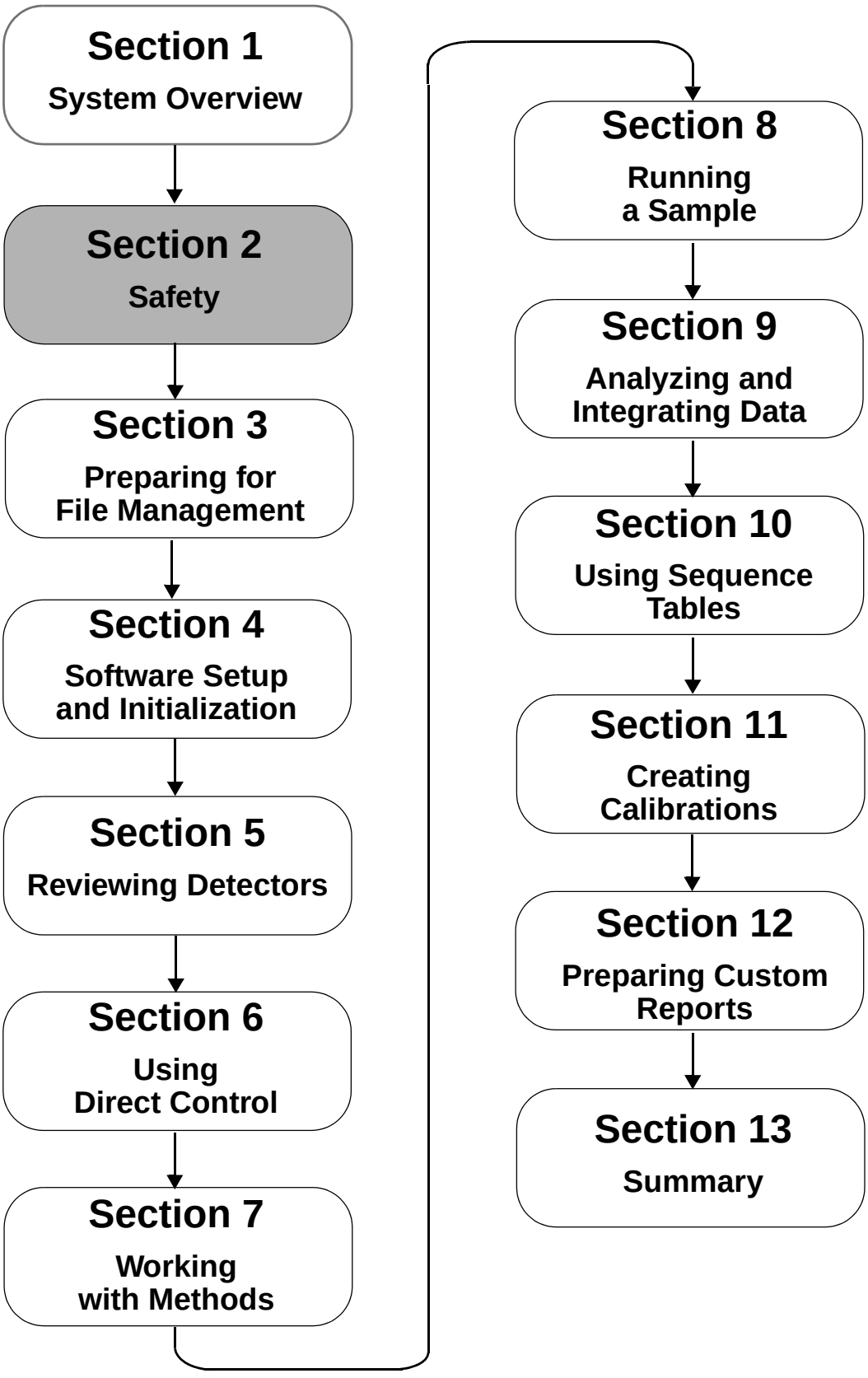
This section introduced you to an overview of P/ACE MDQ system. Now you are ready to learn the details required for successful operation. Refer to “Section 2 - Safety Instructions” before proceeding.

Section 2-Safety

Overview

This section provides safety instructions for P/ACE MDQ hardware and accessories. You will review:

- Safety Feature
- Safety Notices
- Chemical and biological safety
- Electrical safety
- Moving parts
- Instrument safety features
- Release Notes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Safety Information for P/ACE MDQ and 32 Karat Software

All safety instructions should be read and understood before installation, operation, maintenance or repairs are attempted.

Safety Features

Review the location and action of the following safety features:

- ❑ ON/OFF switch
- ❑ Fuse replacement and voltage selection

Safety Notices

Review meaning and placement:

- ❑ International safety symbols
- ❑ High voltage symbol

Chemical and Biological Safety

Normal operation of the system involves the use of many solvents and reagents, which may be toxic, flammable or biologically harmful.

- ❑ Observe all cautionary information printed on the original solution containers prior to use.
- ❑ Operate the system in an appropriate enclosure and take all necessary precautions when using pathologic, toxic, or radioactive materials to prevent the generation of aerosols.
- ❑ Observe the appropriate cautionary procedures as defined by your safety officer when using flammable solvents in or near the powered-up instrument.
- ❑ Wear appropriate lab attire (safety glasses, gloves, lab coat, and breathing apparatus) when working with hazardous materials.
- ❑ Remember that solvents may be flowing under high pressure.

Electrical Safety

- ❑ Always disconnect power to the system before performing maintenance operations.
- ❑ Refer servicing that requires removal of covers to qualified personnel.

Electrostatic Discharge

- ❑ Ground yourself before working with system.
- ❑ Carpeting in a building can influence static charge. Use caution when working in this environment.
- ❑ Contact Beckman Coulter Field Service if you have questions.

Release Notes

The Release Notes contain important information that became available after the 32 Karat Software manuals were printed:

- Read and review the information contained in this file.
- Print the file and place in binder, if necessary.

Summary

This completes the safety portion of the basic training. For more detailed information regarding safety, refer to the appropriate sections in the P/ACE MDQ Installation and Maintenance Guide and 32 Karat Software Online Help. All safety notices can be found in the front of the information binder. If the product is used in a manner other than specified, the safety and performance of the equipment may be impaired.

Section 3-Preparing for File Management

Overview

This section describes managing operational and data files within Windows NT and 32 Karat Software. You will learn the basics of file storage and retrieval.

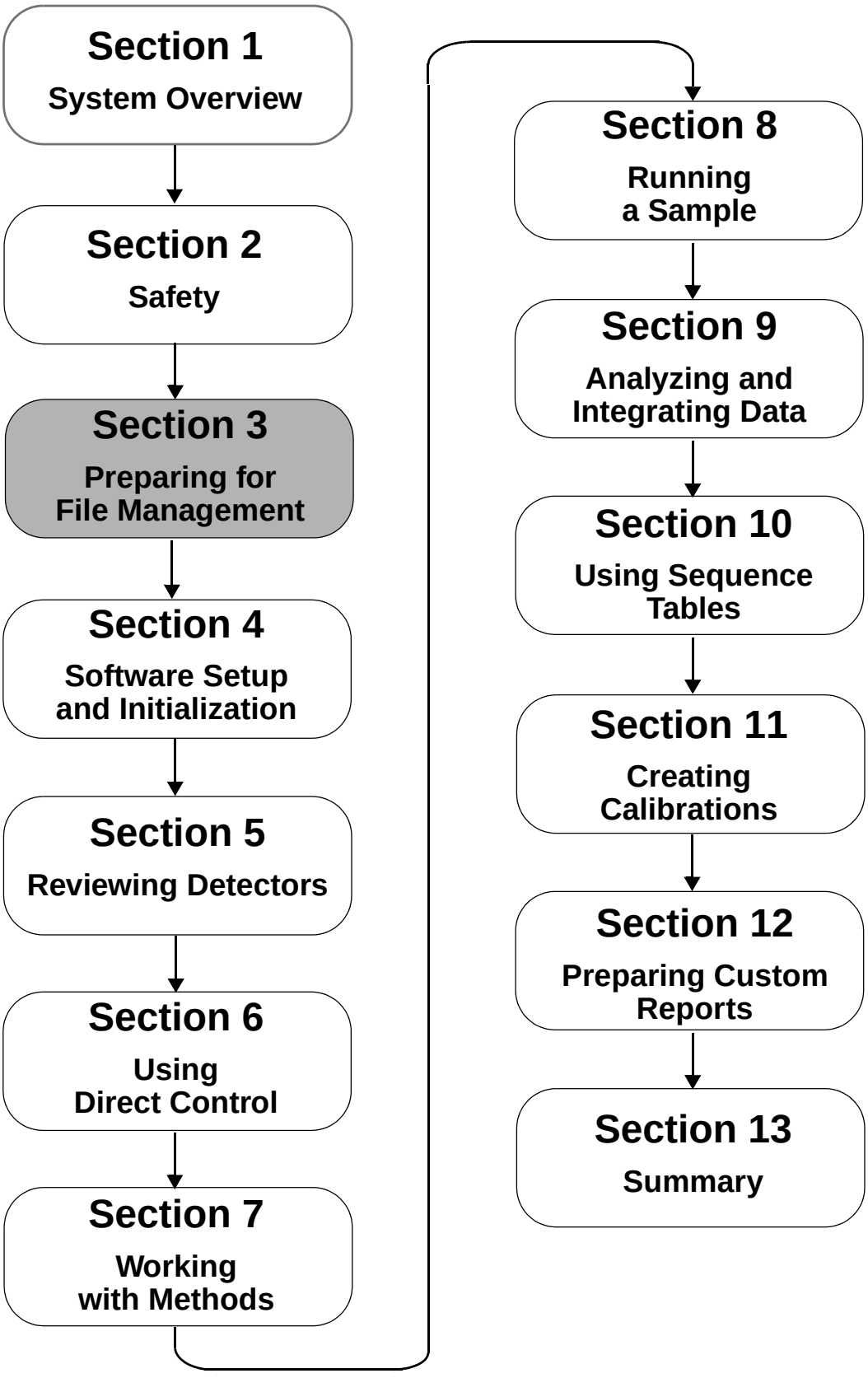
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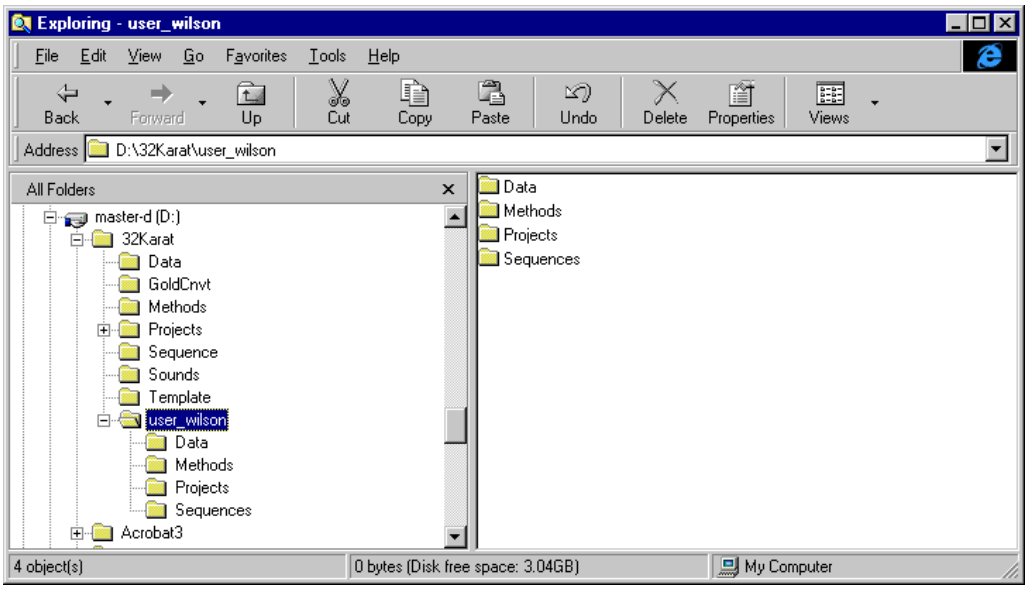
Figure 2 Windows NT Explorer



Windows NT Explorer

- ❑ Opening Windows NT Explorer
- ❑ Note disk sizes (varies depending on computer and installed software)

Create a user folder with subfolders for:

- ❑ Data
- ❑ Methods
- ❑ Projects
- ❑ Sequences

Backing up data files

- ❑ Zip Drive
- ❑ CD Rom

Summary

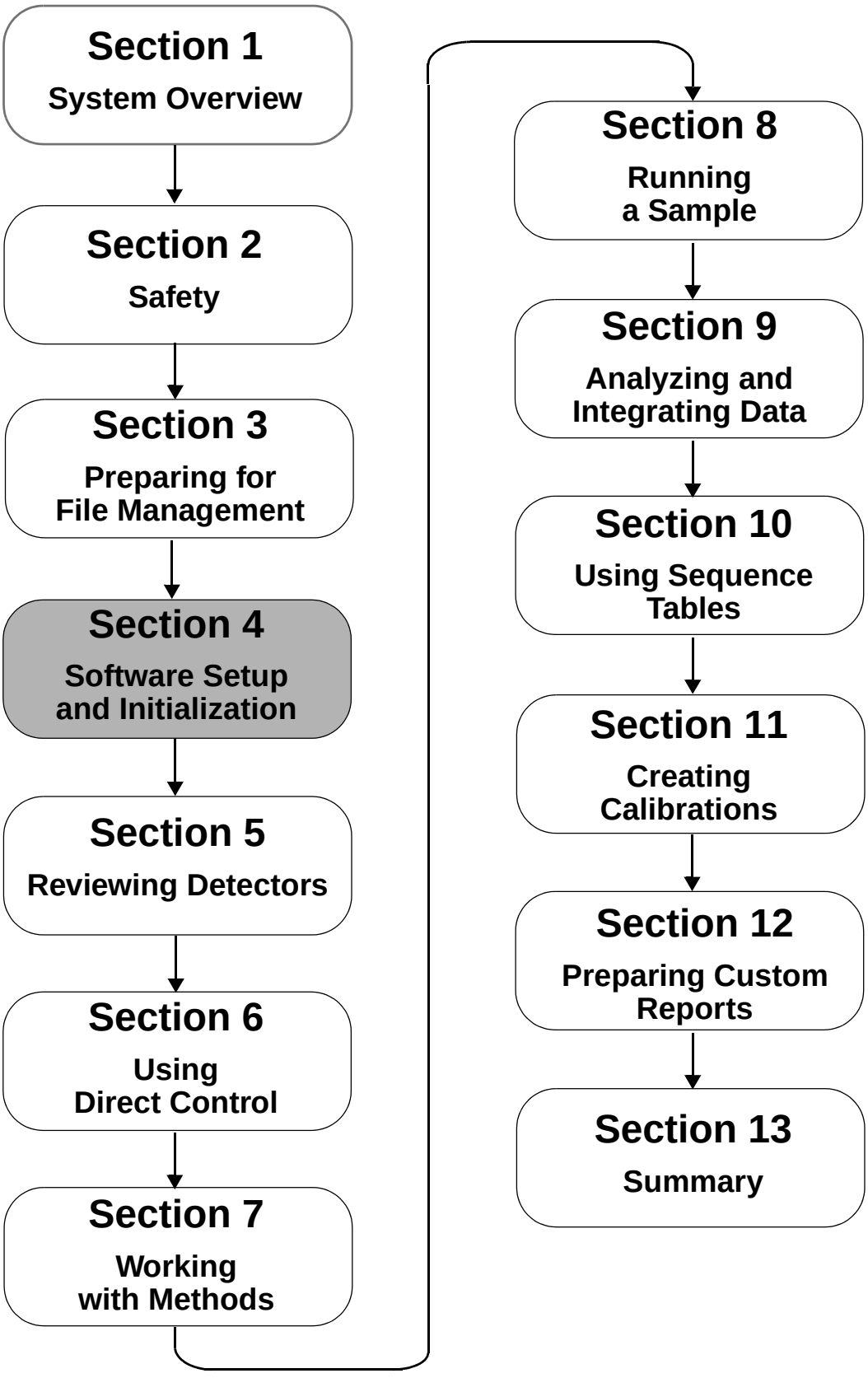
This completes the file management portion of the 32 Karat Software Basic Training Workbook. We have created locations for our project, method, sequence and data files. We are now ready to start 32 Karat Software.

Section 4- Software Setup and Initialization

Overview

This section considers the start-up process for the 32 Karat Software. We will discuss:

- Accessing 32 Karat Software
- The Enterprise Screen (Main Menu)
- Configuring 32 Karat Software
- Screen Layout
- Skill Check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Accessing 32 Karat Software

Figure 3 Accessing 32 Karat Software through Startup Menu

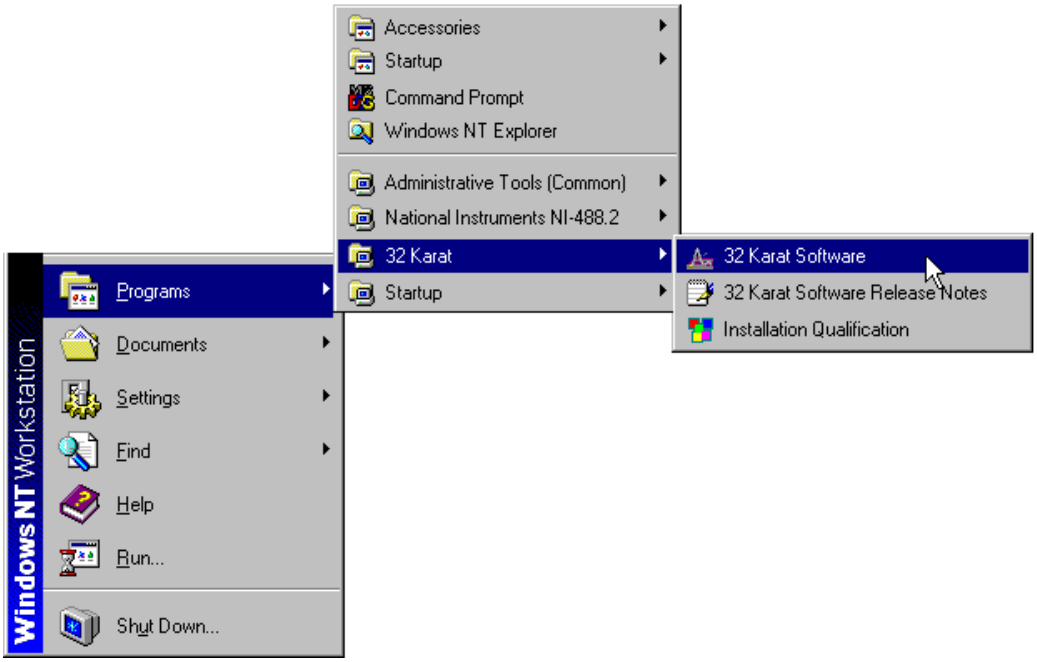


Figure 4 Accessing 32 Karat Software through Windows NT

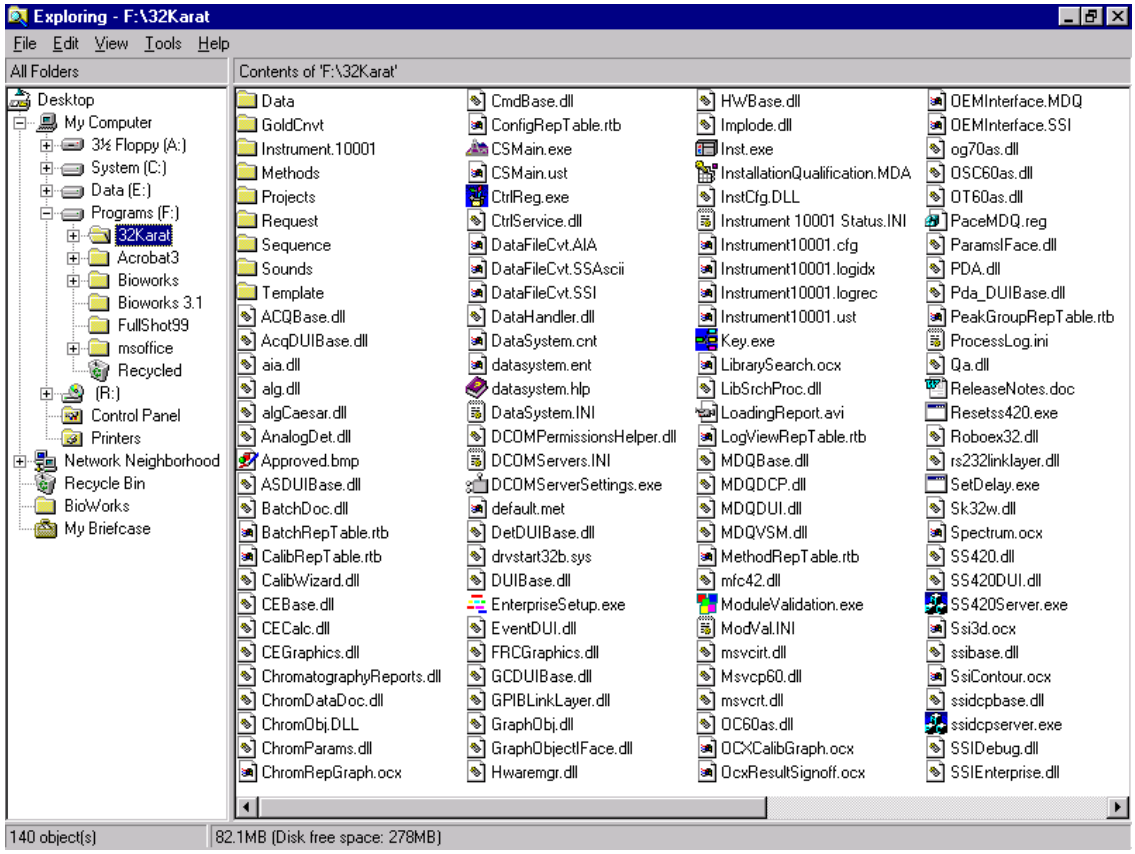
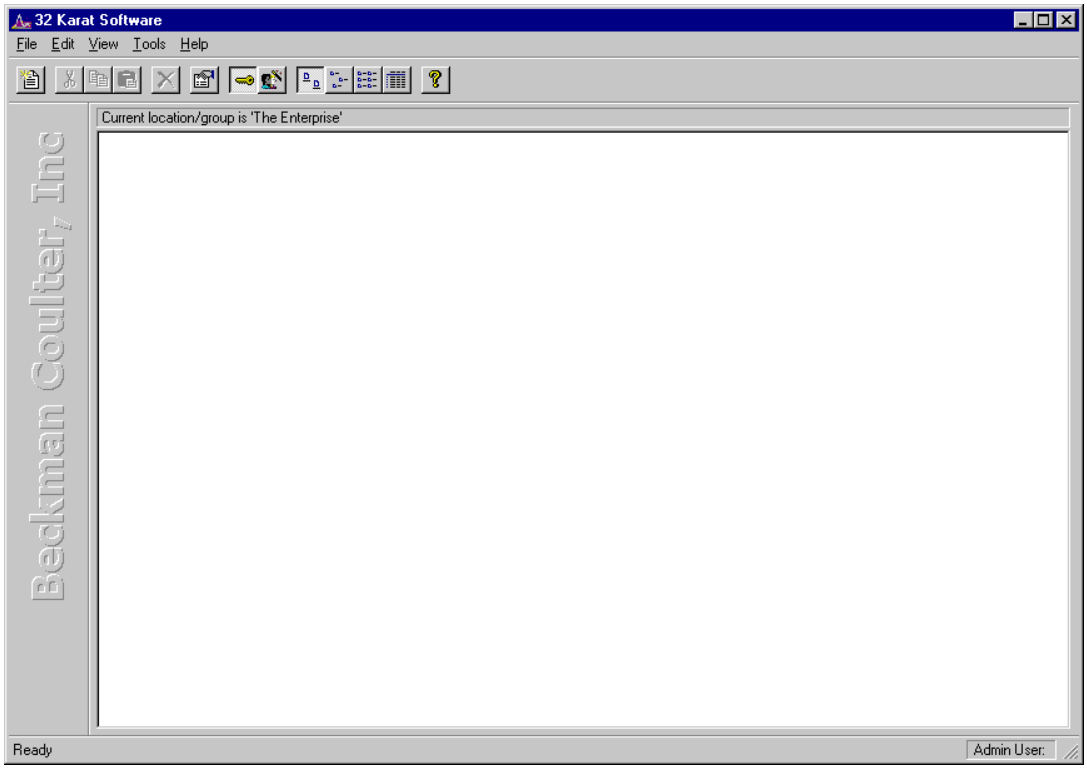


Figure 5 32 Karat Software Enterprise Screen (Main Menu)



- Creating an Instrument
- Online Instruments (for control of system)
- Offline Instruments (for multitasking)
- System Administration
- System Administration Wizard
- Users

Instrument Configuration

- ❑ Naming the Instrument
- ❑ When and how to auto-configure
- ❑ Selecting system options
- ❑ SS420A/D Board or SS420x A/D Device

Module Configuration: Selecting Options

- ❑ Naming the Detectors

Figure 6 P/ACE MDQ System Configuration dialog box

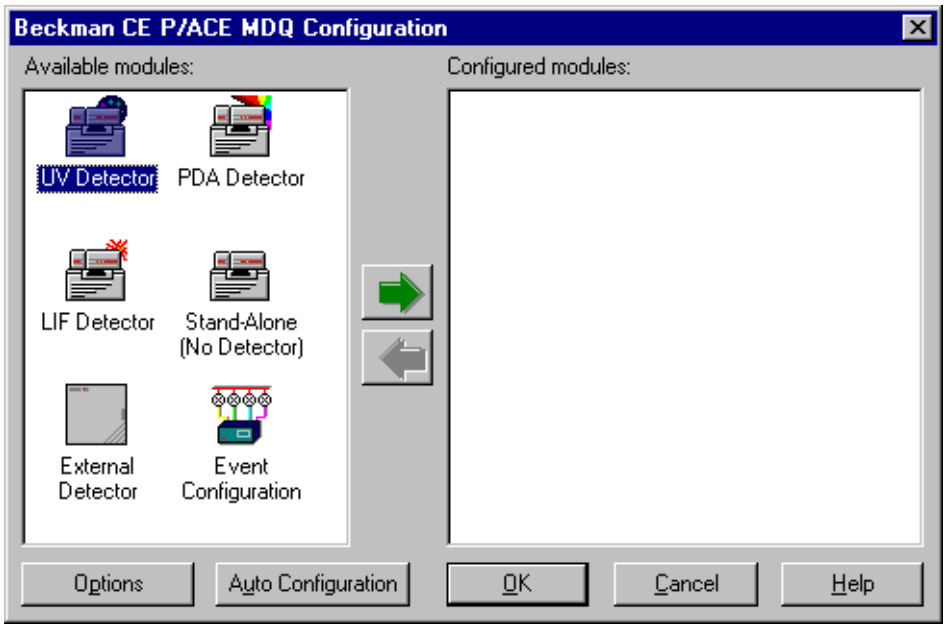
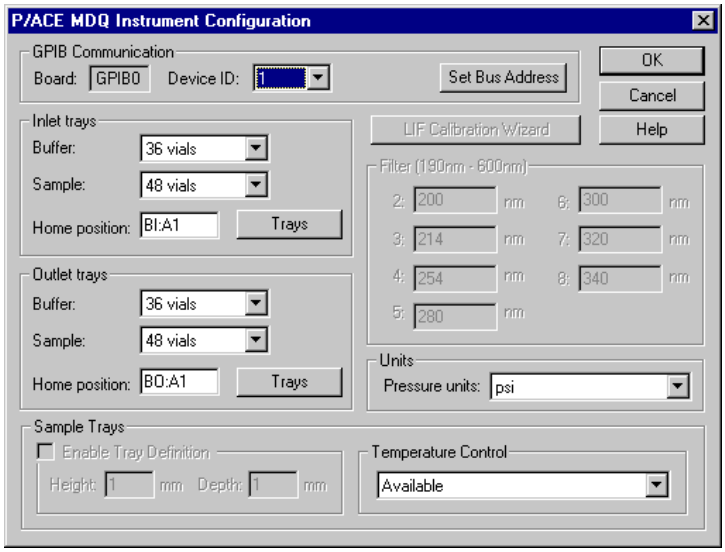
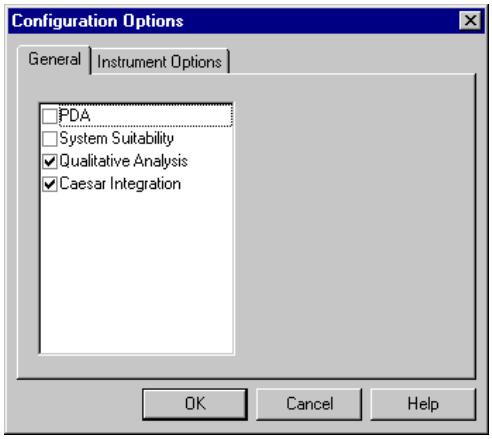


Figure 7 Instrument Configuration dialog box



- GPIB Communication
- Inlet/Outlet Trays
- Sample Trays
- LIF Calibration Wizard
- Filters
- Units
- Temperature Control

Figure 8 Configuration Options dialog box

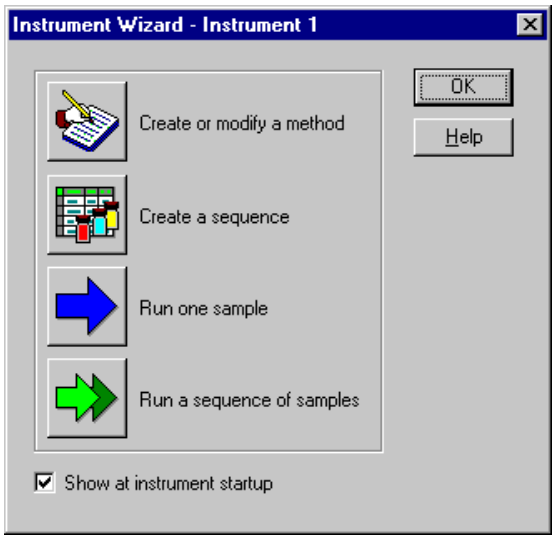


- PDA
- System Suitability
- Qualitative Analysis
- Caesar Integration

Starting the Newly Configured Instrument

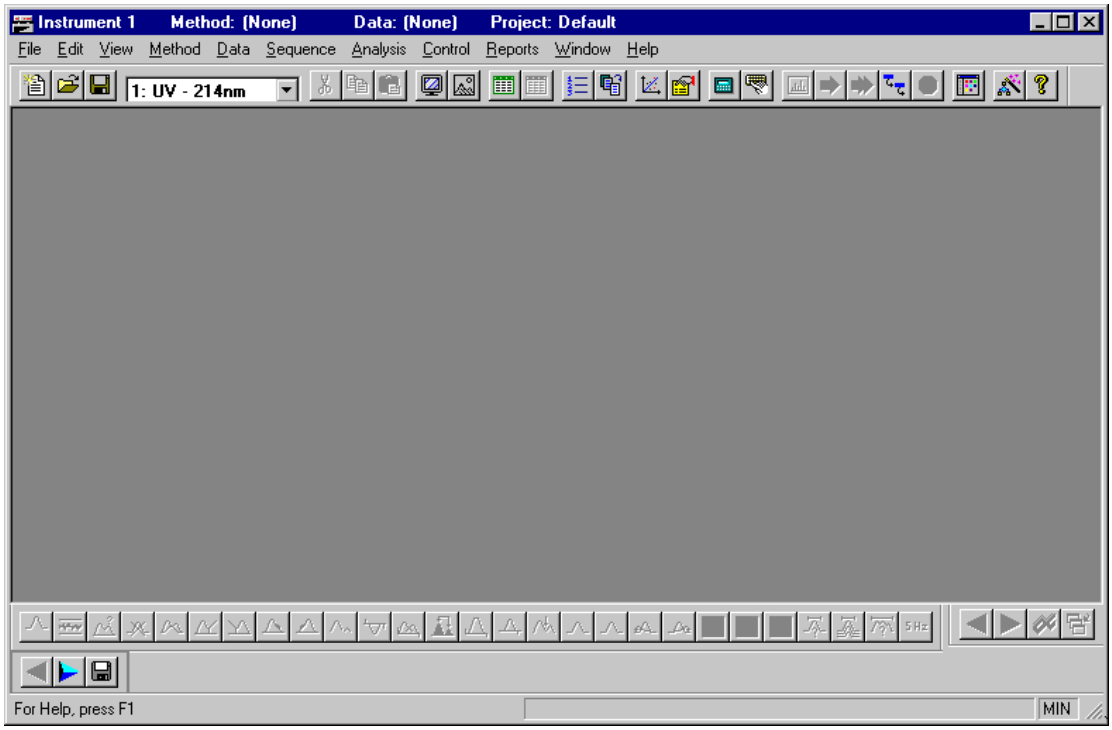
Instrument Wizard

Figure 9 Instrument Wizard dialog box



Instrument Window Screen Layout

Figure 10 Instrument Window



- ❑ Instrument Window
- ❑ Title Bar
- ❑ Menu Bar
- ❑ Tool Bar
- ❑ Status Line

Skill Check

Upon completion of this section, you should be able to do the following:

1. Start the computer.
2. Log on to the Windows NT operating system.
3. Start 32 Karat Software.
4. Create an Instrument.
5. Auto Configure the instrument.
6. Open the Instrument Window.

Summary

This completes the software setup portion of the training. The software should now be started and configured.

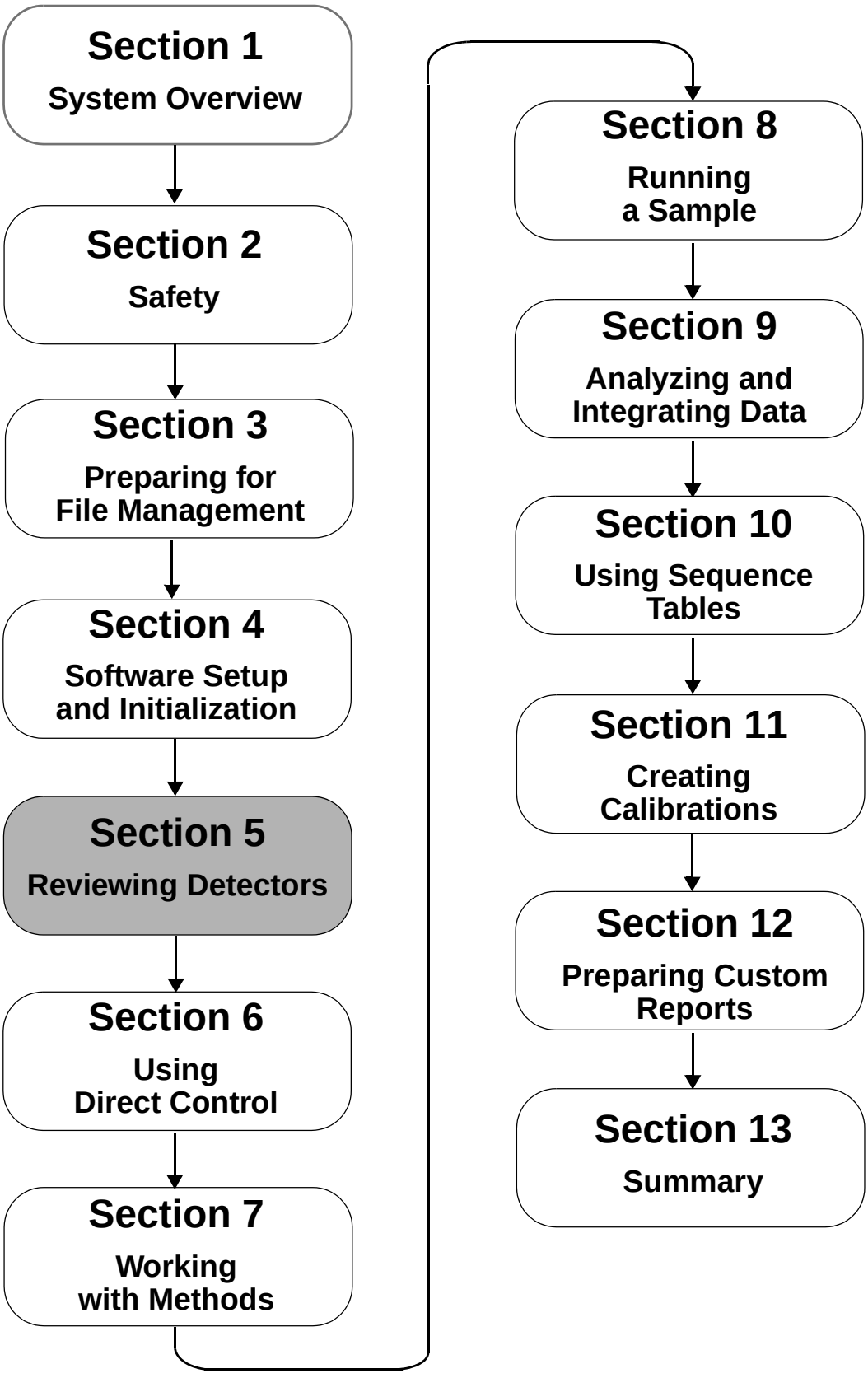
The next section covers the various types of detectors. You will review the information that pertains to the configuration of your instrument. Only one detector type will be covered.

Section 5-Reviewing Detectors

Overview

Depending on the configuration of your system, the function of the detector(s) varies. This section focuses on the important setup and functions of each detector. Some of these relate to report options you will learn in Section 12. In this section we will discuss:

- UV Initial Conditions Tab
- UV Data Display
- PDA Initial Conditions Tab
- The PDA Setup Window
- PDA Data Display
- LIF Initial Conditions Tab
- LIF Data Display
- LIF Calibration Wizard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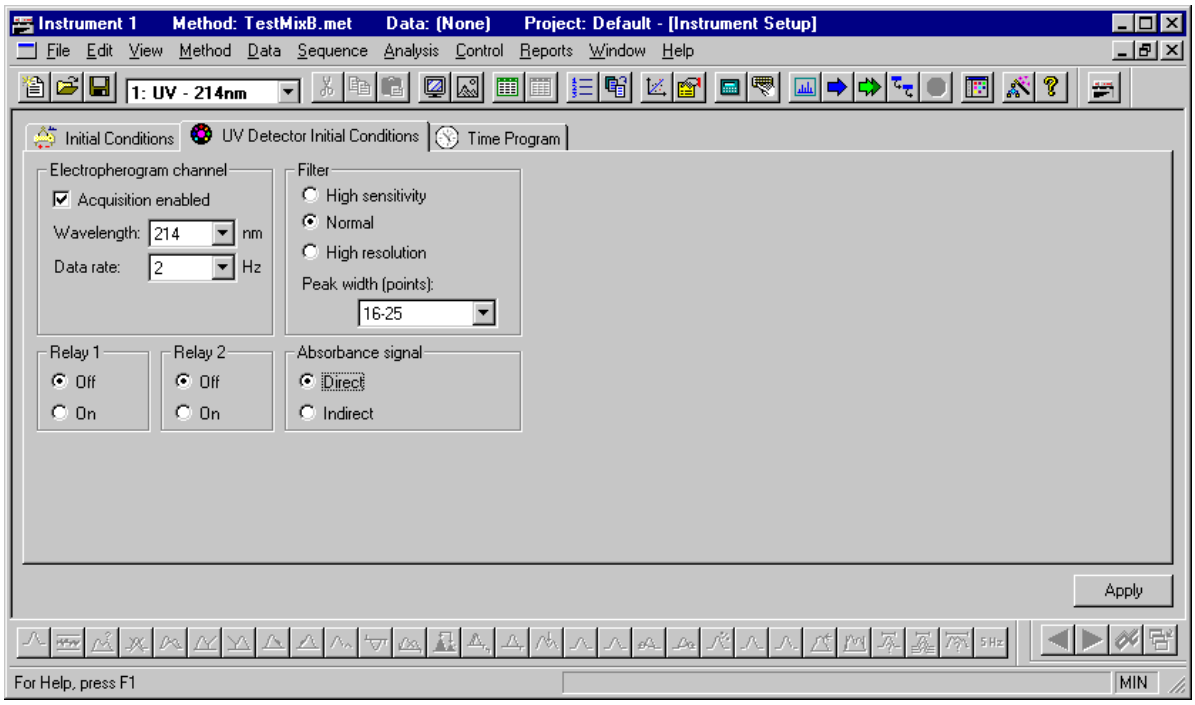
UV Detector

UV Initial Conditions

Figure 11 UV Initial Conditions tab



Electropherogram Channel

- Wavelength
- Data Rate

Filter Settings

- Peak width

Relays

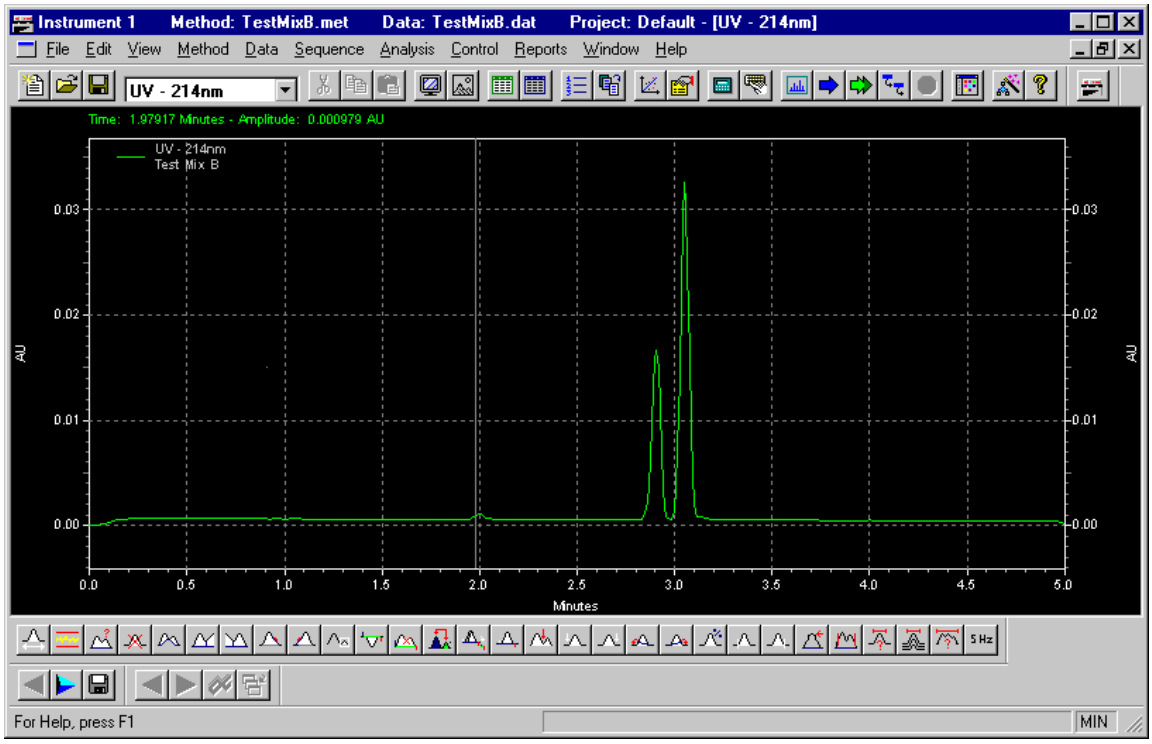
- On/Off

Absorbance signal

- ❑ Direct
- ❑ Indirect

UV Data Display

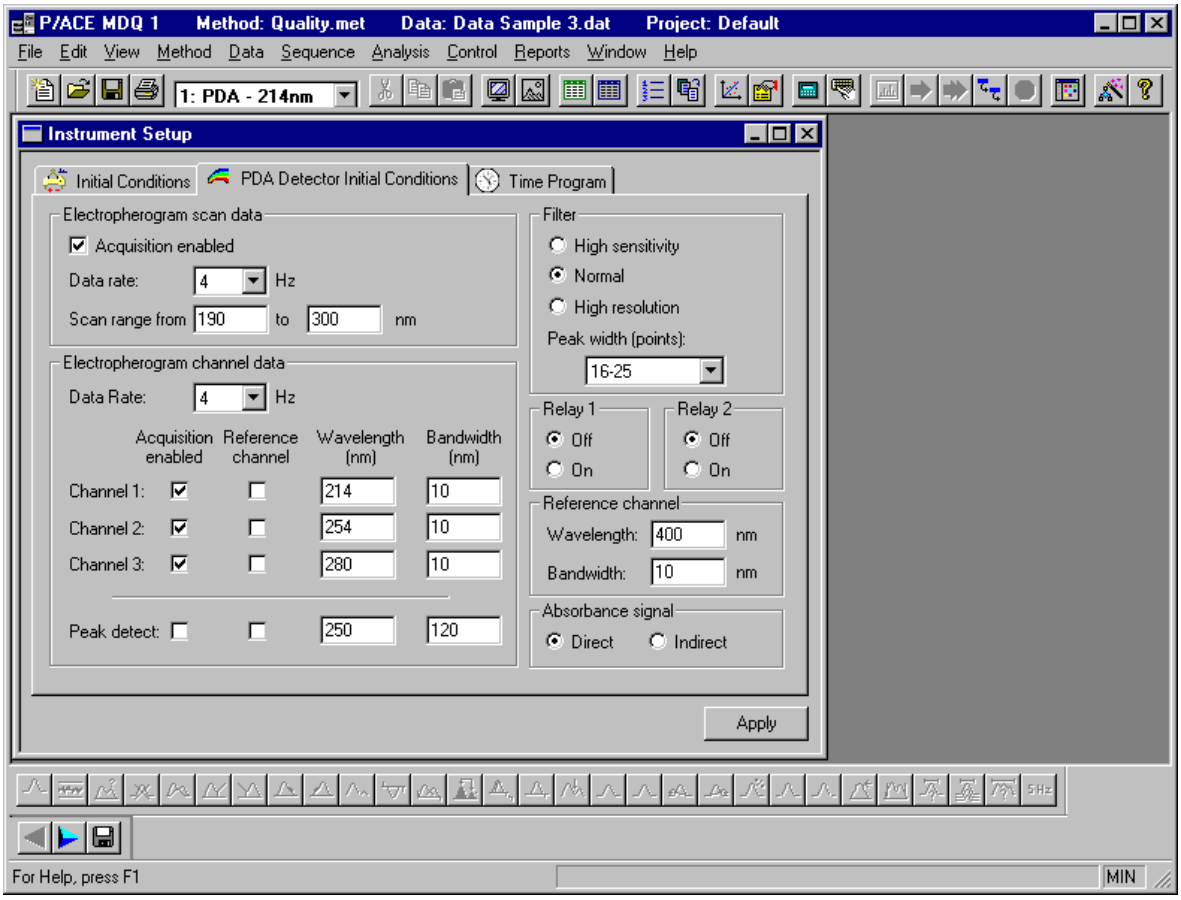
Figure 12 Instrument Window with UV data displayed



PDA Detector

PDA Initial Conditions

Figure 13 PDA Initial Conditions tab



Electropherogram scan data

- Data rate
- Scan range

Electropherogram channel data

- Data rate
- Channel Definition

- ❑ Peak detect

Filter Settings

- ❑ Peak width

Fraction Collector /Relays

- ❑ On

- ❑ Off

Reference Channel

- ❑ Wavelength

- ❑ Bandwidth

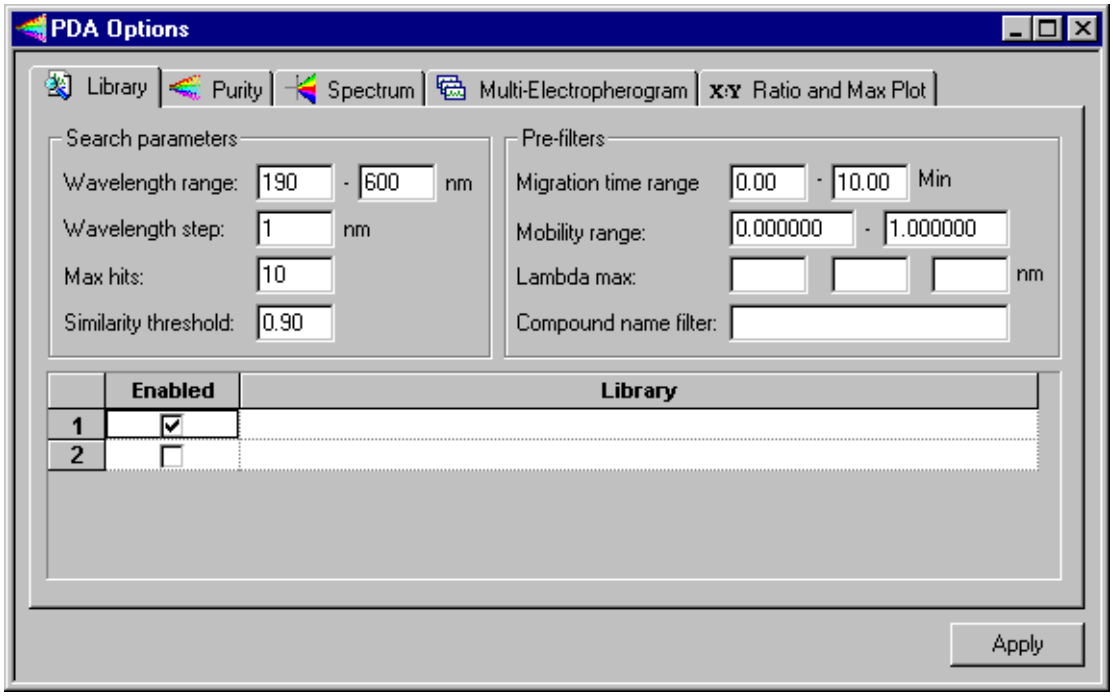
Absorbance signal

- ❑ Direct

- ❑ Indirect

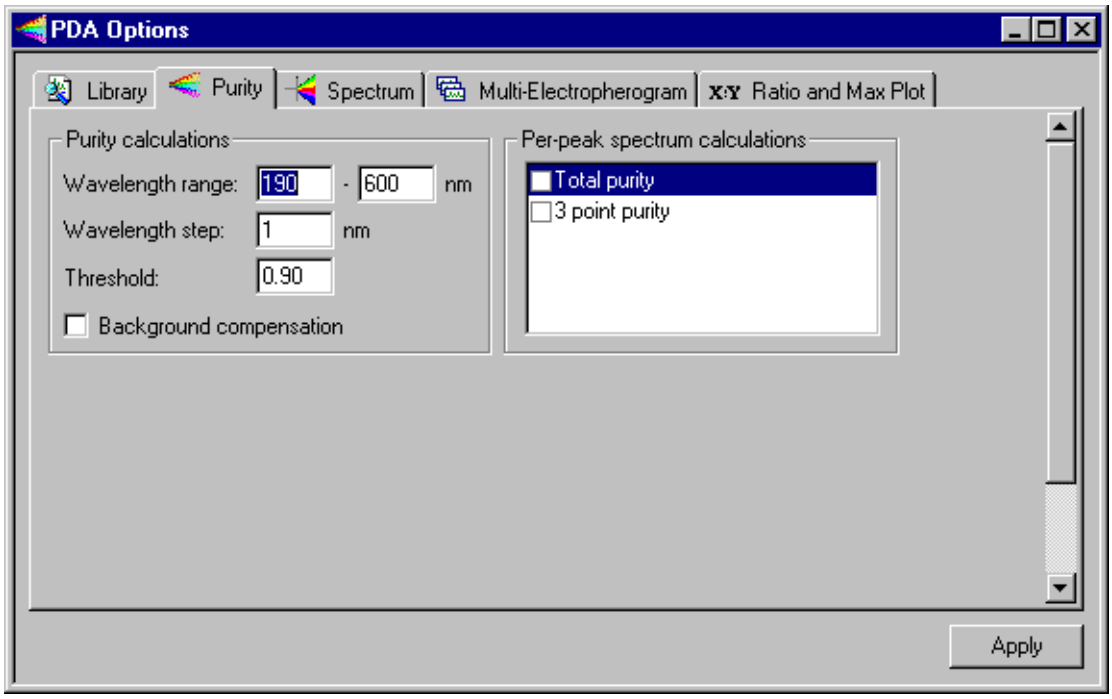
PDA Setup

Figure 14 PDA Options with Library tab selected



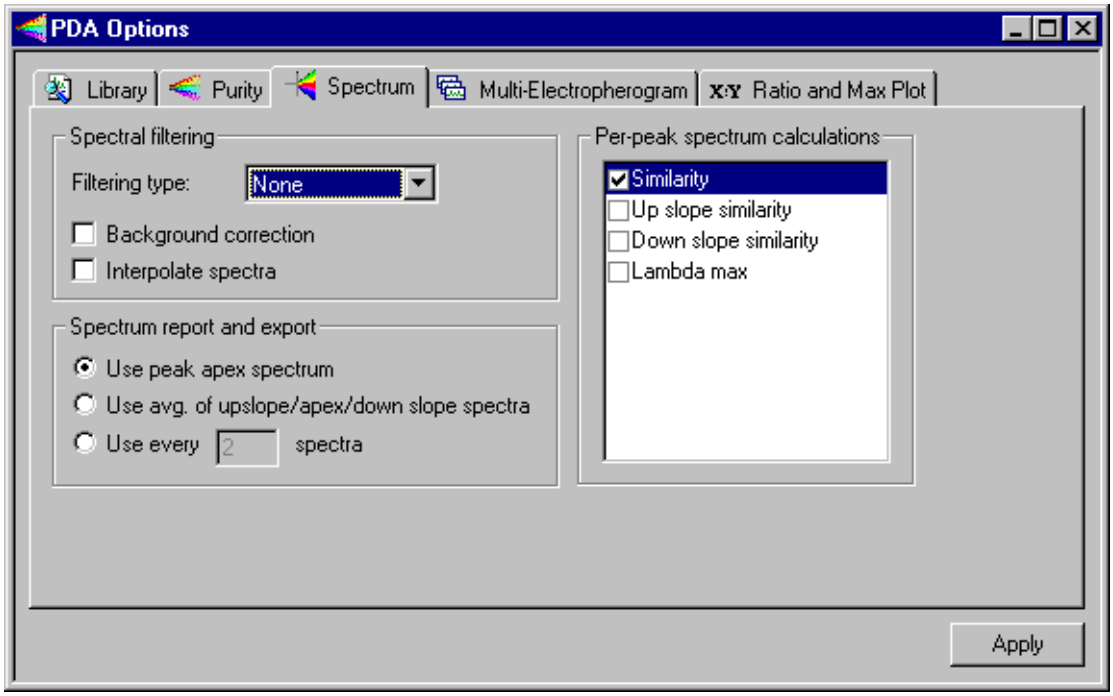
- Library Search Parameters

Figure 15 PDA Options with Purity tab selected



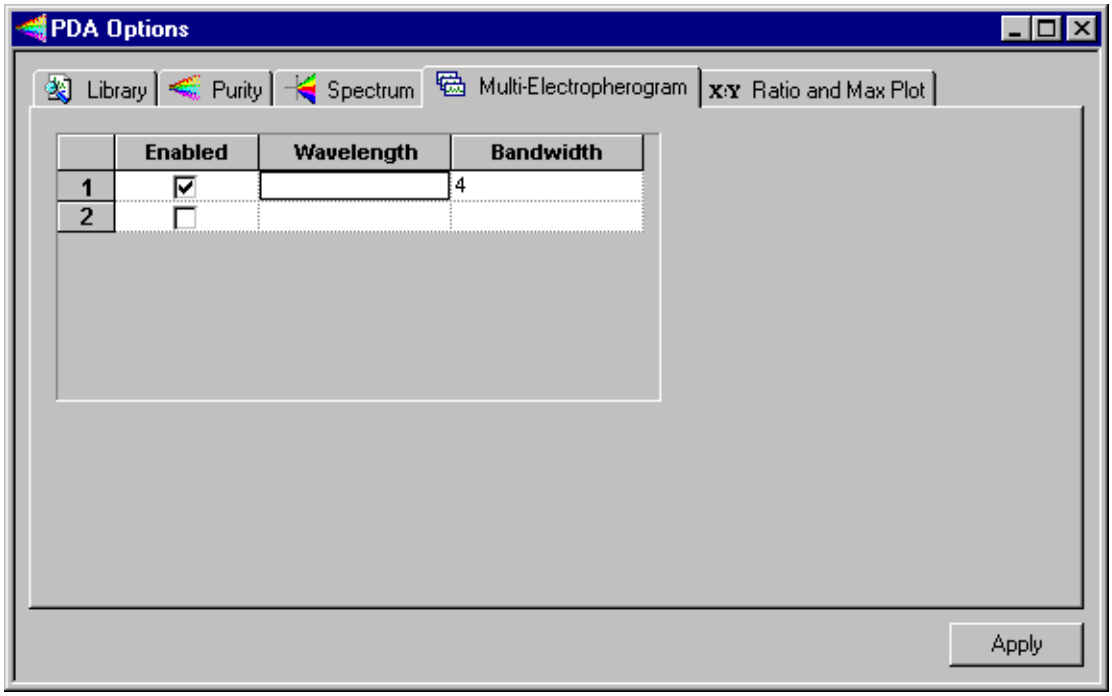
- Purity Calculations

Figure 16 PDA Options with Spectrum tab selected



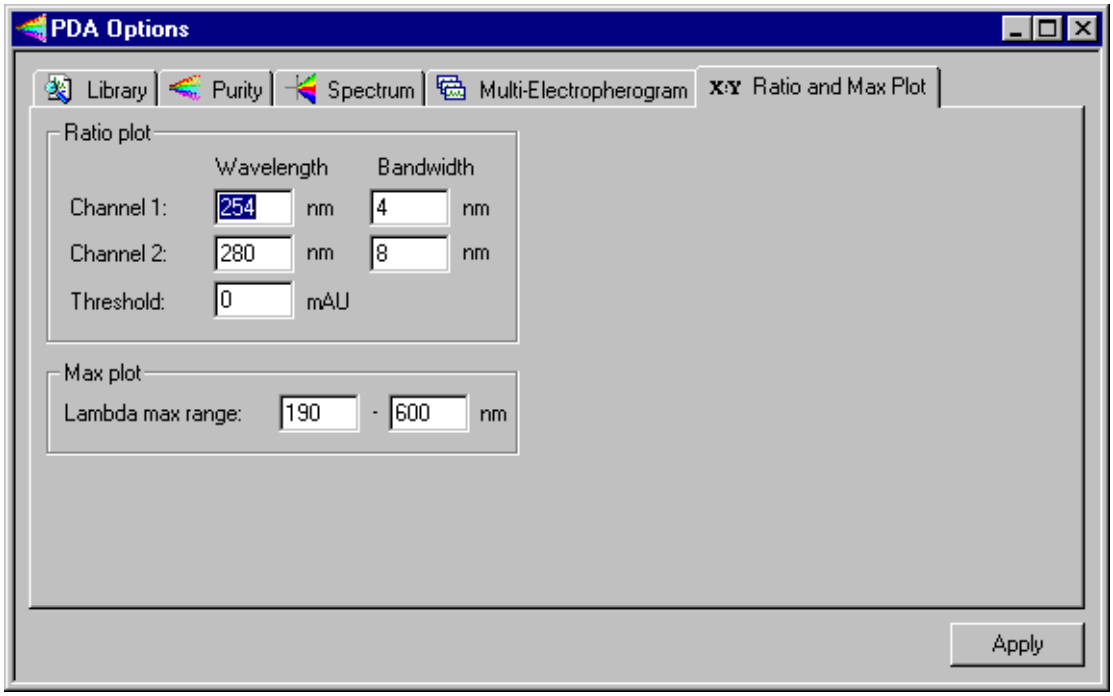
- Spectral Filtering

Figure 17 PDA Options with Multi-Electropherogram tab selected



- Enabled
- Wavelength
- Bandwidth

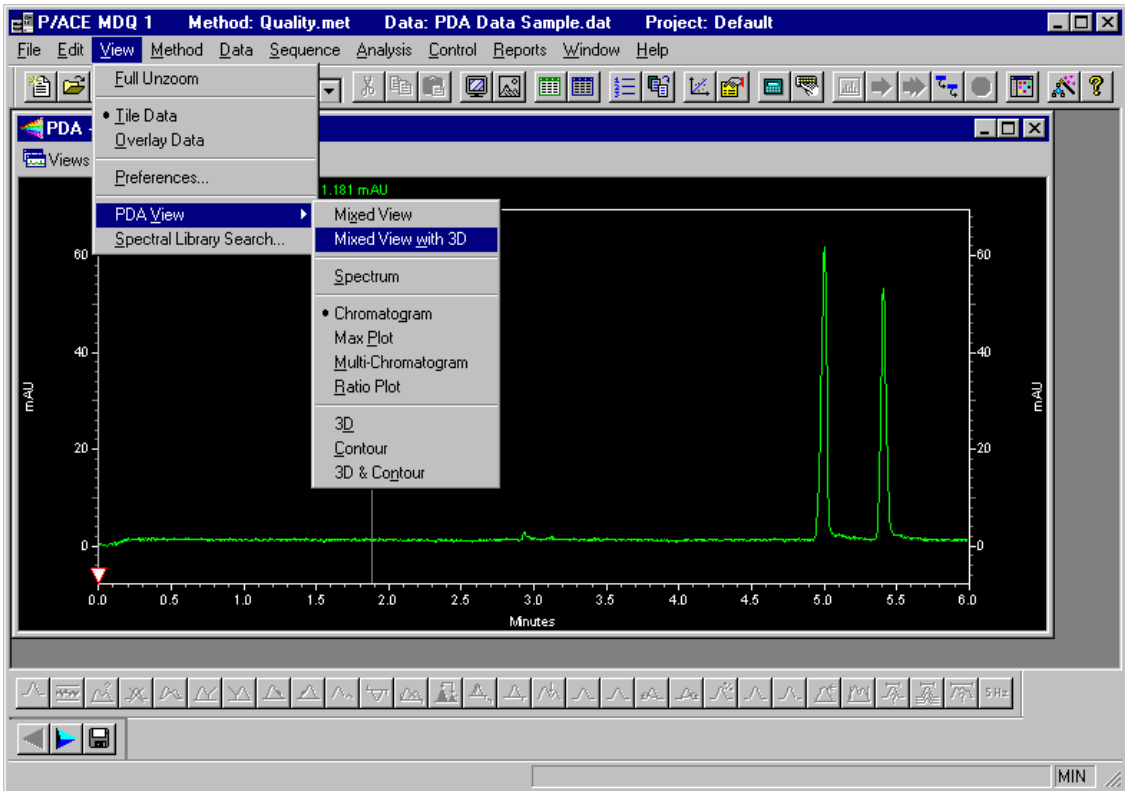
Figure 18 PDA Options with Ratio tab selected



- Wavelength
- Bandwidth

PDA Data Display

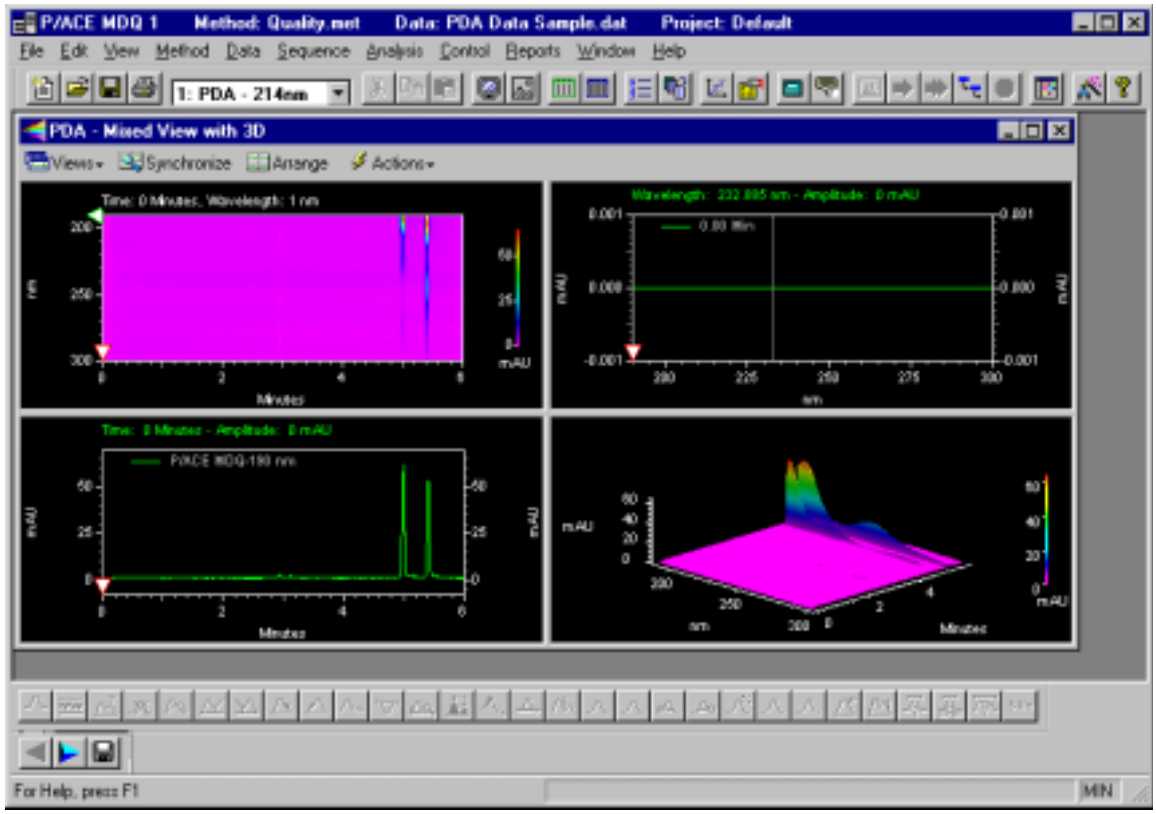
Figure 19 Instrument Window with PDA data file open; View menu open and PDA View selected



- Photo Diode Array data features
- PDA View

View Options

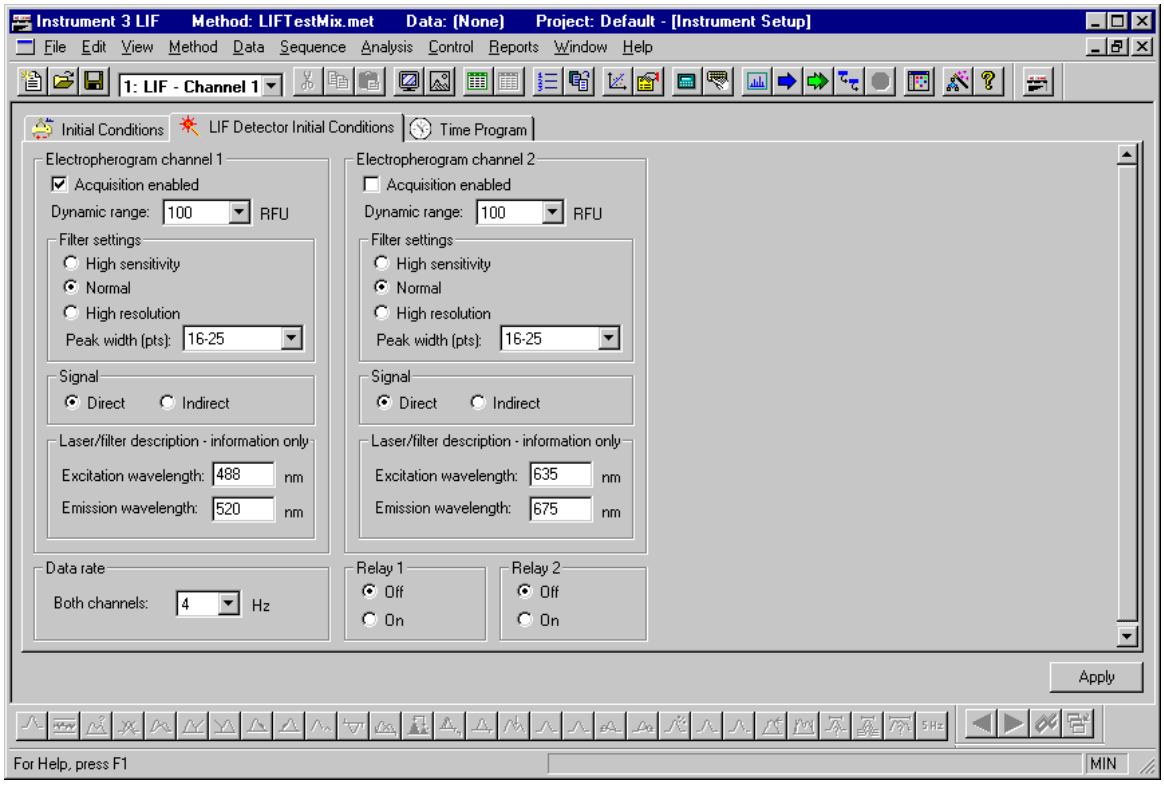
Figure 20 Photo Diode Array data



LIF Detector

LIF Initial Conditions

Figure 21 LIF Initial Conditions tab



Electropherogram Channels

- ❑ Dynamic range
- ❑ Filter Settings
- ❑ Peak width
- ❑ Signal

Laser/Filter Descriptions

- ❑ Excitation wavelength
- ❑ Emission wavelength

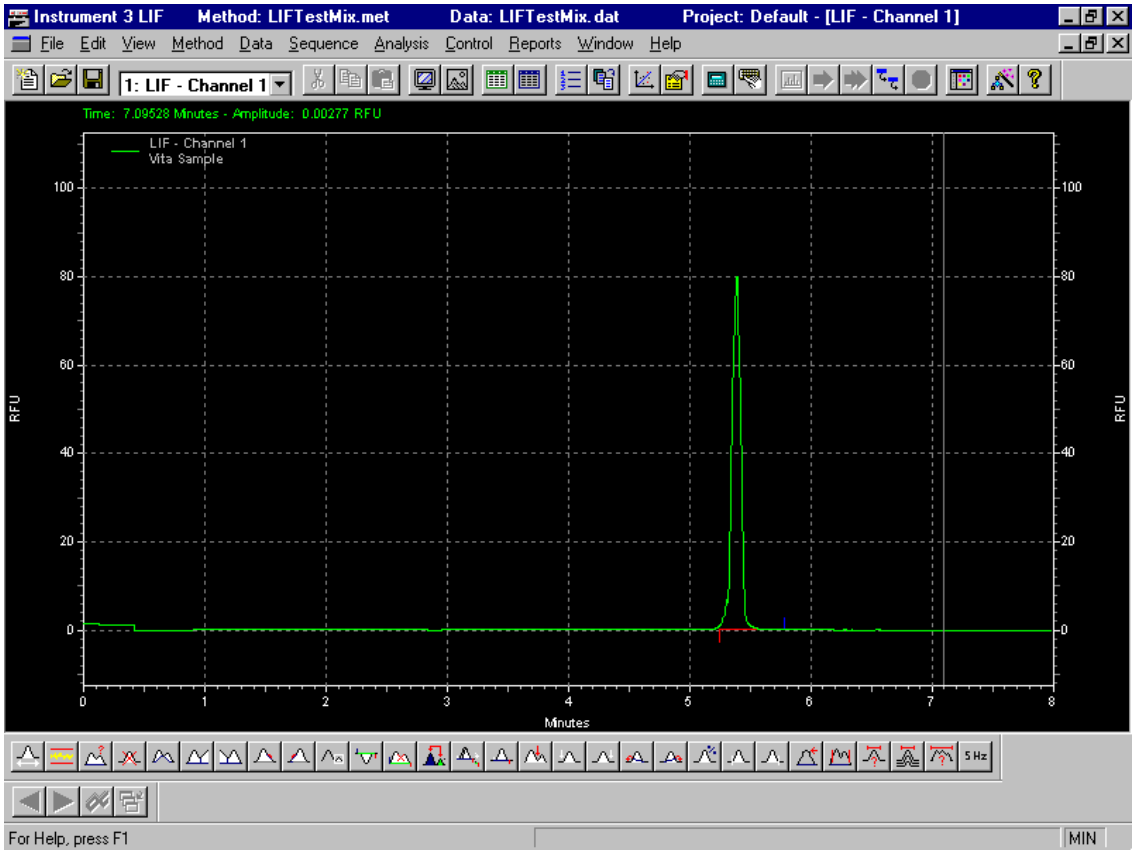
Data Rate

Relays

- ❑ On/Off

LIF Data Display

Figure 22 Instrument Window with LIF data file open; right mouse click menu open



LIF Calibration Wizard

- ❑ Accessing LIF Calibration Wizard

Figure 23 Instrument Configuration dialog box

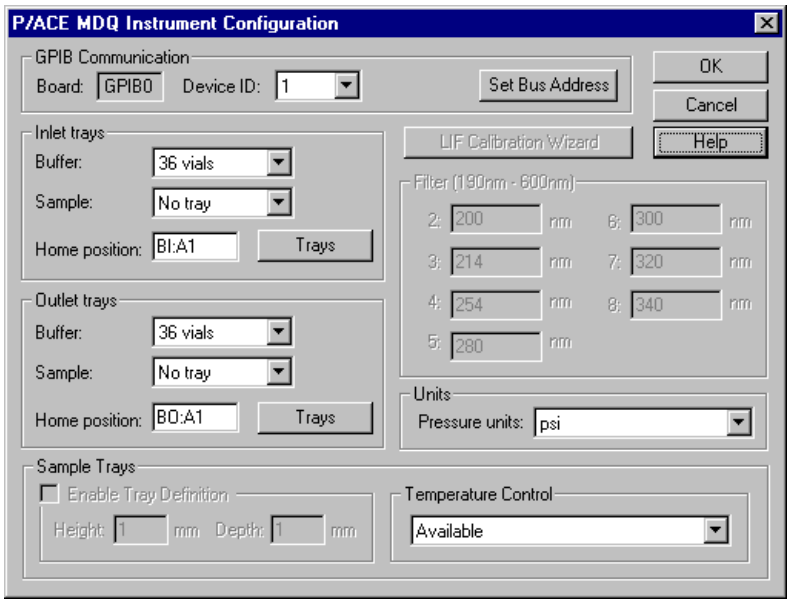


Figure 24 LIF Detector Calibration Wizard - Step 1

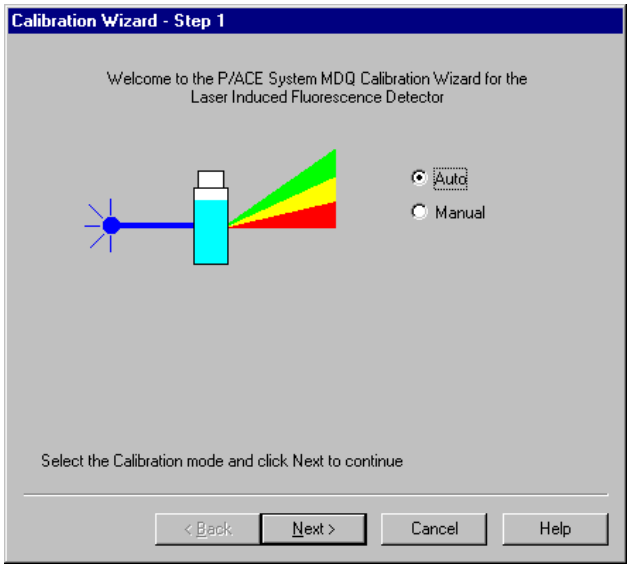


Figure 25 LIF Detector Calibration Wizard - Step 2

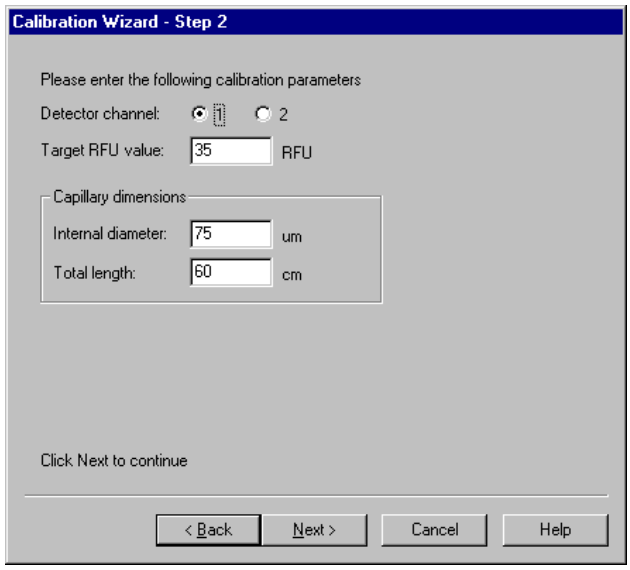
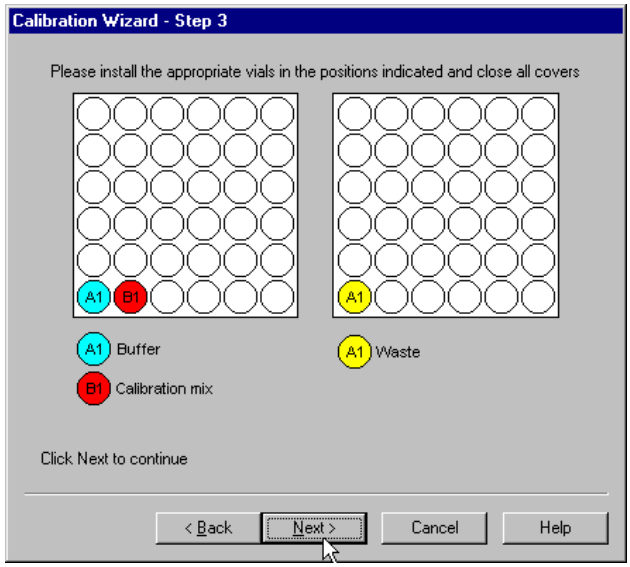


Figure 26 LIF Detector Calibration Wizard - Step 3



Summary

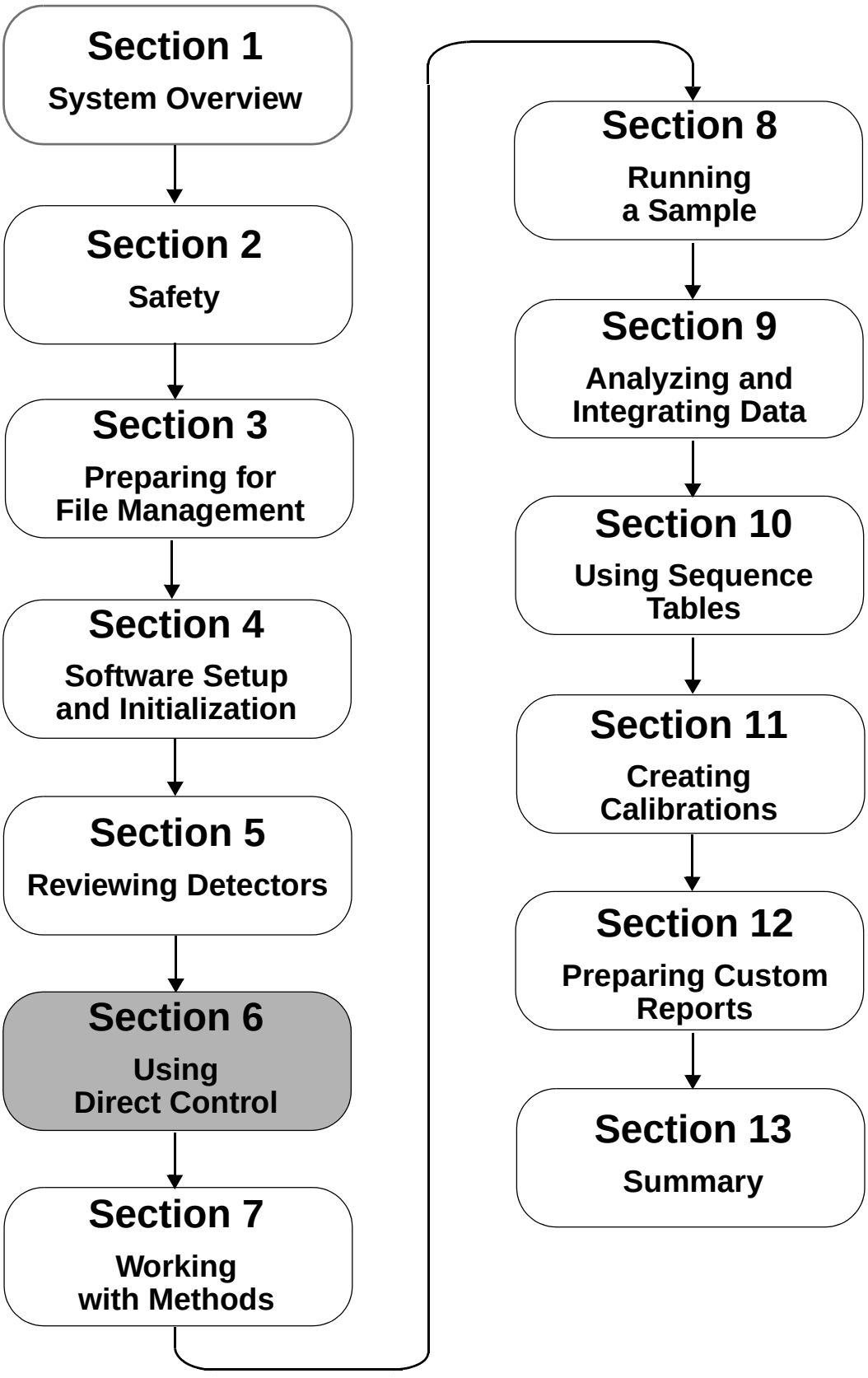
This completes the detector portion of the 32 Karat Software Basic Instrument Training. You are ready to use the Direct Control feature.

Section 6-Using Direct Control

Overview

This section covers the start up process and parameter control for P/ACE MDQ system. You will establish initial running conditions for each component. We will discuss:

- Accessing Direct Control
- Direct Control screens
- Controlling module parameters
- Skill Check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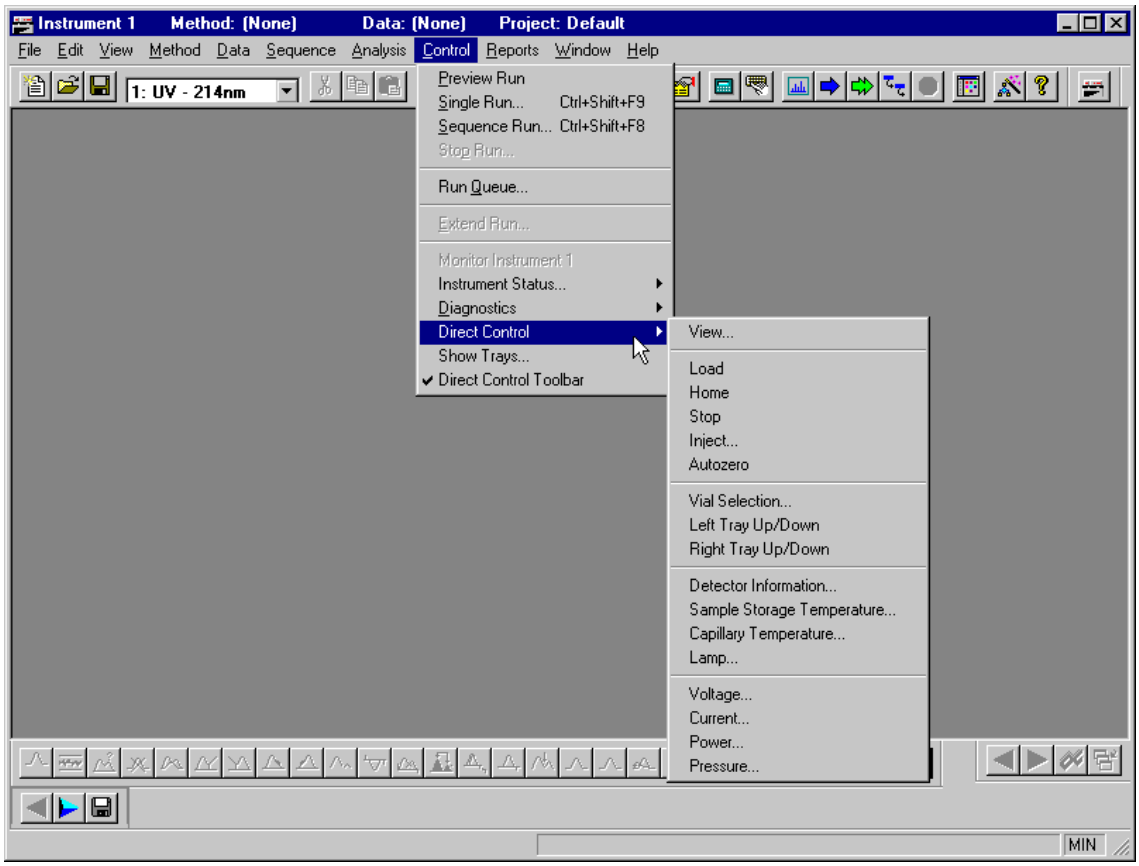
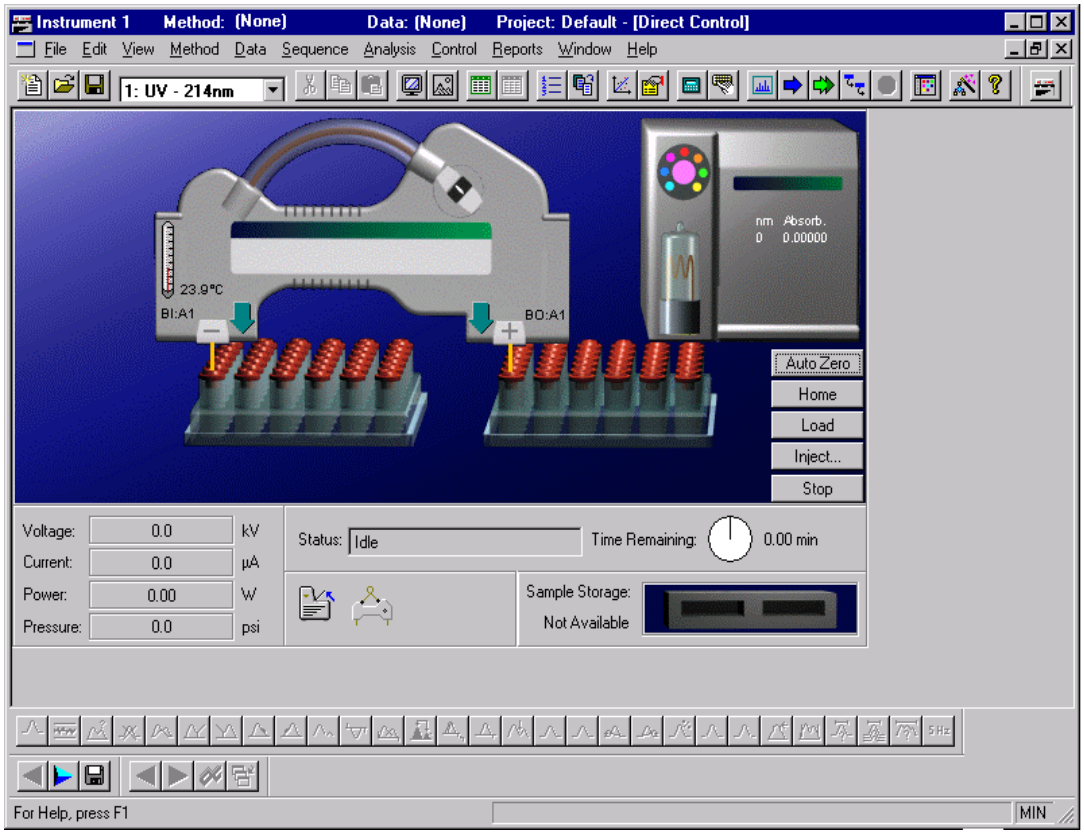
Accessing Direct Control

Figure 27 Instrument Window with Control | Direct Control selected



Using Direct Control

Figure 28 Direct Control Screen



Cartridge Coolant Temperature

- ❑ Set Temperature

Sample Storage Temperature

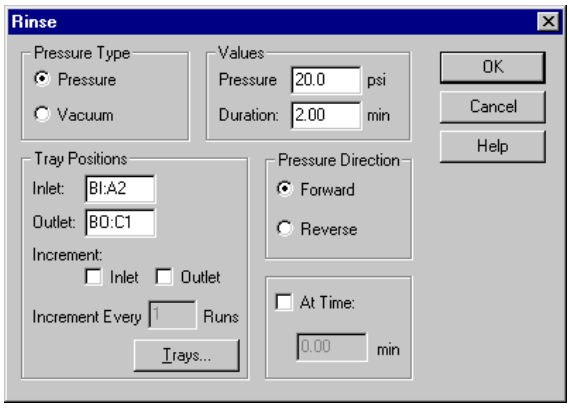
- ❑ Set Temperature

Capillary Information

- ❑ Capillary Description
- ❑ Capillary Lot Number

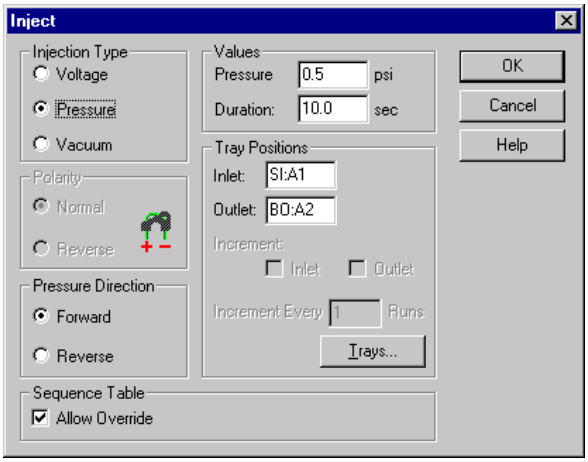
Rinse

Figure 29 Rinse dialog box



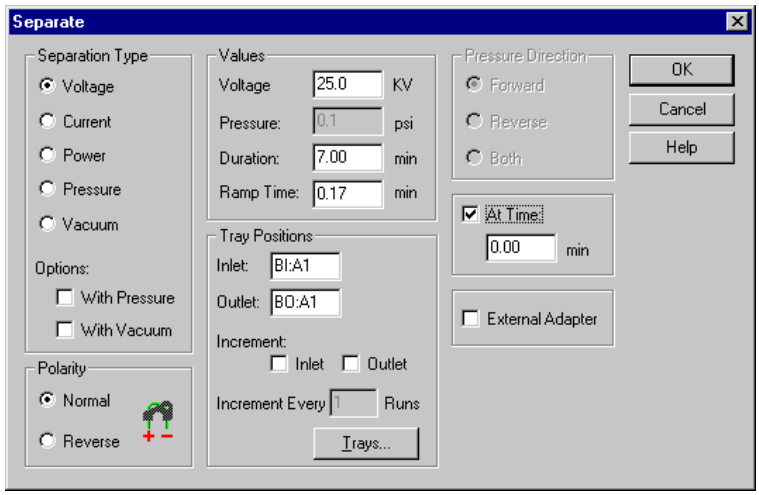
Inject

Figure 30 Inject dialog box



Separate

Figure 31 Separate dialog box



Detector Settings

Common Parameters

- ❑ Data Filters
- ❑ Peak Width
- ❑ Relays
- ❑ Detection Signal
- ❑ Data Acquisition

UV Detector Parameters

- ❑ Wavelength selection
- ❑ Data Rate
- ❑ Filter Positions

PDA Detector Parameters

- ❑ Channel data
- ❑ Scan Data
- ❑ Reference Channel
- ❑ Shutter

LIF Detector Parameters

- ❑ Electropherogram Channels 1 and 2
- ❑ Dynamic Range
- ❑ Data Rate
- ❑ Laser / Filter Description

Lamp Status

- ❑ On/Off

Laser Status

- ❑ On/Off

Tray Position

- ❑ Graphical display

Voltage Settings

- ❑ Voltage
- ❑ Duration
- ❑ Ramp Time
- ❑ Voltage Max
- ❑ Current Max
- ❑ Tray Positions
- ❑ External Adapter
- ❑ Polarity
- ❑ Pressure

Current Settings

- ❑ Current
- ❑ Duration
- ❑ Ramp Time
- ❑ Voltage Max
- ❑ Current Max
- ❑ Tray Positions
- ❑ External Adapter
- ❑ Polarity
- ❑ Pressure

Power Settings

- ❑ Power
- ❑ Duration
- ❑ Ramp Time
- ❑ Voltage Max
- ❑ Current Max

- ❑ Tray Positions
- ❑ External Adapter
- ❑ Polarity
- ❑ Pressure

Pressure

- ❑ Pressure / Vacuum
- ❑ Duration
- ❑ Tray Positions
- ❑ Direction
- ❑ Pressure Type

Time Remaining

- ❑ Graphical display

Status

Figure 32 Instrument Window with Control | Instrument Status | View selected

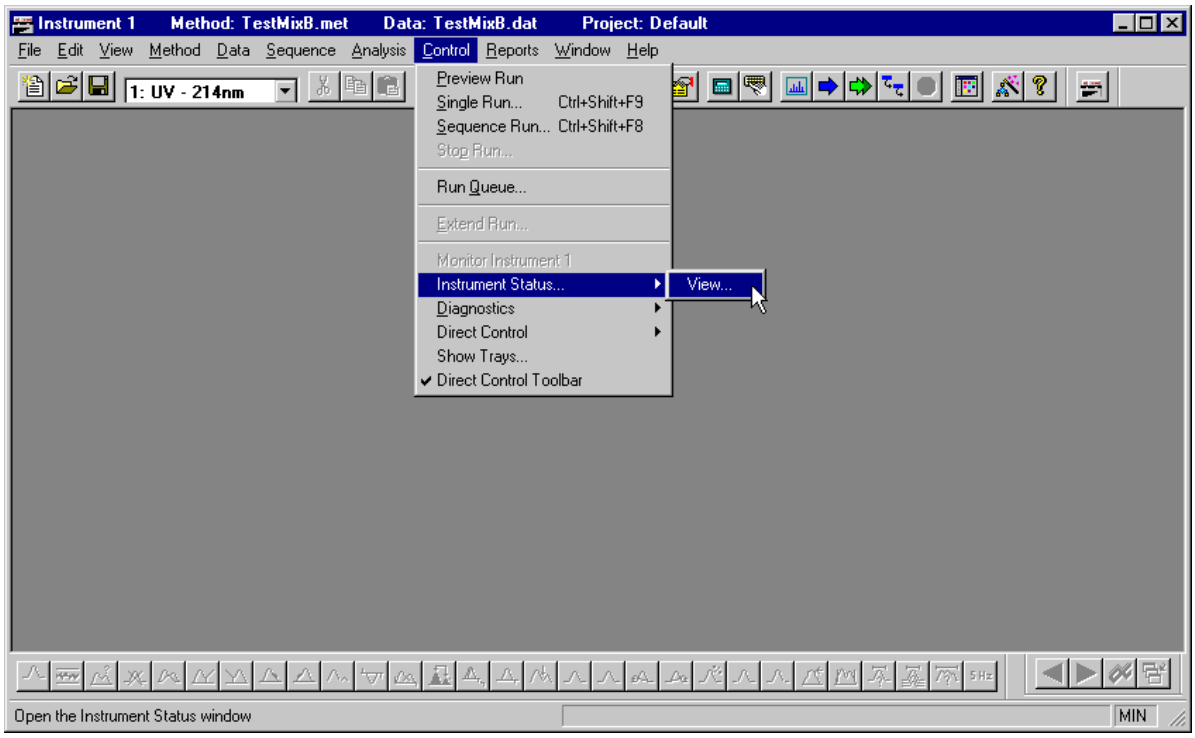
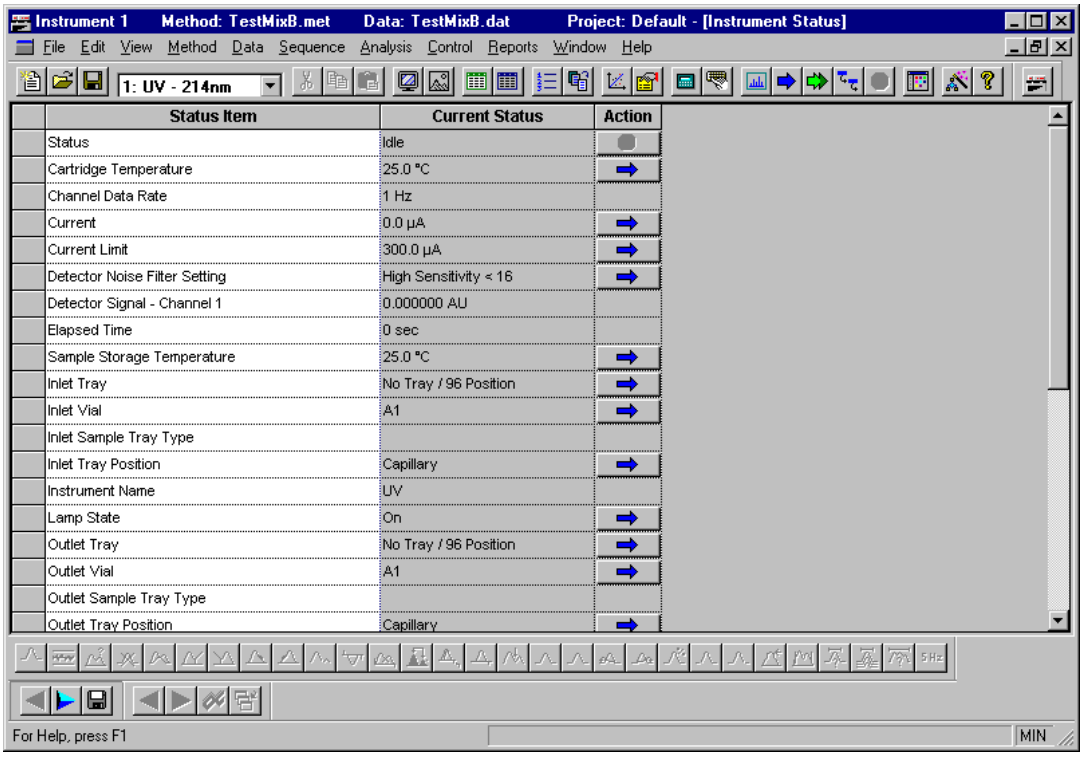


Figure 33 Status Window



- Status Item
- Current Status
- Action

Skill Check

Upon completion of this section, you should be able to do the following:

1. Access Direct Control.
2. Program and run a rinse.
3. Program and run an injection.
4. Program and run a separation.

Summary

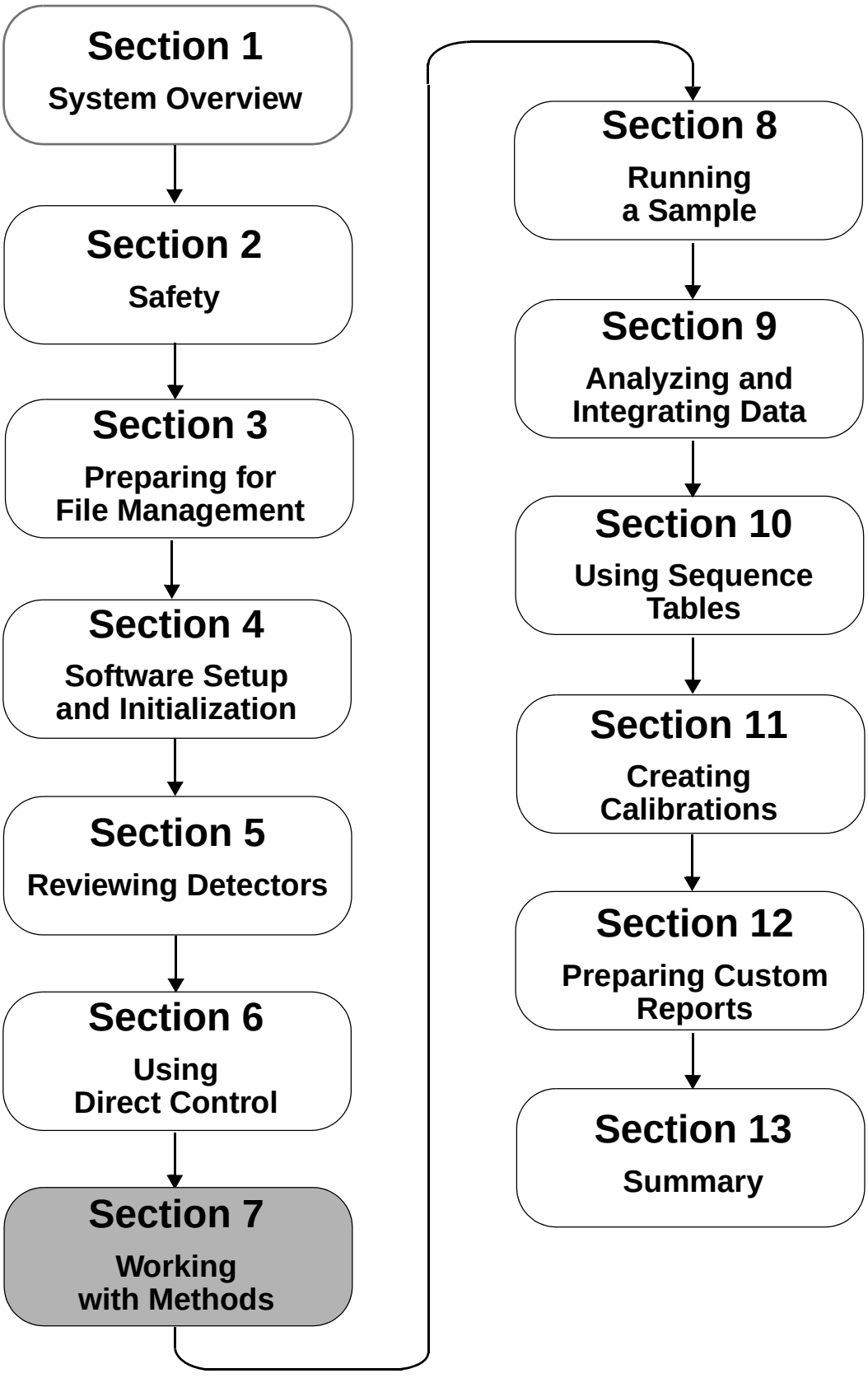
This completes the Direct Control portion of 32 Karat Software Basic Instrument Training. When the system finishes equilibrating, you will prepare a method to run.

Section 7-Working with Methods

Overview

In this section we will explain procedures for building and editing a method. A method automates all of the hardware functions as well as data collection. (Later we will talk about editing, analysis parameters, and report generation). In this section, we will discuss:

- Method Wizard
- Creating a Method
- Saving a Method
- Editing a Method
- Printing a Method
- Other Method Properties
- Skill Check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Using the Method Wizard

Figure 34 Method Window dialog box

- Creating a new method
- Modifying the current method
- Modifying a method on disk

Creating a Method

Figure 35 Instrument Window with File | Method | New selected

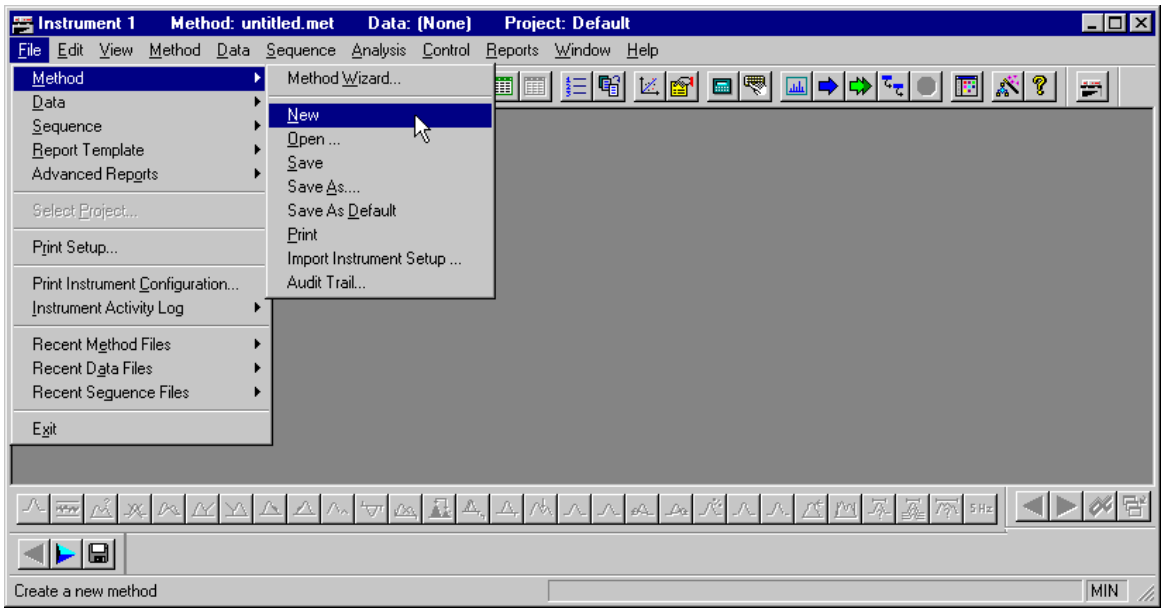
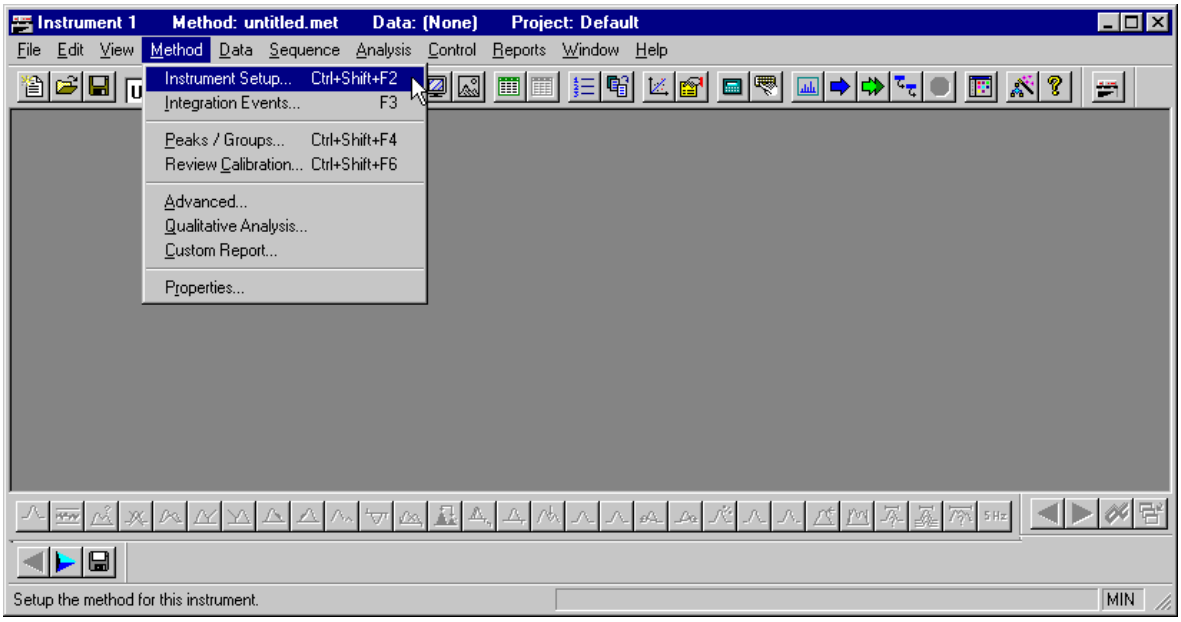
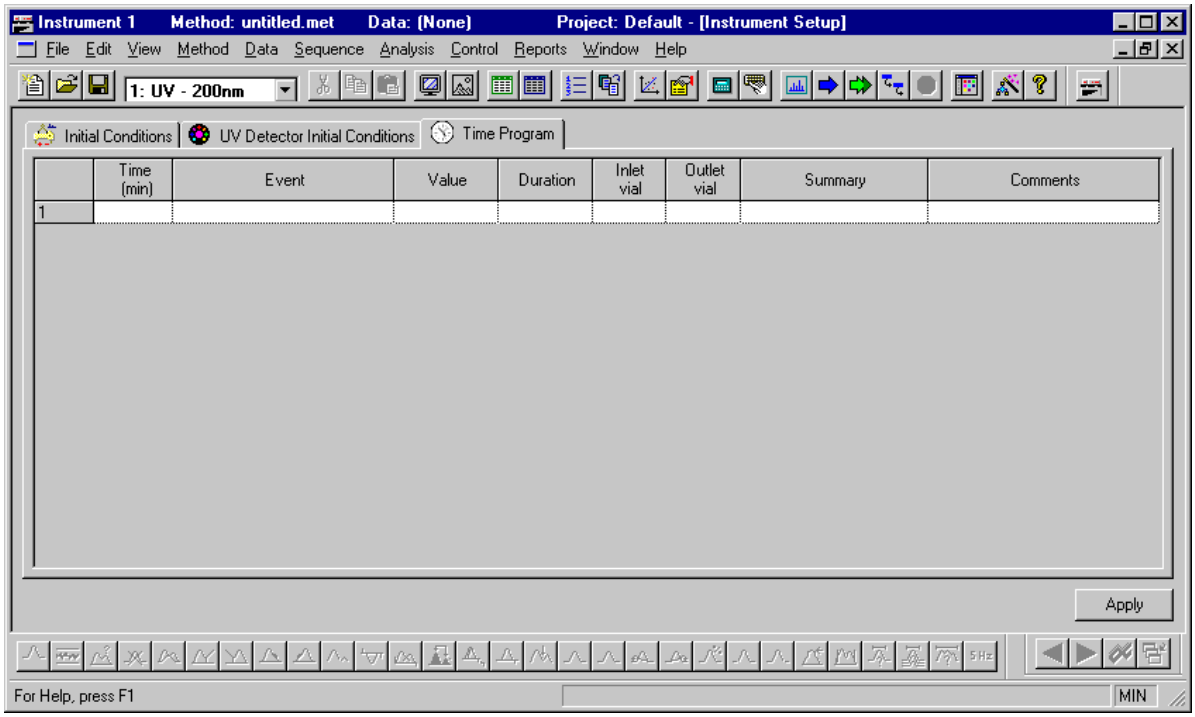


Figure 36 Instrument Window with Method | Instrument Setup selected



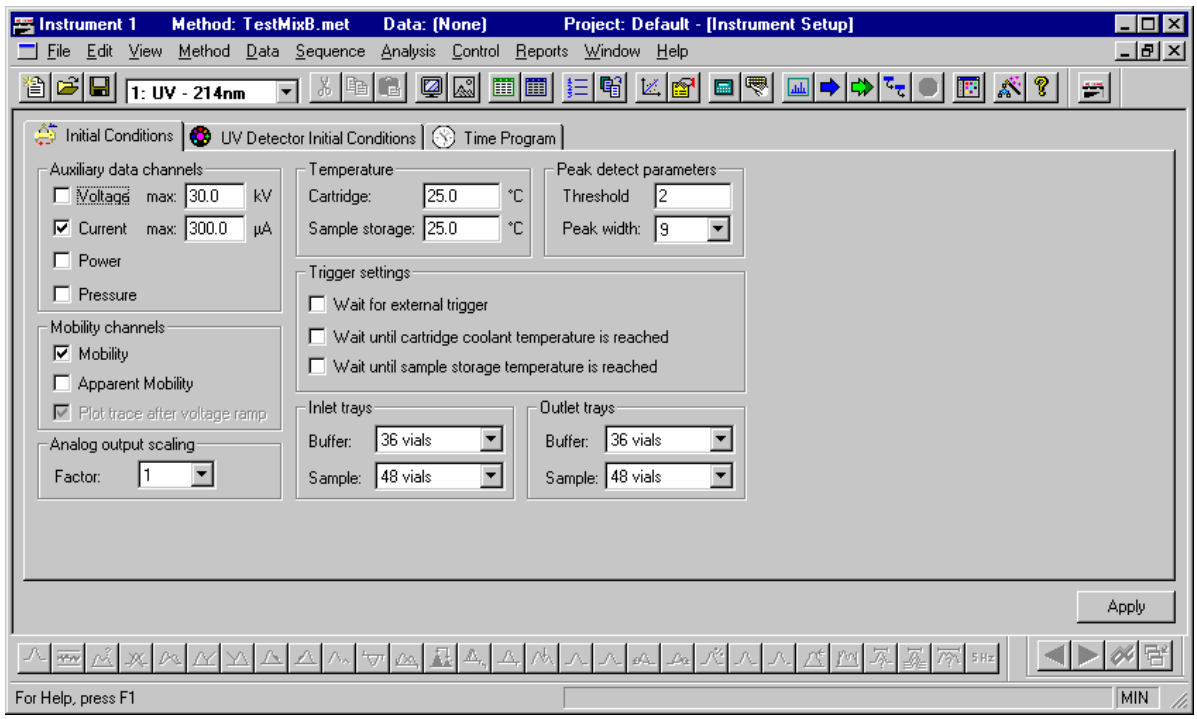
Instrument Setup

Figure 37 Instrument Setup Window with Time Program tab



Initial Conditions Tabs

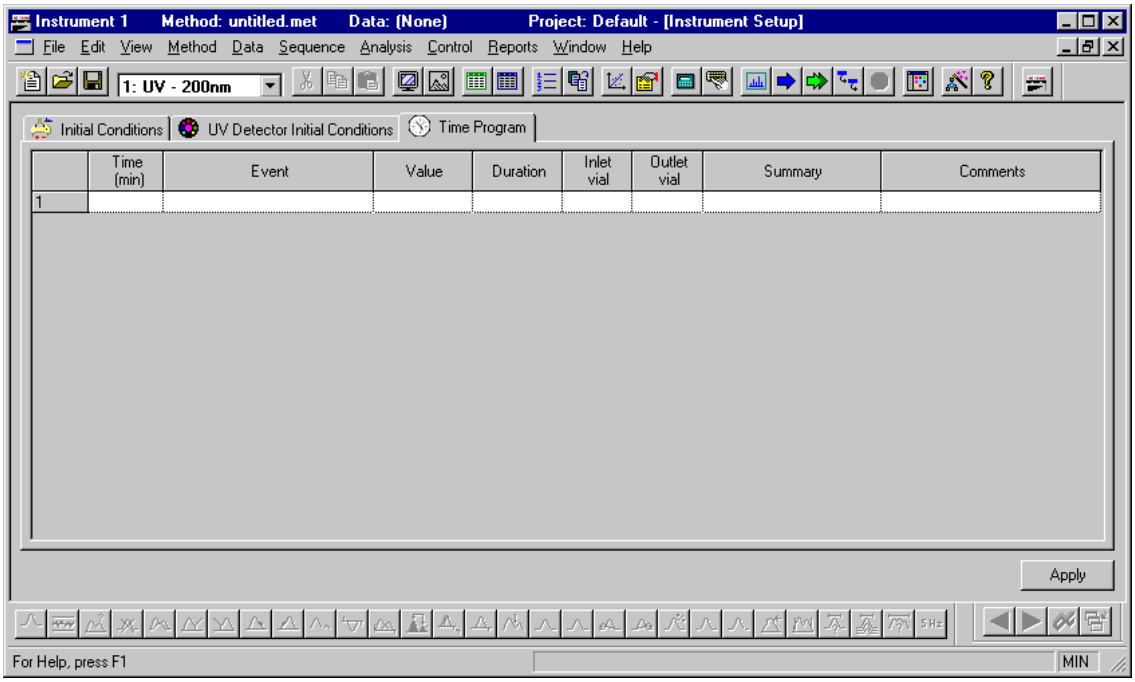
Figure 38 Initial Conditions tab



- ❑ Auxiliary data channels
- ❑ Mobility Channels
- ❑ Temperature
- ❑ Peak detect parameters
- ❑ Trigger settings
- ❑ Tray type selection
- ❑ Analog output scaling

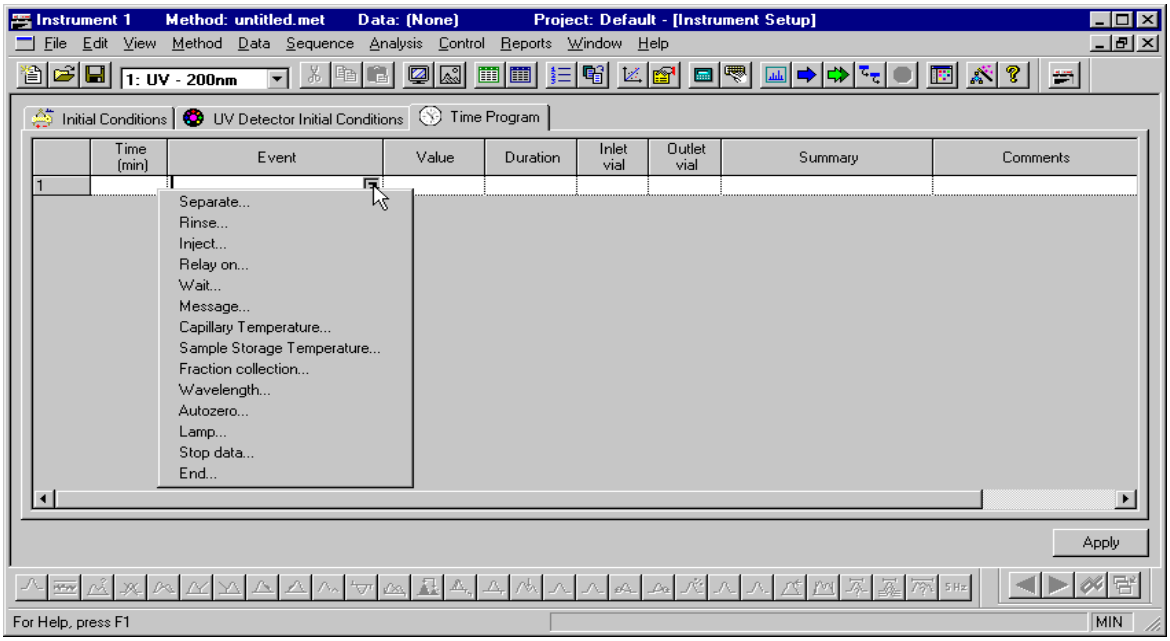
Time Programming

Figure 39 Time Programming tab



- ❑ Time
- ❑ Event
- ❑ Value
- ❑ Duration
- ❑ Inlet Vial/Outlet Vial
- ❑ Summary
- ❑ Comments

Figure 40 Time Program tab with available Event list displayed



Events

- ❑ Rinse
- ❑ Inject
- ❑ Separate

UV Detector

- ❑ Associated Event dialog boxes

PDA Detector

- ❑ Associated Event dialog boxes

LIF Detector

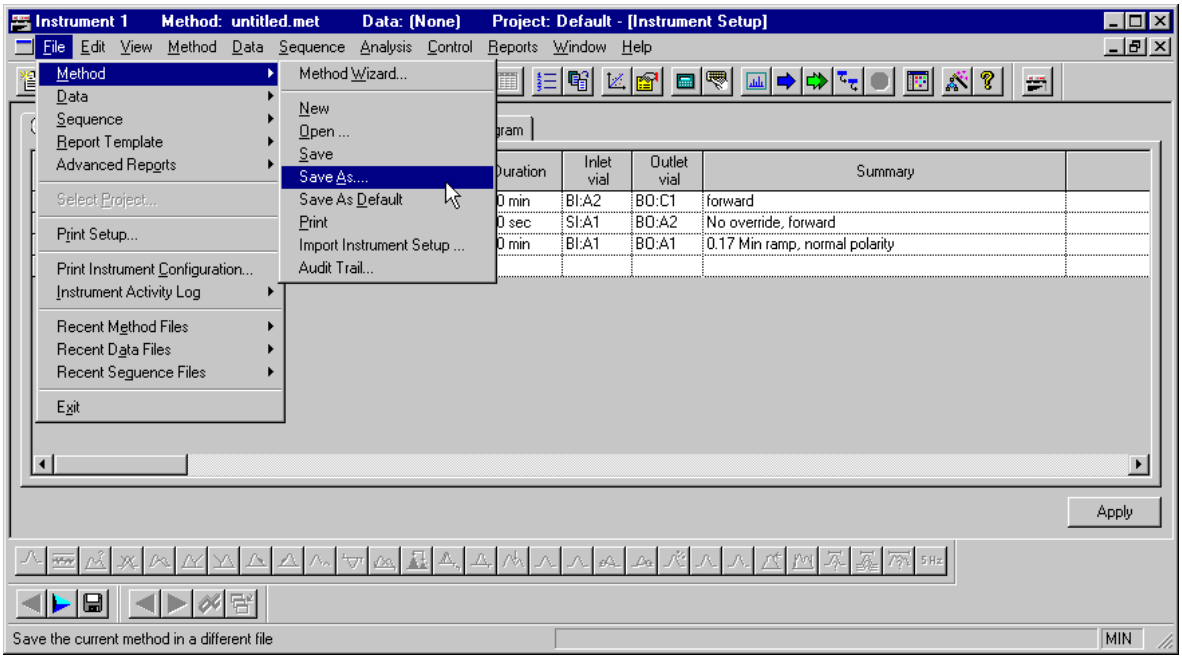
- ❑ Associated Event dialog boxes

External Detector

- ❑ Selecting an External Detector Adapter

Saving a Method

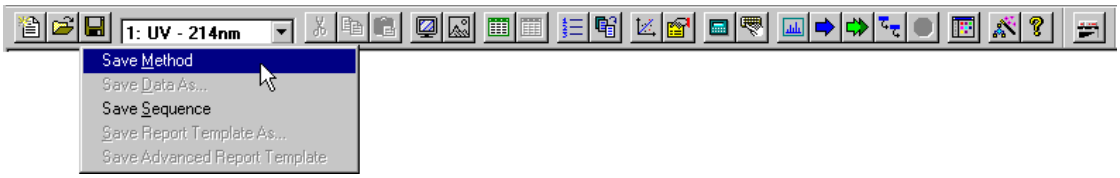
Figure 41 Instrument Window with File | Method | Save selected



- ❑ Save Method As

- ❑ Save As Default

Figure 42 Save icon with Method selected



- ❑ Naming and saving a new method

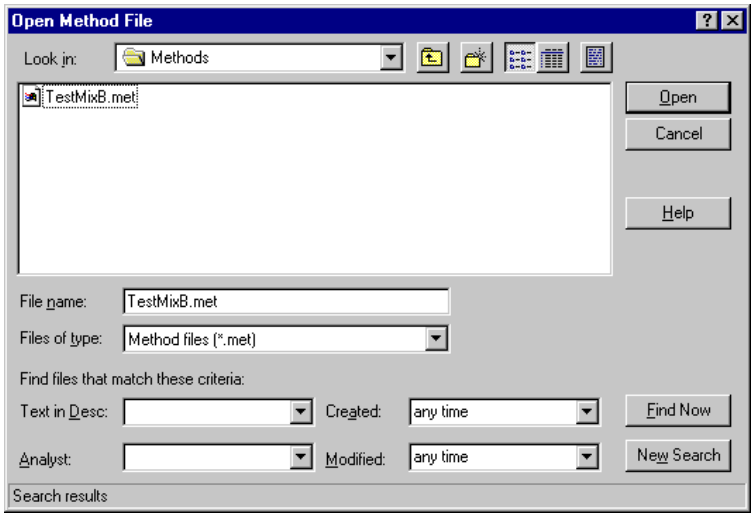
- ❑ Saving an existing method

Editing a Method

- ❑ Method Wizard

- ❑ Open method

Figure 43 Open Method File dialog box

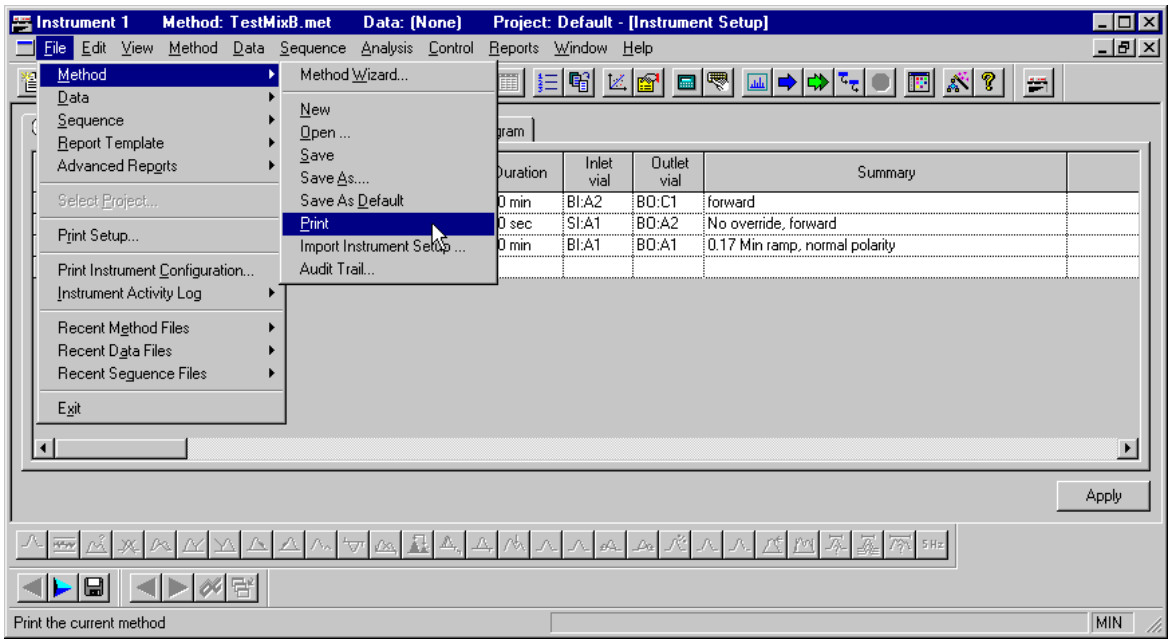


- ❑ Make changes

- ❑ Save Method or Save Method As

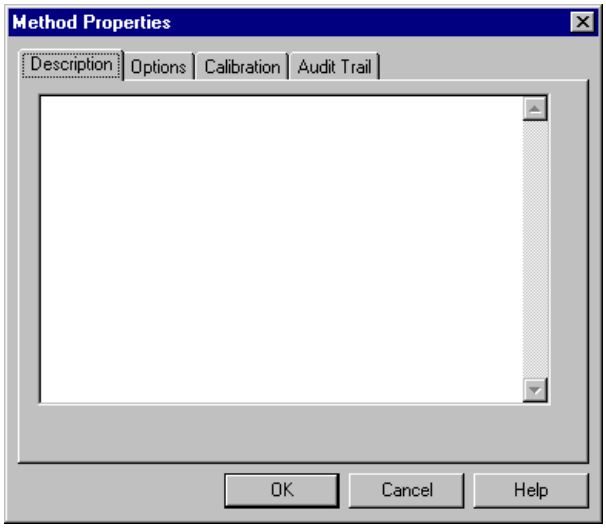
Printing a Method

Figure 44 Instrument Window with File | Method | Print selected



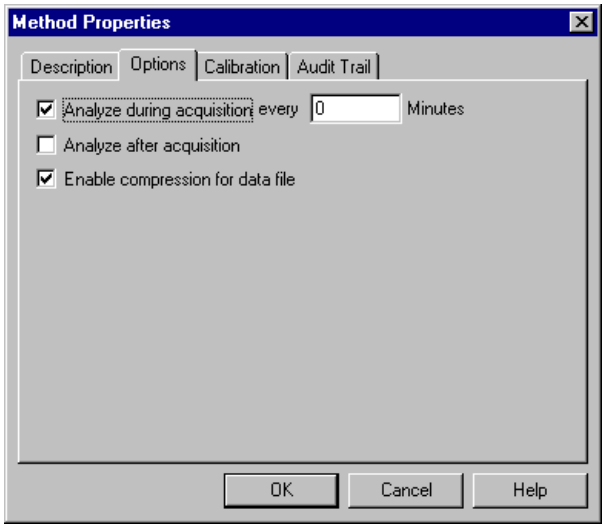
Other Method Functions Properties

Figure 45 Description tab



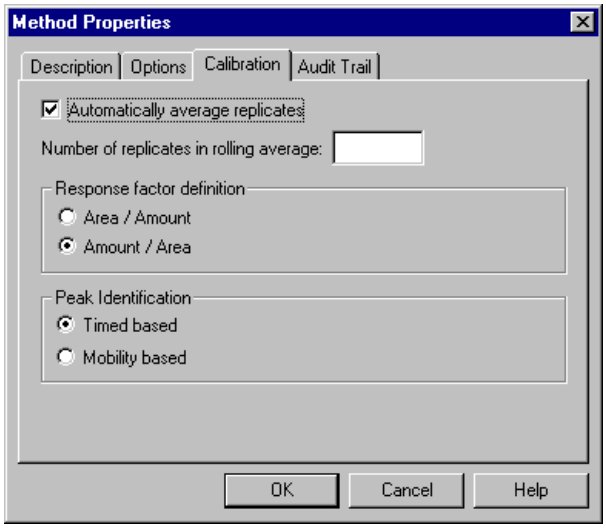
- Method Description

Figure 46 Options tab



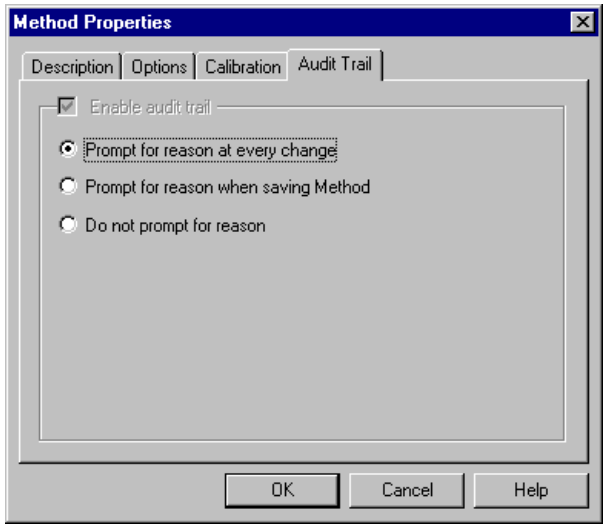
- Analysis
- Data Compression

Figure 47 Calibration tab



- Automatically Average Replicates
- Response Factor Definition
- Peak Identification Options

Figure 48 Audit Trail tab



- Audit Trail

Skill Check

Upon completion of this section, you should be able to do the following:

1. Create a new method for a constant voltage separation in a 60 cm, 75 µm I.D. capillary.
2. Prepare the following 2 mL vials for inlet and outlet vial positions and for rinses:

Vial	Contents	Volume	Position
Rinse	Run Buffer A	2 mL	BI:B1
Injection	Run Buffer A	1 mL	BO:B1
Separation	Run Buffer A	2 mL	BI:A1
Separation	Run Buffer A	2 mL	BO:A1
Waste	N/A	0	BO:A3

S = Sample; B = Buffer

I = Inlet; O = Outlet

A1 through F6 indicate Vial Positions

3. For UV and PDA detectors, fill one 2 mL vial with Beckman Coulter Test Mix B and place in the SI:A1 position. If you are using an LIF detector, fill the 2 mL vial with Beckman Coulter LIF Detector Test Mix. (Prepare LIF Detector Test Mix according to the Test Mix directions.)
4. Set the initial temperature to 23°C.
5. Program an un-timed pre-rinse (with a duration of at least two minutes at 20-30 psi) of Run Buffer A (BI:B1) to the waste vial (BO:A3).
6. Program a 10 second forward pressure injection of Beckman Coulter Test Mix (SI:A1) at 0.5 psi to the injection buffer vial (BO:B1).
7. Program a 30.0 kV constant voltage separation using a 0.17 minute ramp time and a duration of 6.0 minutes. Select the At Time check box and enter 0.00 minutes.
8. If you are using a UV detector, set the wavelength to 214 nm. If you are using a PDA, set the wavelength to 214 nm with a 10 nm bandwidth. If you are using an LIF detector make sure that the appropriate filters are in place.
9. Save the method you have created as TestMixB.met.

Summary

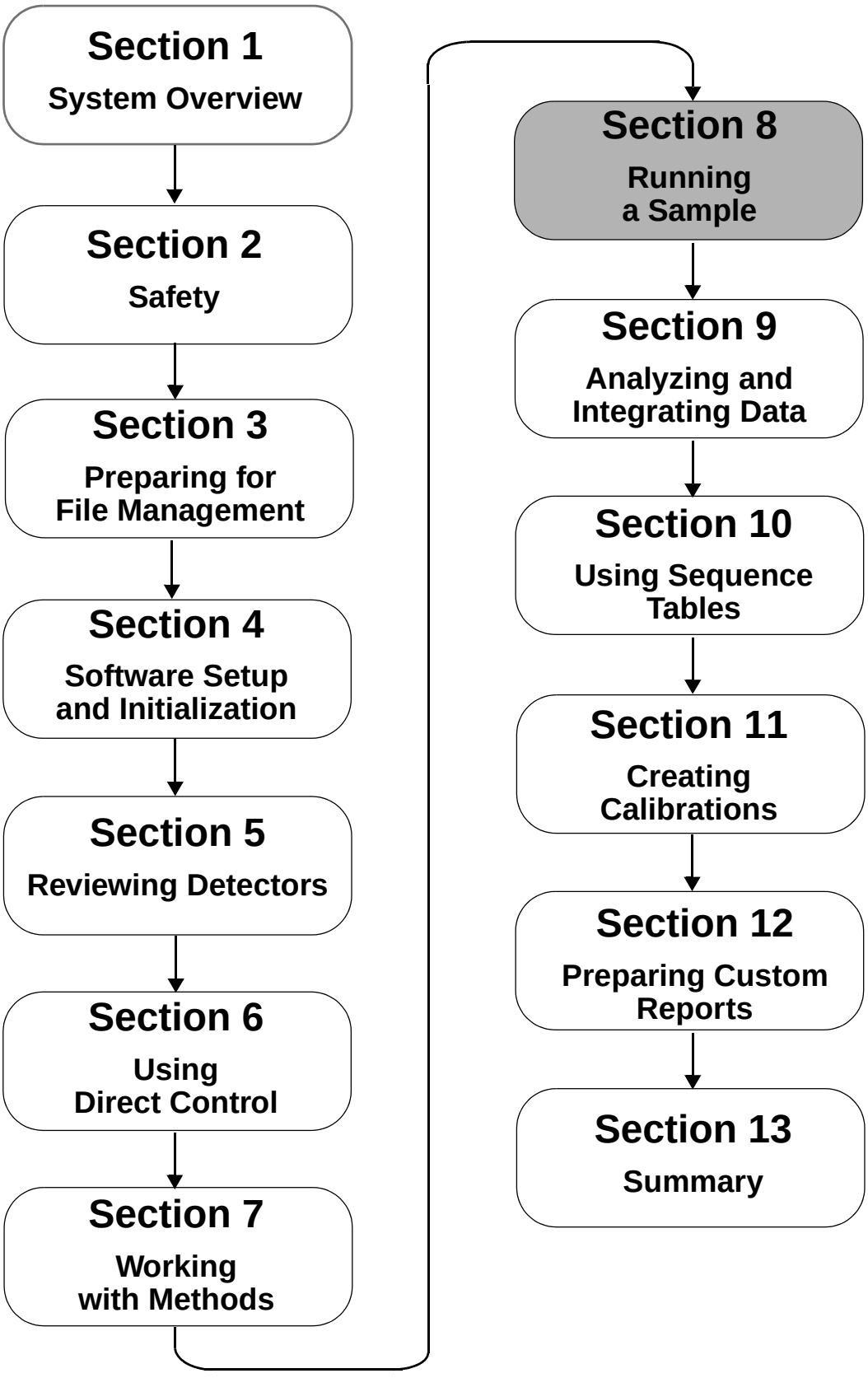
This completes the methods development portion of the 32 Karat Software Basic Instrument Training. We are ready to run an actual separation.

Section 8-Running A Sample

Overview

We will now use the method you prepared in the previous lesson to generate an electropherogram of Beckman Coulter Test Mix. We will discuss:

- Running a Single Sample
- Stopping / Aborting Method
- Data Display
- Skill Check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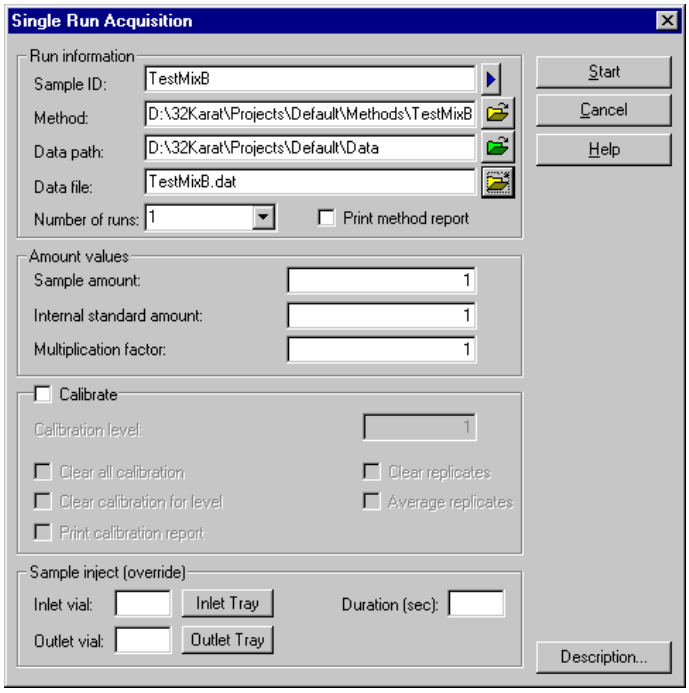
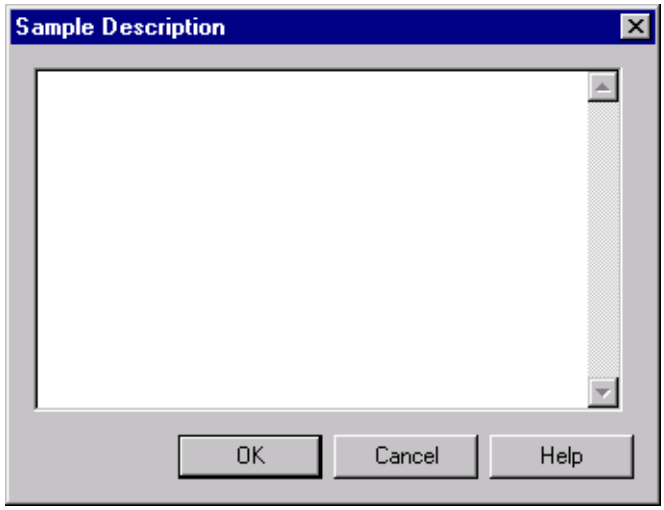
Running a Single Sample

Figure 49 Single Run Acquisition dialog box



- Sample ID
- Method
- Data path
- Data file
- Description

Figure 50 Sample Description dialog box



- ❑ Start

Stopping / Aborting Method

- ❑ Stop Run

- ❑ Abort Run

Displaying Data

Figure 51 Instrument Window with *TestMixB.dat* open

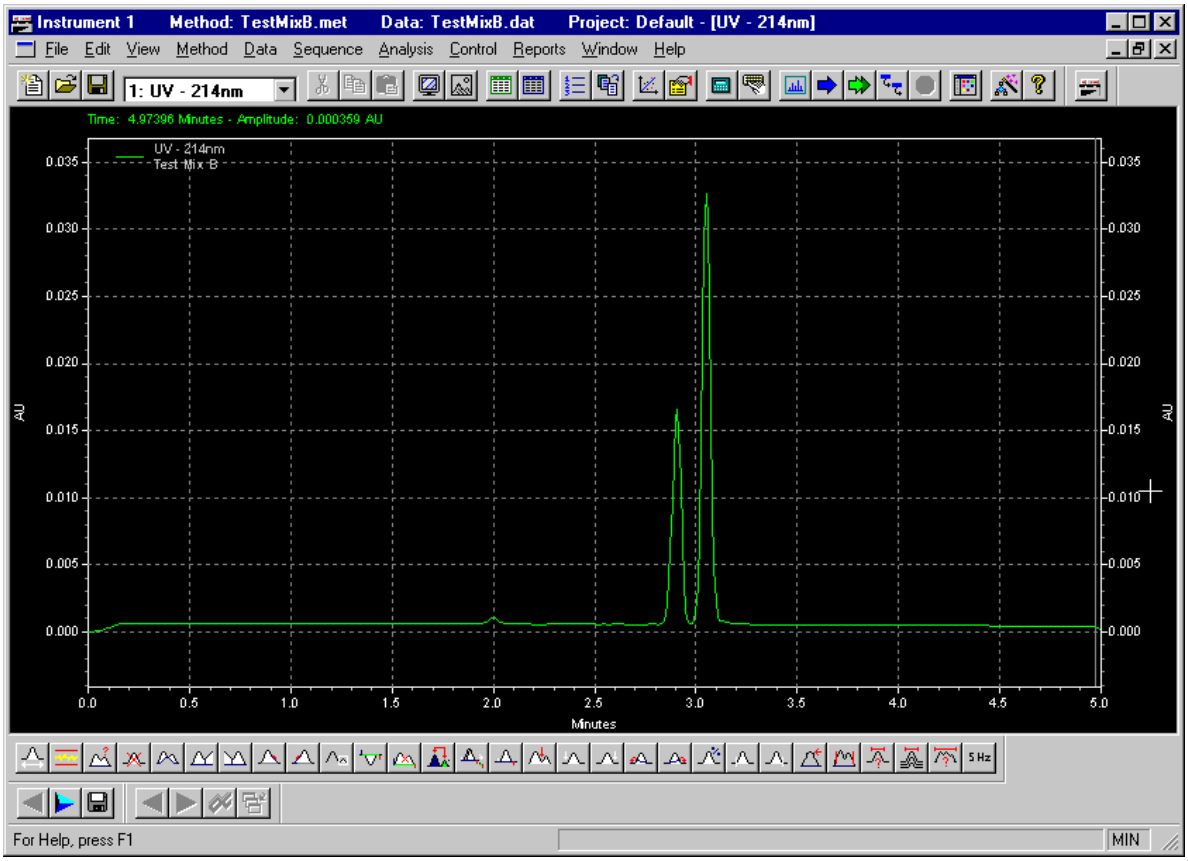
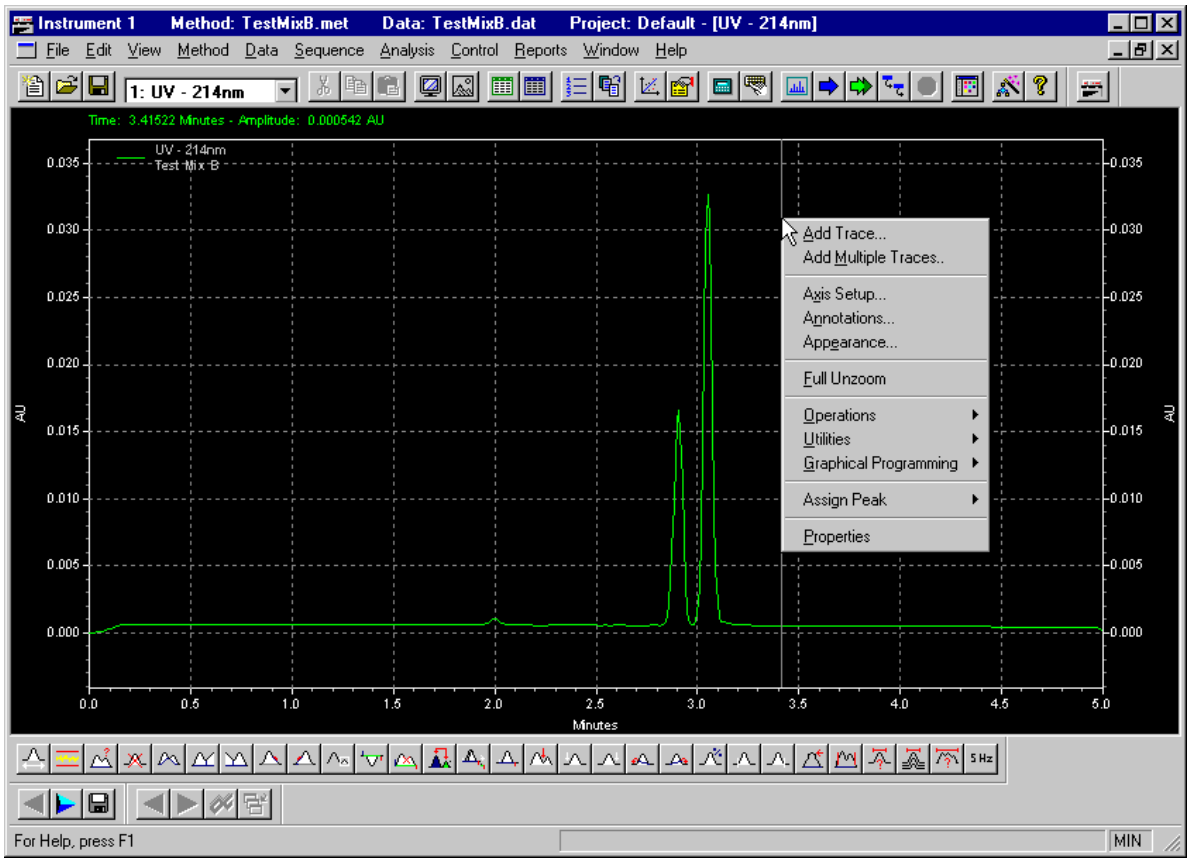
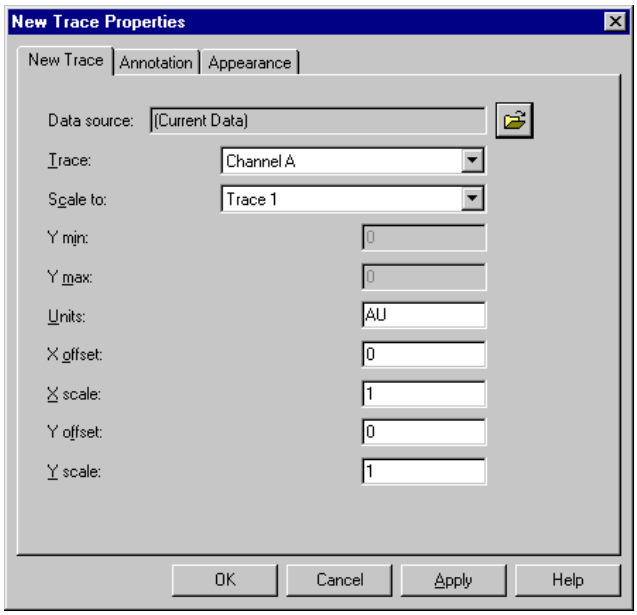


Figure 52 Instrument Window with data file open and right mouse click menu open



Add Trace

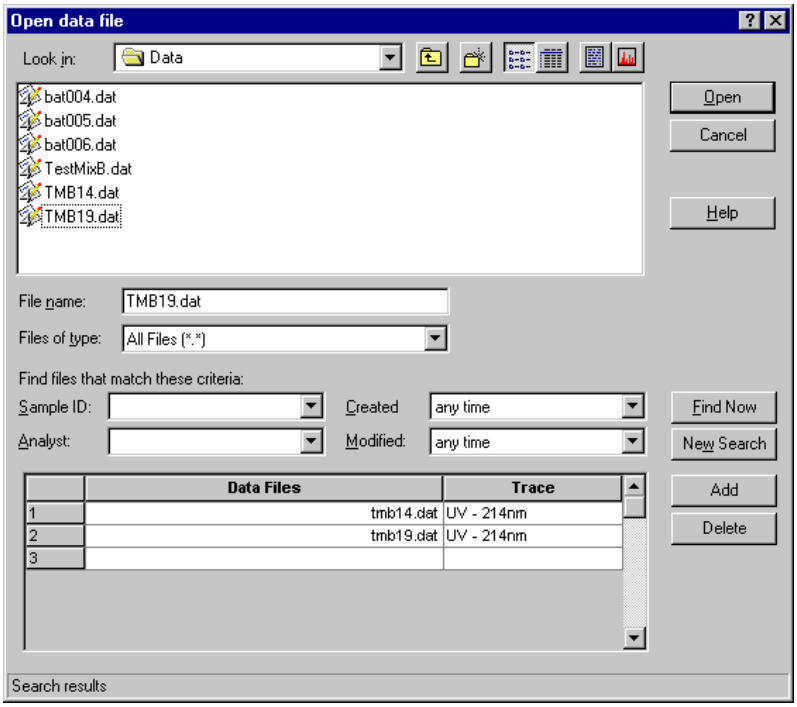
Figure 53 New Trace Properties dialog box



- New Trace
- Annotation
- Appearance

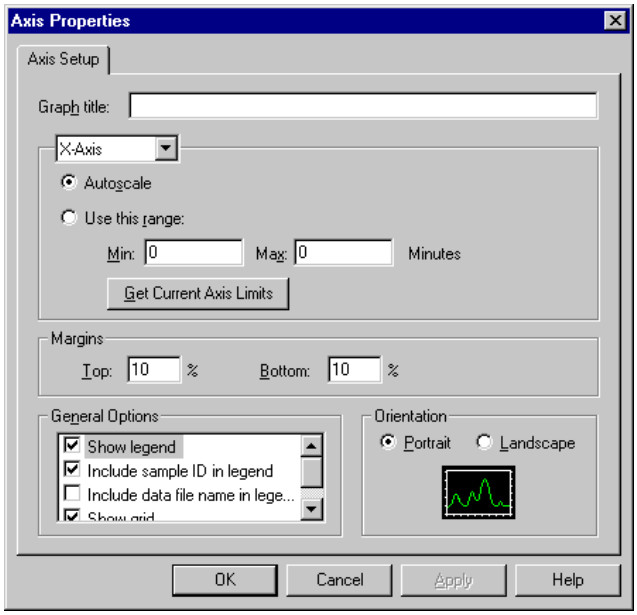
Add Multiple Traces

Figure 54 Open Data File dialog box



Axis Setup

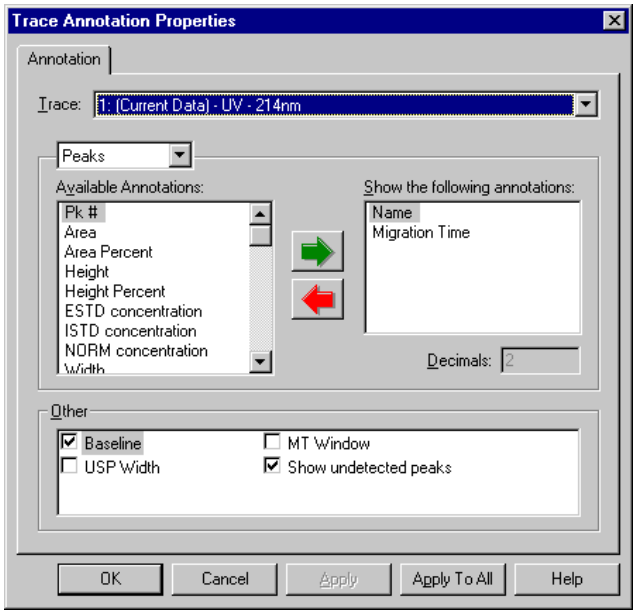
Figure 55 Axis Properties Setup dialog box



- Axis Setup
- Graph Title
- Autoscale
- Range
- Margins
- General Options
- Orientation

Annotations

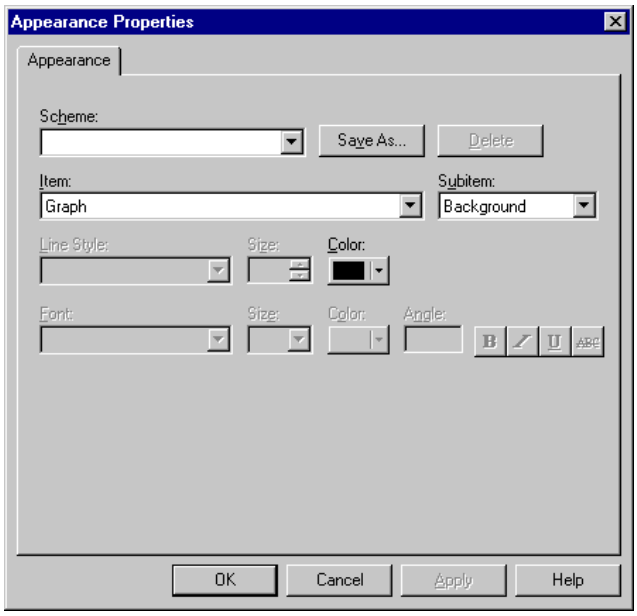
Figure 56 Trace Annotation Properties dialog box



- Traces
- Available Annotations list box
- Other options

Appearance

Figure 57 Appearance Properties dialog box

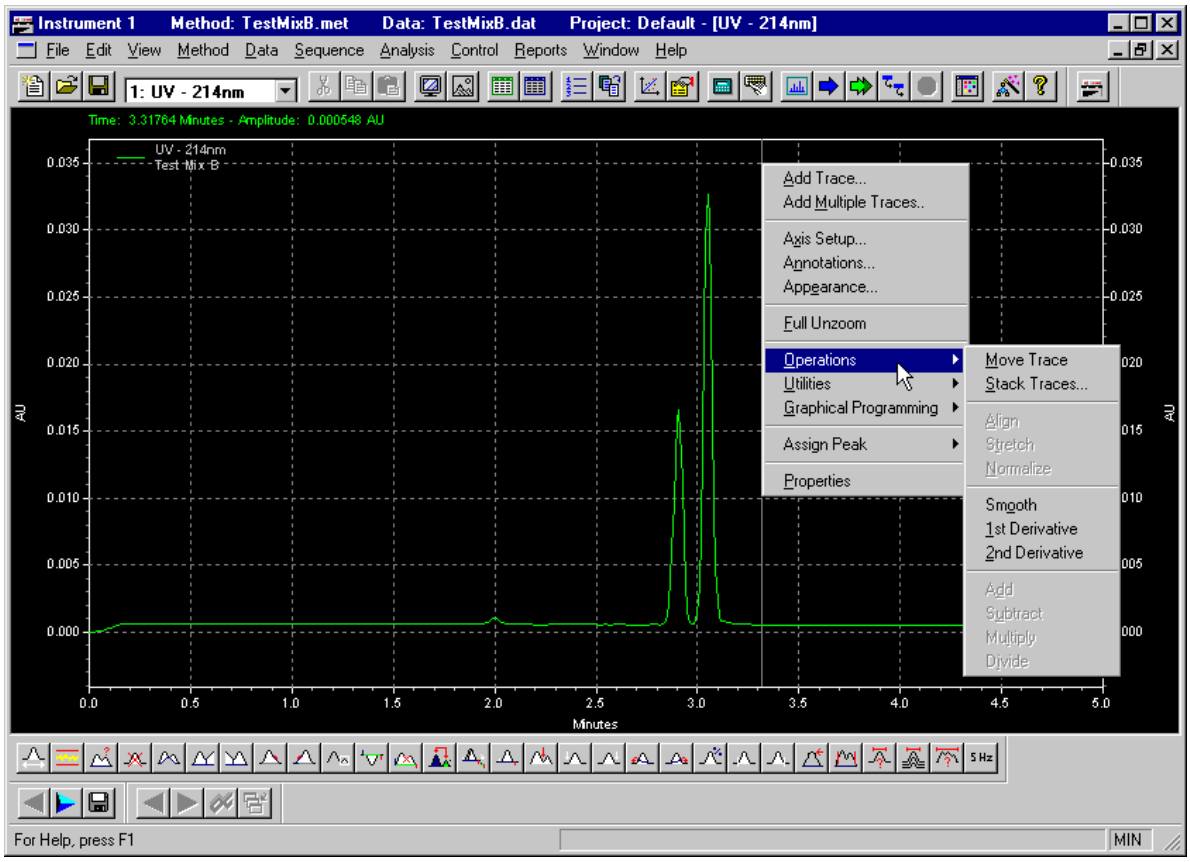


- Scheme
- Line Style
- Item
- Font

Full Unzoom

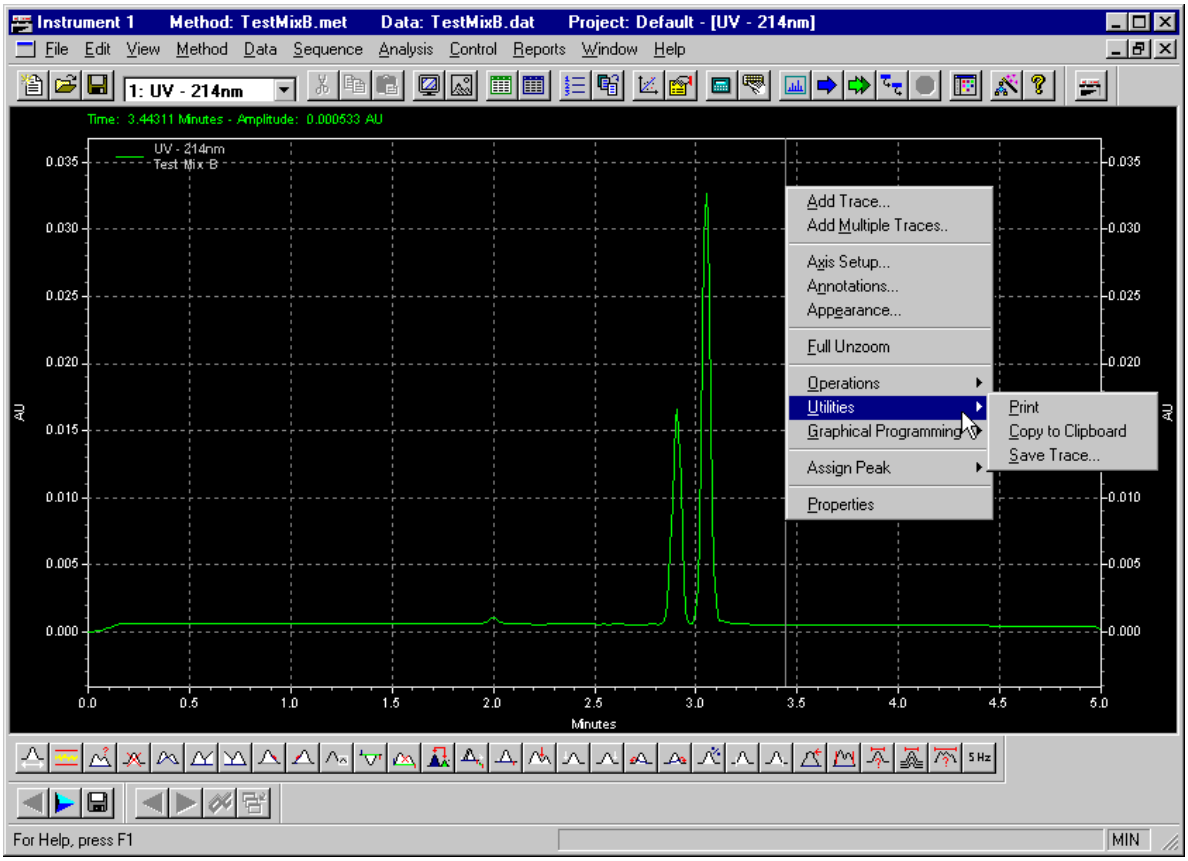
Operations

Figure 58 Operations Sub-menu



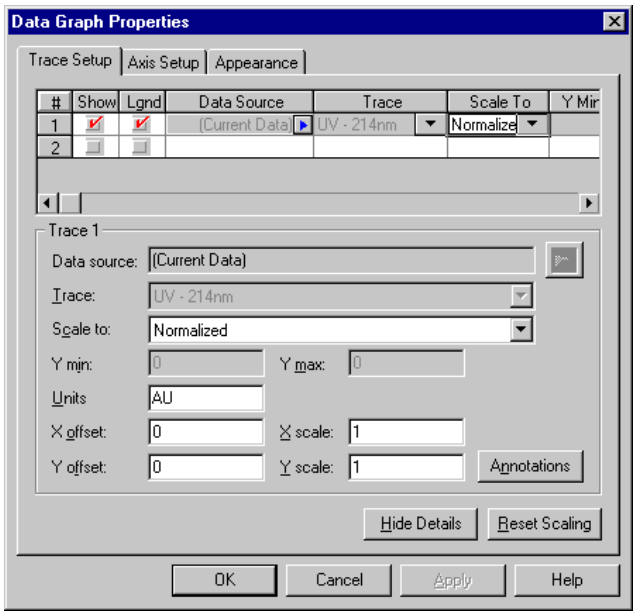
Utilities

Figure 59 Utilities Sub-menu



Properties

Figure 60 Data Graph Properties dialog box



Skill Check

Upon completion of this section, you should be able to do the following:

1. Run the method TestMixB.met.
2. Zoom the display scale.
3. Auto zero from the status window.
4. Change the selections in the status window.
5. Save the data as TestMixB.dat.

Summary

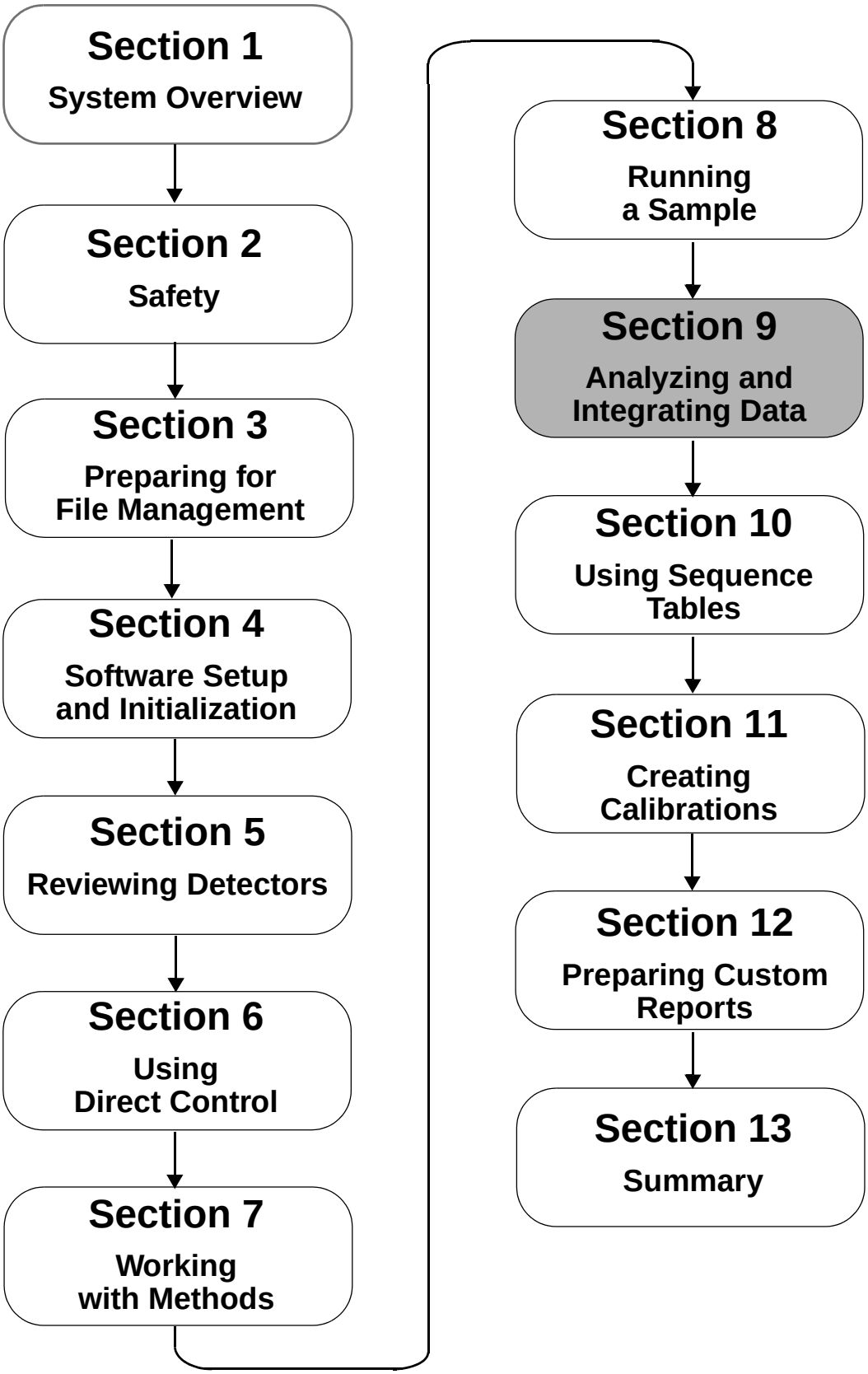
Congratulations! You have just generated your first electropherogram with your new P/ACE MDQ system. Next we will learn how to analyze the data.

Section 9-Analyzing and Integrating Data

Overview

Now that we have collected some actual run data, we will use the integration features of 32 Karat Software to begin analysis of the sample. We will discuss:

- Opening data files
- Graphical integration events programming
- Defining and Naming Peaks
- Identifying Peaks based on Migration Time
- Identifying Peaks based on Mobility
- Annotation of the on-screen Display
- Skill Check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Opening Data Files

Figure 61 Instrument Window with data file open and Analysis menu selected

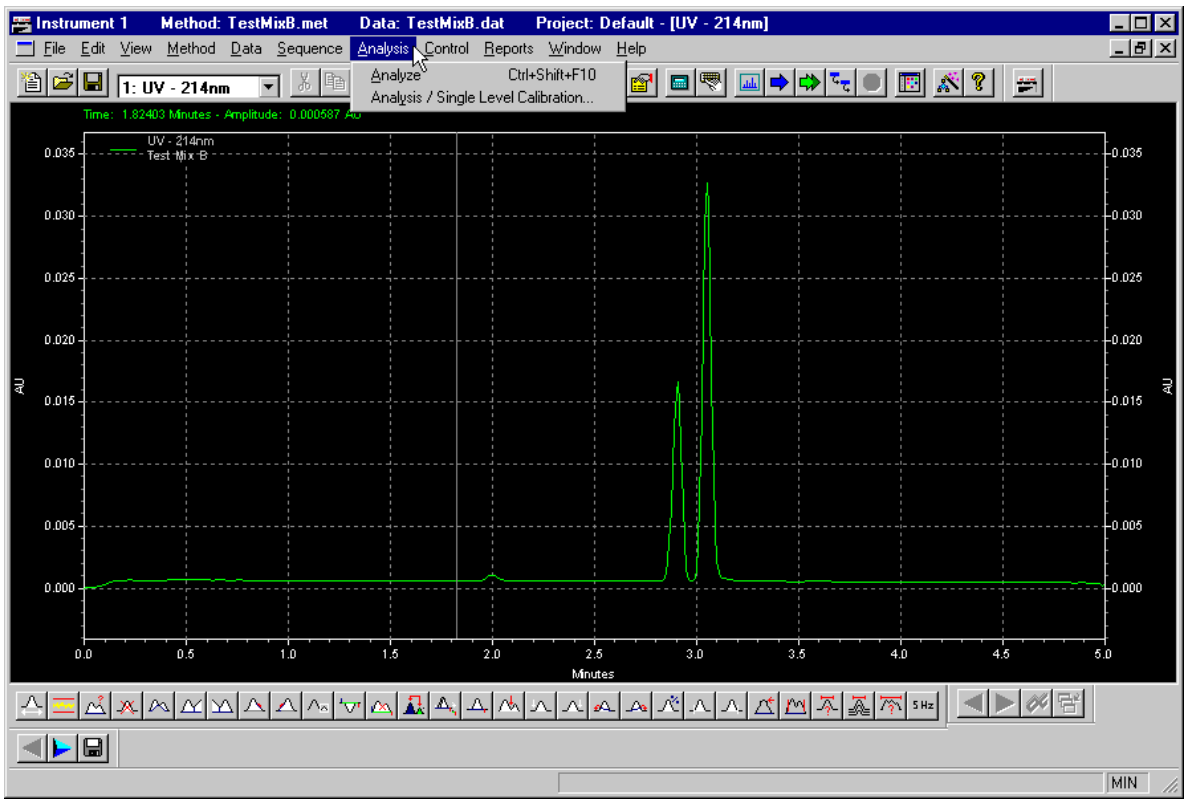
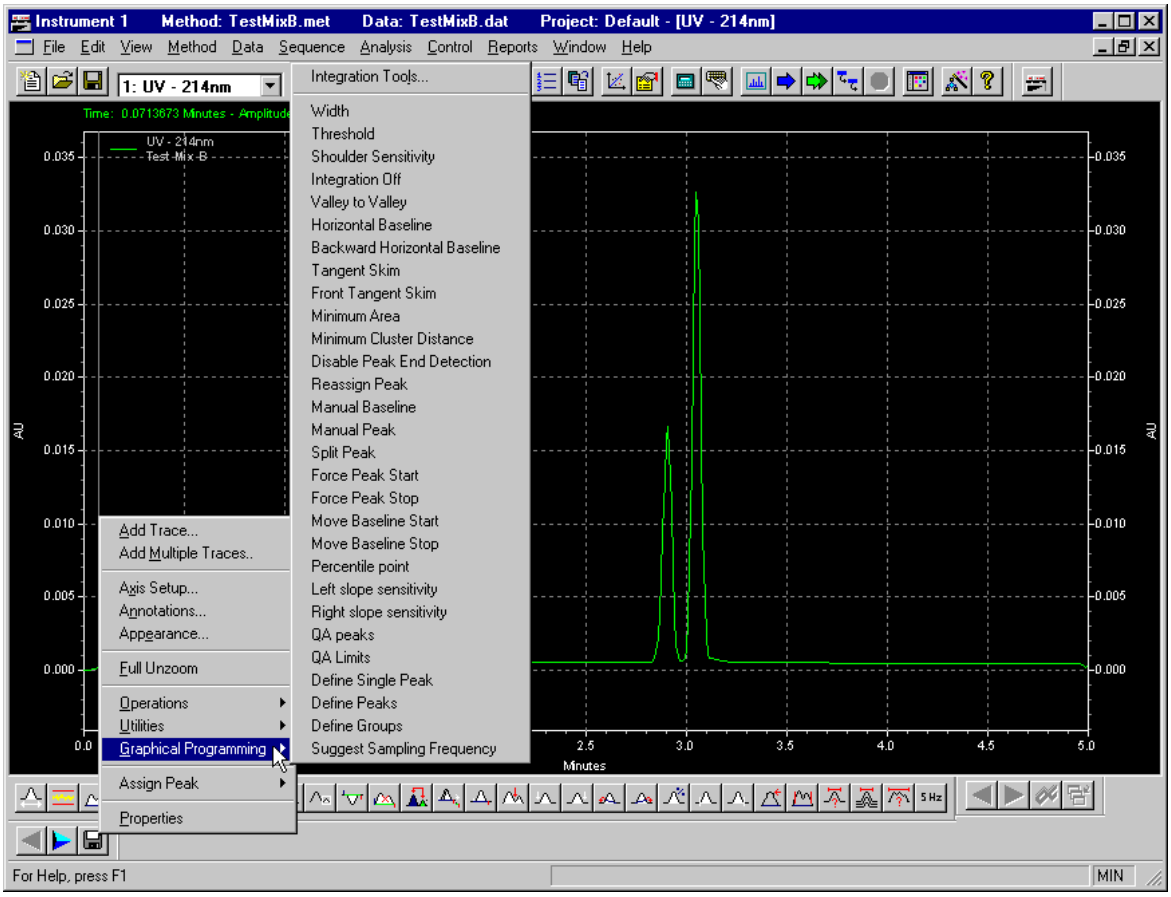


Figure 62 Analyze icon

Graphical Programming

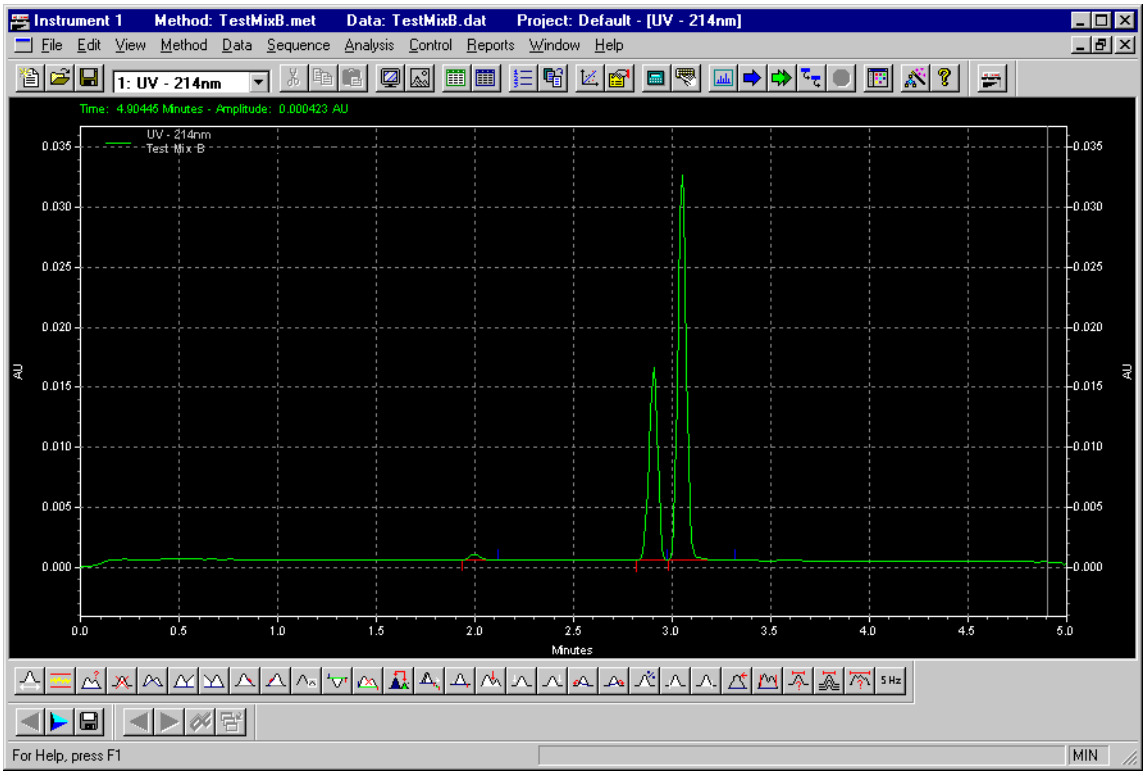
Figure 63 Graphical Programming Sub-menu



- ❑ Define Peaks

Analyzed electropherogram

Figure 64 Instrument Window with an analyzed data file open



Optimizing Integration

The Integration Tool bar is located at the bottom of the Instrument window or, from the right mouse button-click menu and select Graphical Programming.

Figure 65 Integration Events Toolbar

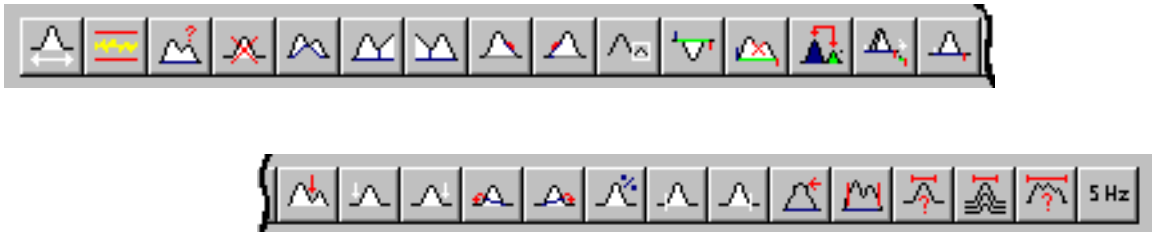
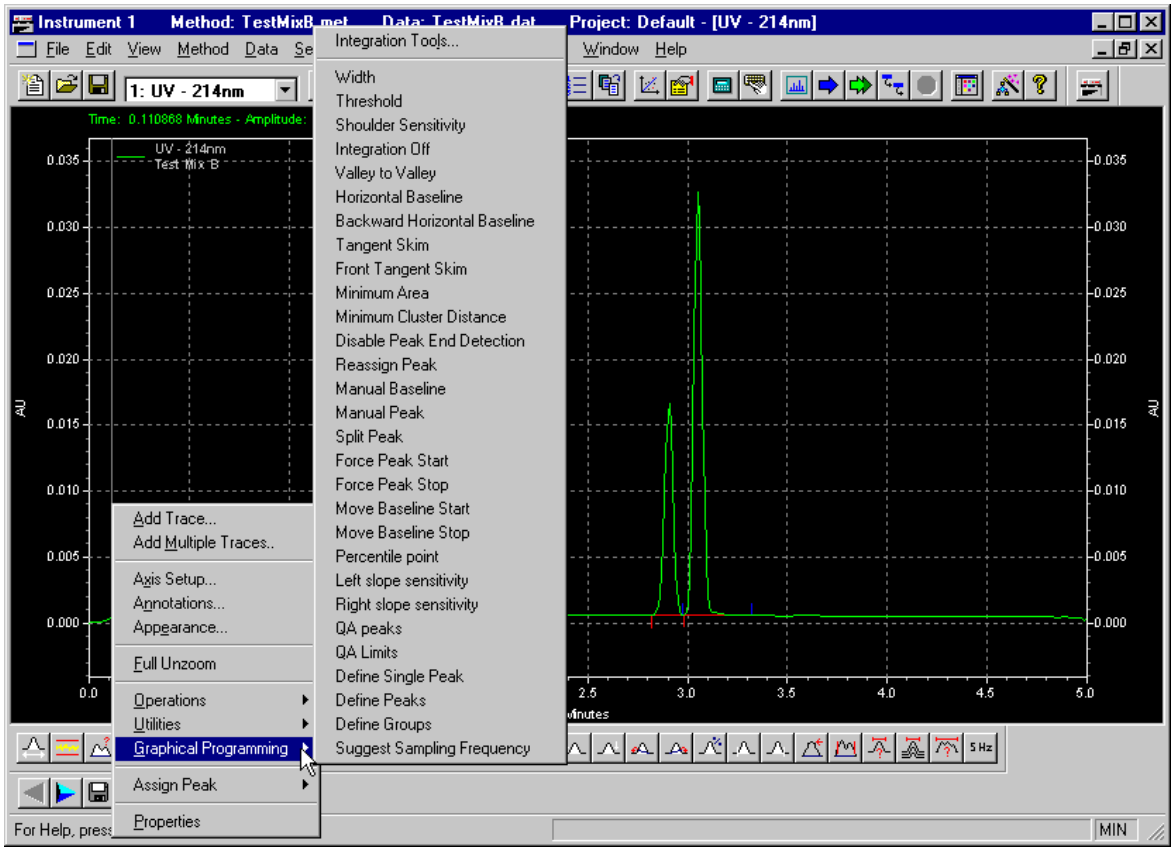


Figure 66 Instrument Window with right mouse click menu open and Graphical Programming selected

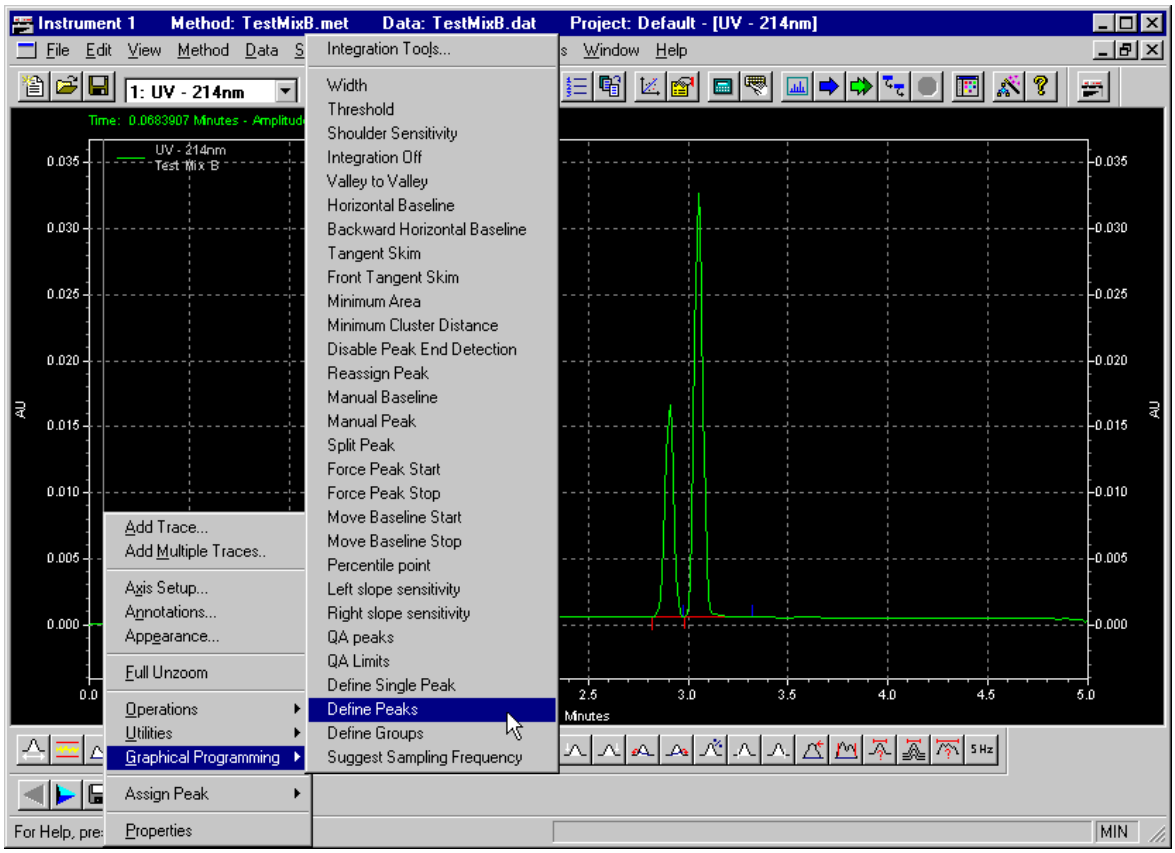


- ❑ Set Width
- ❑ Set Threshold
- ❑ Integration Off
- ❑ Manual Integration Fixes vs. Integration Events Table
- ❑ Valley to Valley
- ❑ Horizontal Baseline
- ❑ Backward Horizontal Baseline
- ❑ Tangent Skim
- ❑ Front Tangent Skim
- ❑ Minimum Area
- ❑ Negative Peak
- ❑ Disable Peak End Detection
- ❑ Reassign Peak
- ❑ Manual Baseline
- ❑ Manual Peak

- ❑ Split Peak
- ❑ Force Peak Start
- ❑ Force Peak Stop
- ❑ Move Baseline Start
- ❑ Move Baseline Stop
- ❑ Percentile Point
- ❑ Left Slope Sensitivity
- ❑ Right Slope Sensitivity
- ❑ Define Single Peak
- ❑ Define Peaks
- ❑ Define Groups
- ❑ Suggest Sampling Frequency

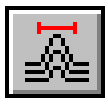
Defining and Naming Peaks

Figure 67 Instrument Window with Define Peaks selected



- ❑ Define Peaks

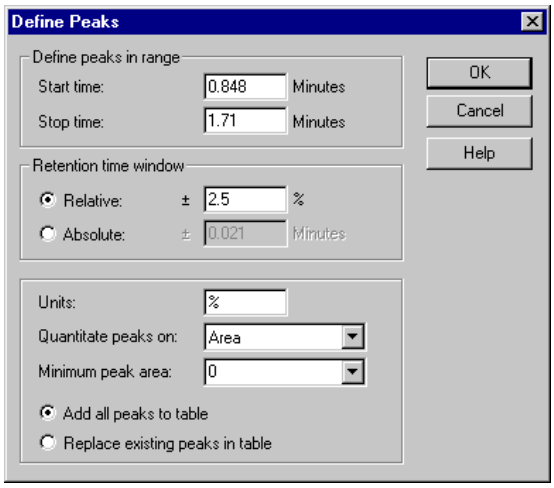
Figure 68 Define Peaks icon



- ❑ Select Start of Named Peak Range

- ❑ Select End of Named Peak Range

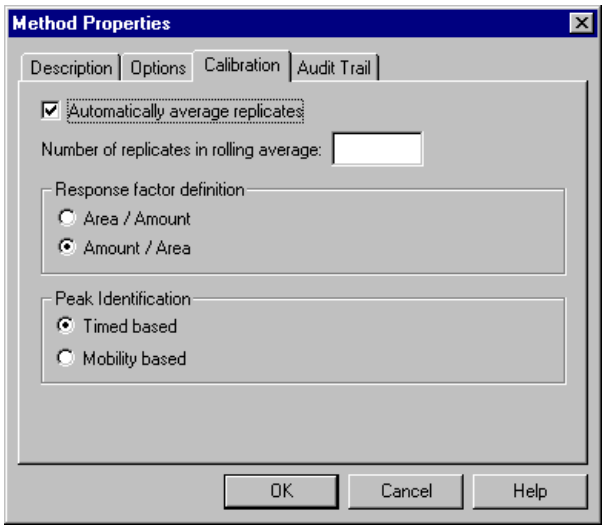
Figure 69 Define Peaks dialog box



- Define peaks in range
- Retention time window
- Units
- Quantitate on Area or Height

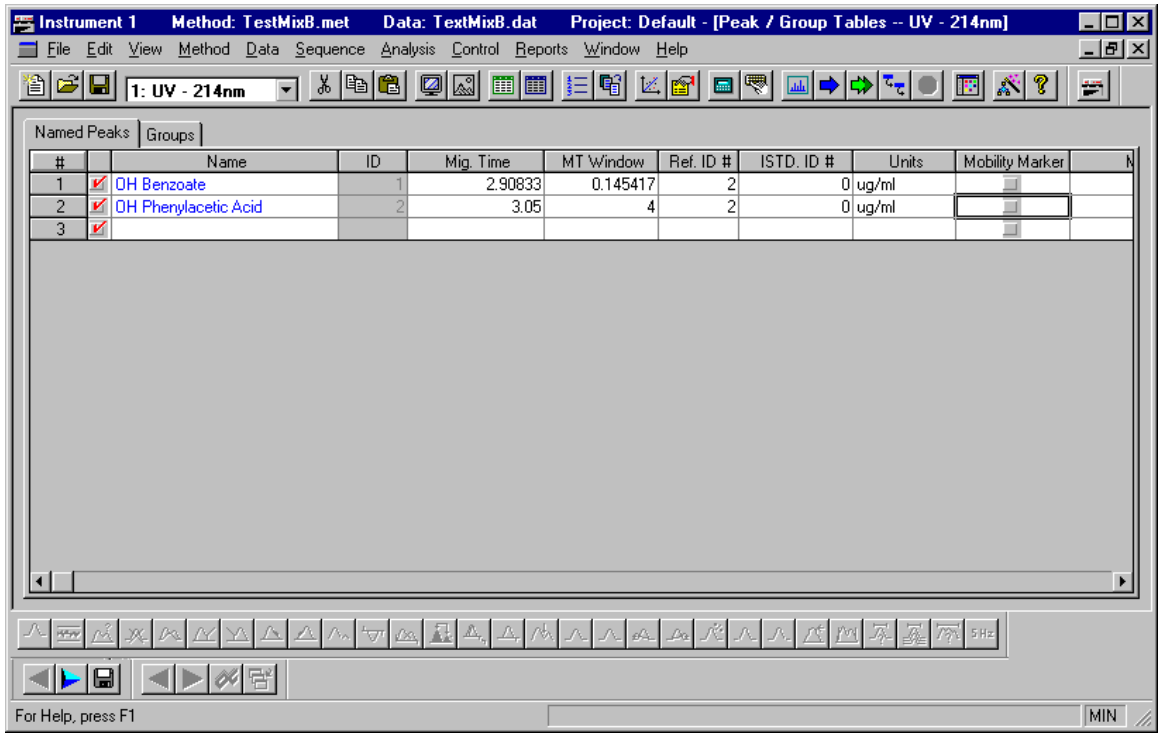
Identifying Peaks based on Migration Time

Figure 70 Method Properties dialog box



- Defining Peaks
- Viewing Peak ID Table

Figure 71 Peak ID Table



- ❑ Enter peak names in Peak ID Table

Figure 72 Instrument Window with the right mouse click menu and Annotations highlighted

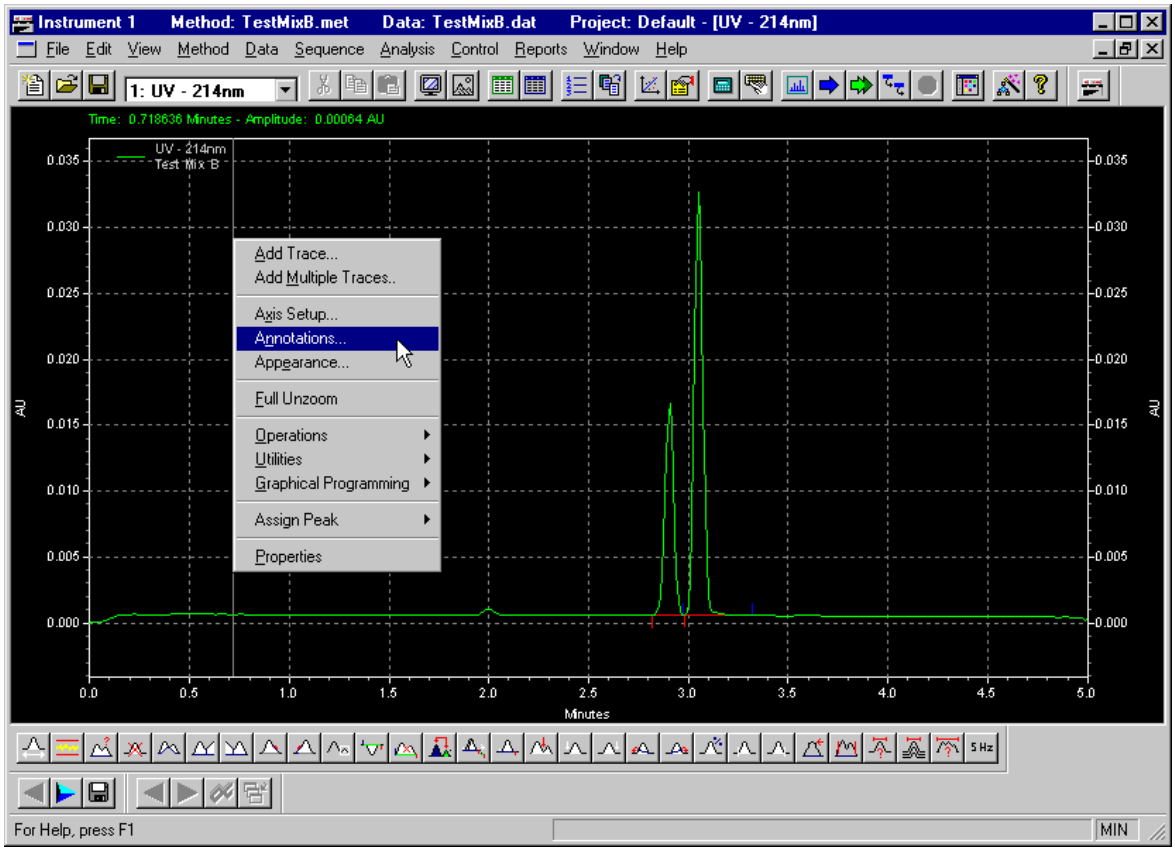
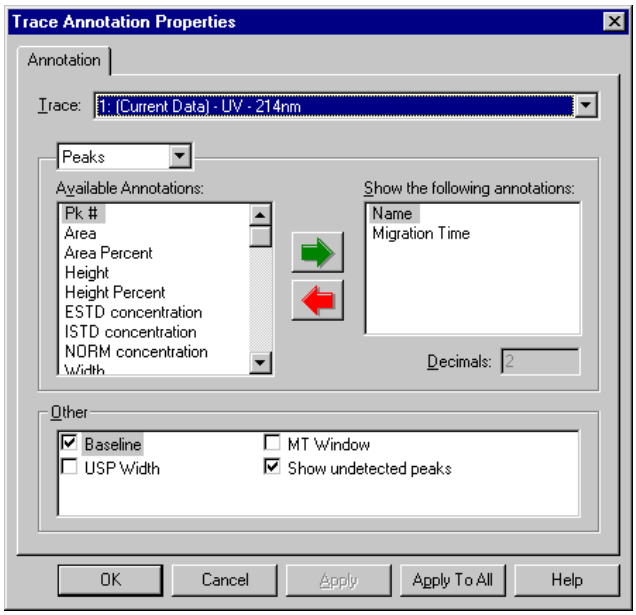
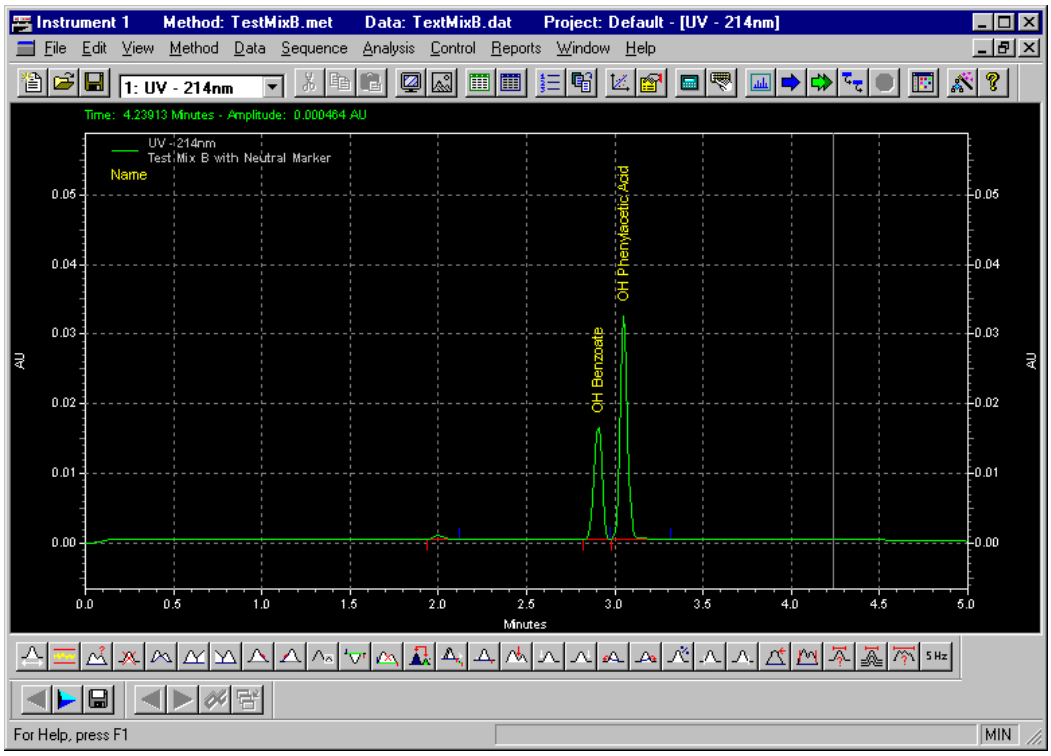


Figure 73 Trace Annotation Properties dialog box



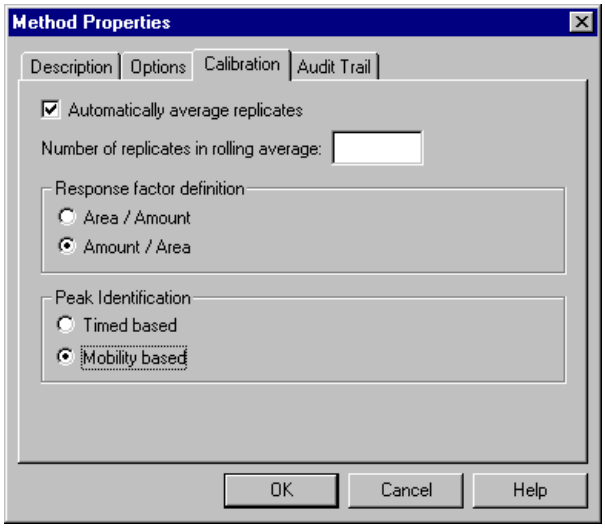
- Annotation of on-screen display

Figure 74 Data Display with Annotations for Time-Based Peak Identification



Identifying Peaks based on Mobility

Figure 75 Method Properties dialog box



- ❑ Defining Peaks

Figure 76 Peak ID Table with Mobility Marker selected

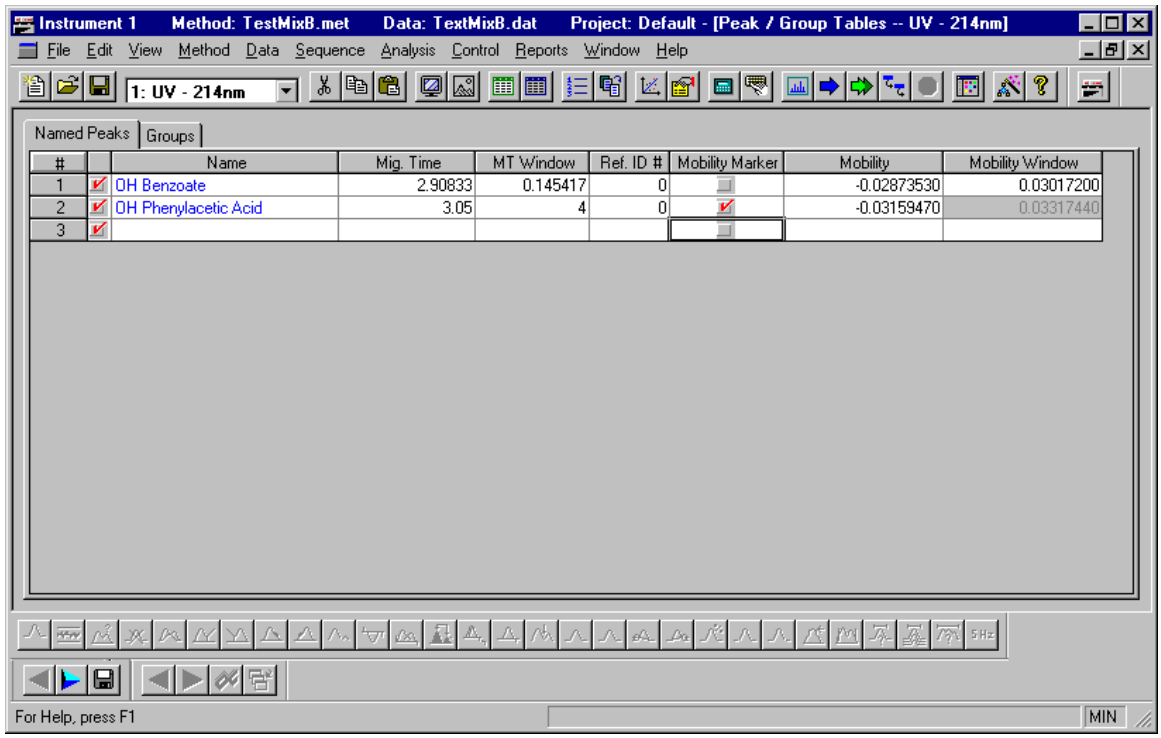


Figure 77 Trace Annotation Properties dialog box

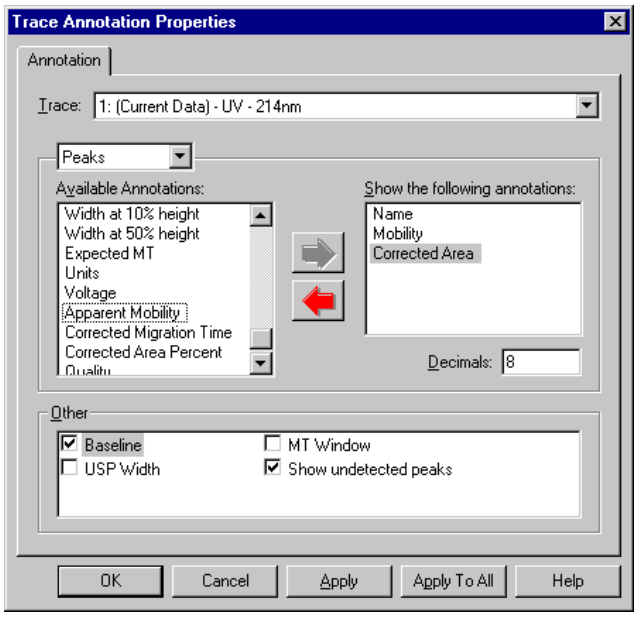
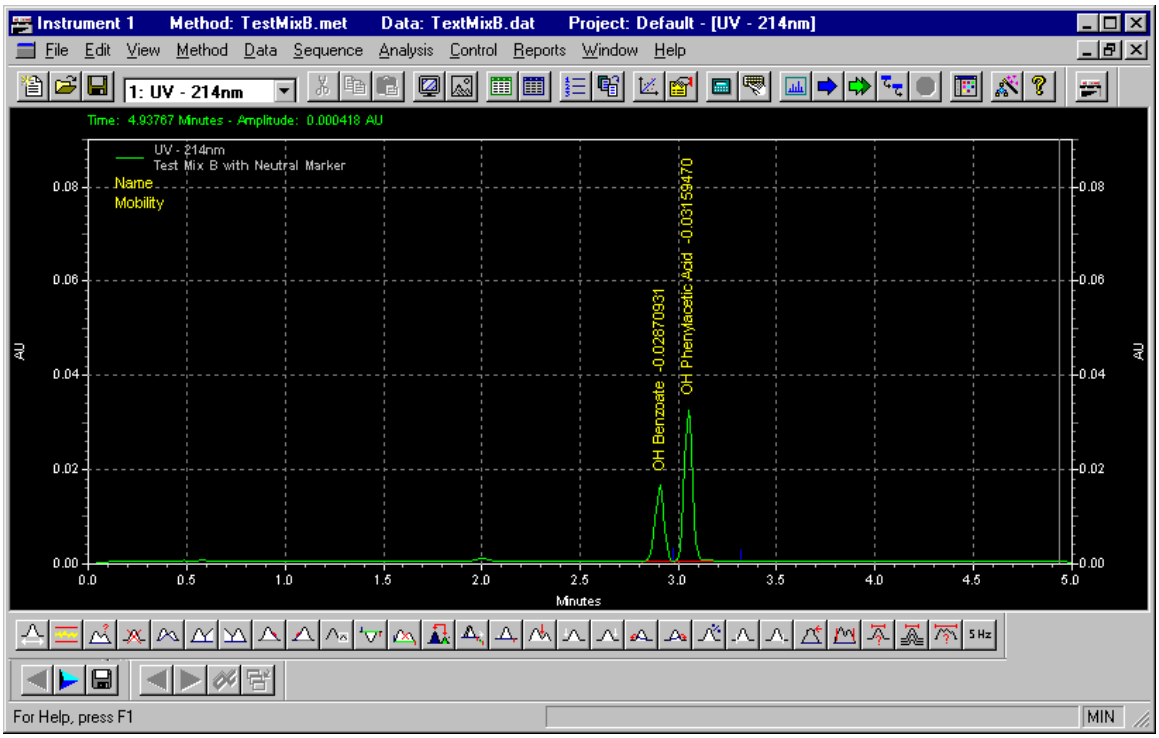


Figure 78 Data Display with Annotations for Mobility-Based Peak Identification



Skill Check

Upon completion of this section, you should be able to do the following:

1. Open the Test Mix B.dat data file.
2. After data collection, add a Peak ID Table to identify the two peaks.
3. Analyze the data.
4. Set the peak width and threshold to obtain acceptable integration of both peaks.
5. Build a table to name the peaks. (The elution order is Benzoic acid and then Phenyl acetic acid.)
6. Make sure **Time based** is selected in the Options tab of the Method Properties dialog box.
7. Set the parameters in the Peak ID table to identify peaks based on migration time.
8. Analyze the data and apply annotations to show names, migration times and corrected areas on the on-screen electropherogram display.
9. Change the selection in the Options tab to **Mobility based**.
10. Change the parameters in the Peak ID table to identify peaks based on mobility.
11. Reanalyze the data.
12. Apply the appropriate annotations to the data display.

Summary

This completes the Analysis and Integration portion of the Basic Instrument Training. Be sure to come back and explore all the various integration and peak identification options to find the ones that best suit your own work.

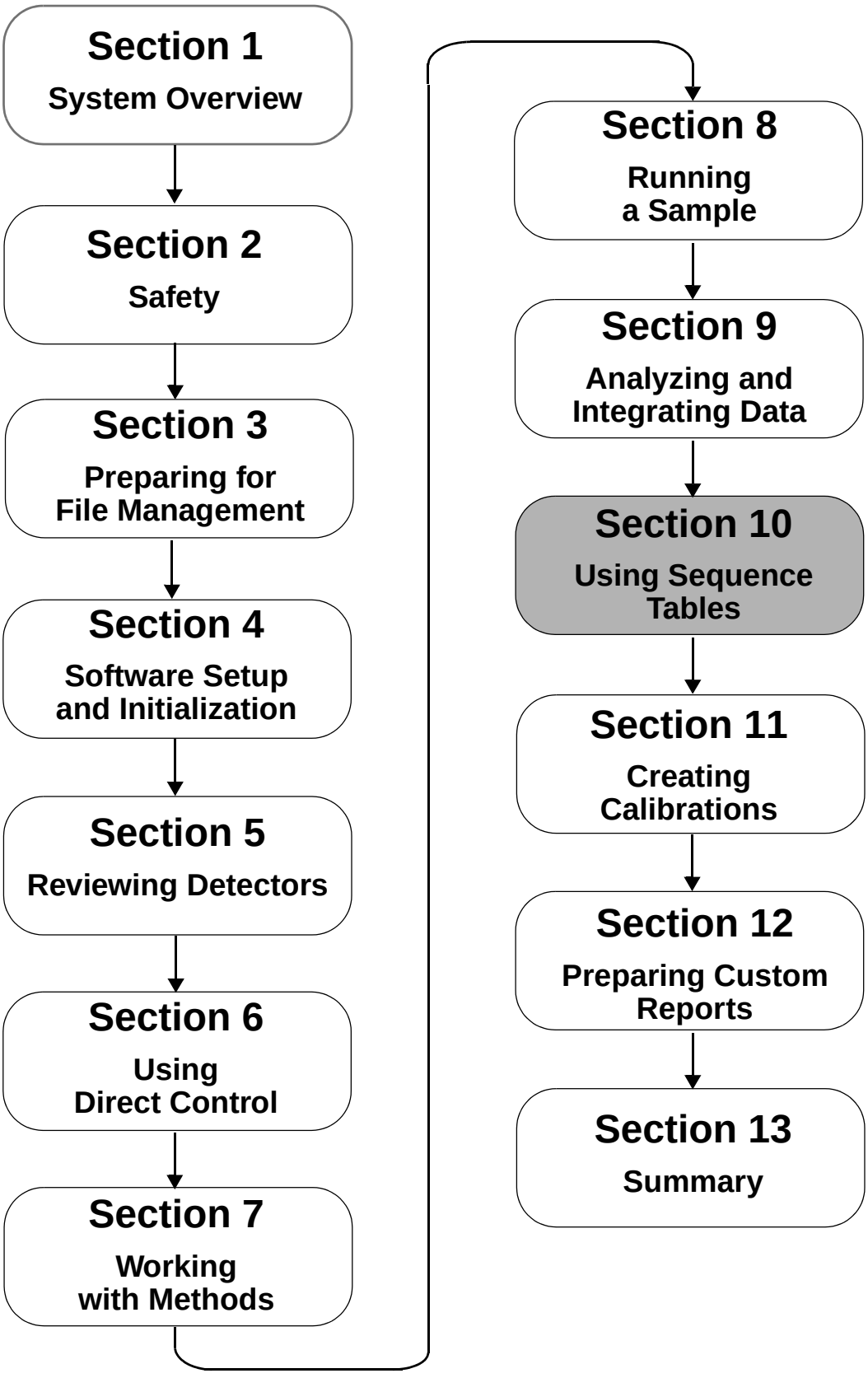
Next we will automate groups of consecutive runs using Sequence Tables.

Section 10-Using Sequence Tables

Overview

In this section we will further automate the system by defining a sequence of methods and samples to run unattended. This is accomplished using a Sequence Table. We will discuss:

- Sequence Wizard
- Editing Sequence Tables
- Saving Sequence Tables
- Running Sequence Tables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Using the Sequence Wizard

Figure 79 Instrument Window with File | Sequence | New selected

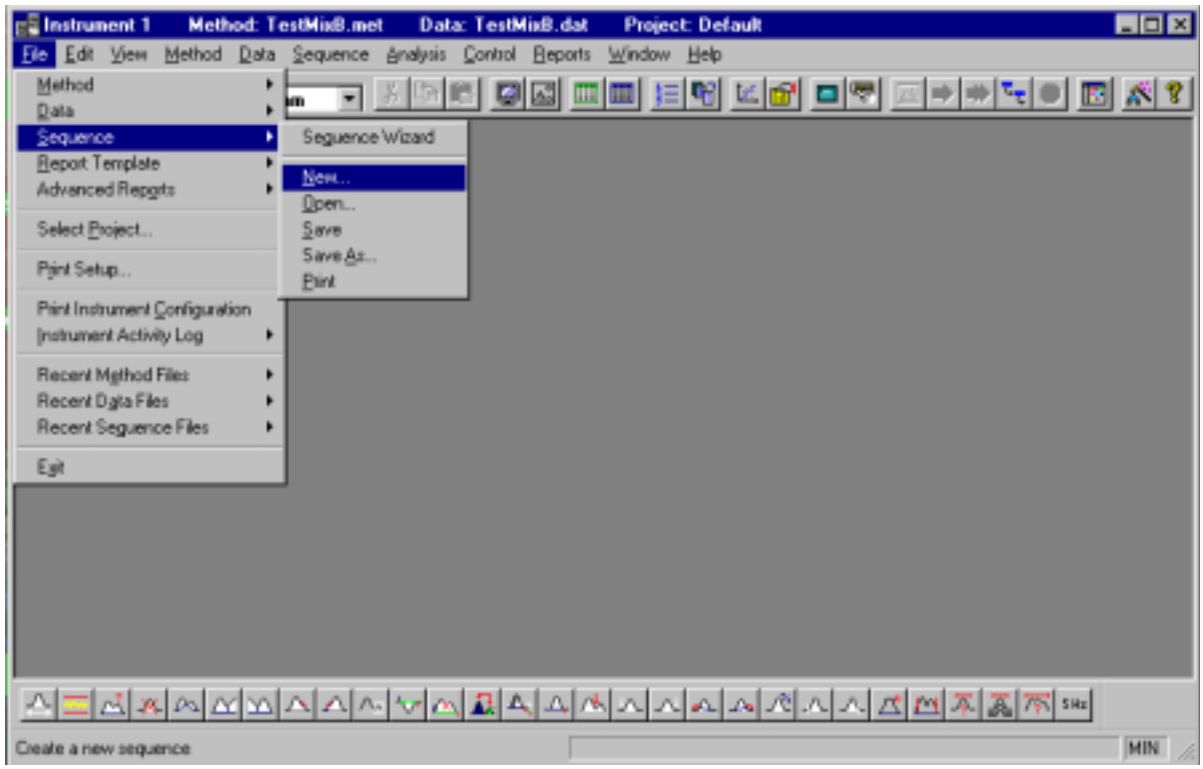
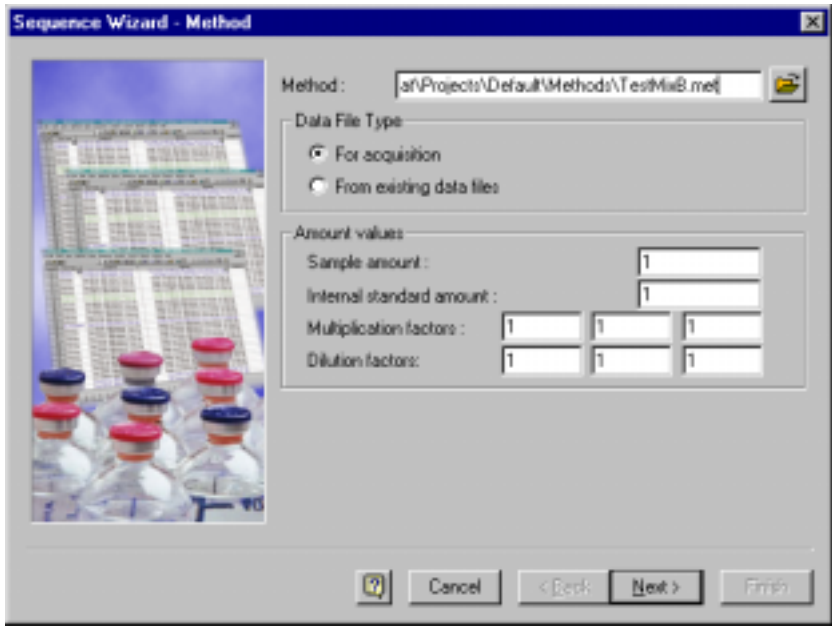
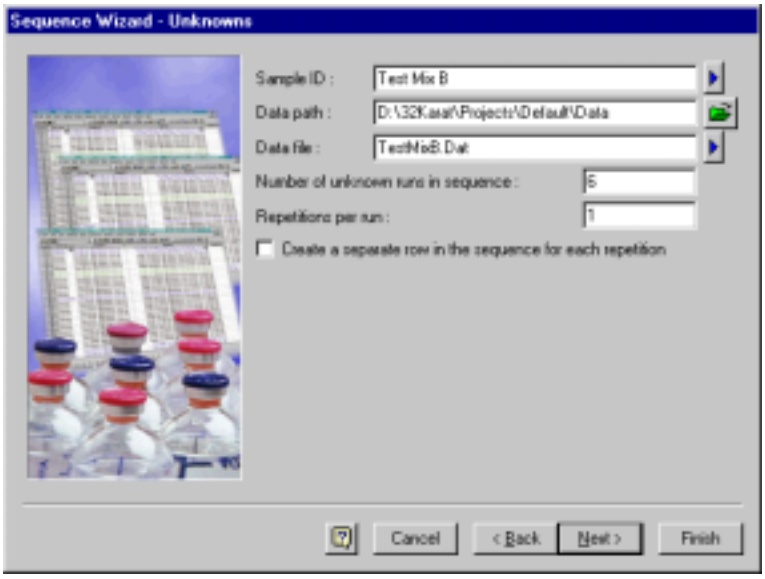


Figure 80 Sequence Wizard - Methods dialog box



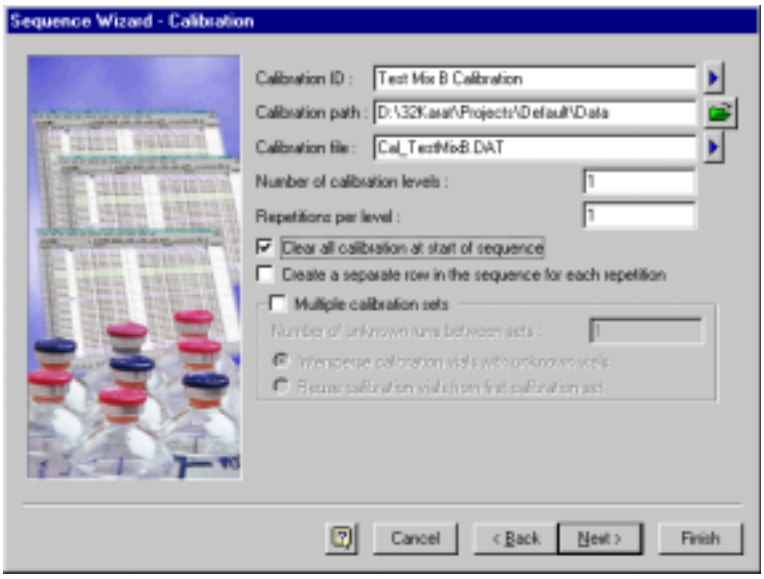
- Method Information
- Data File Type
- Amount values

Figure 81 Sequence Wizard - Unknowns dialog box



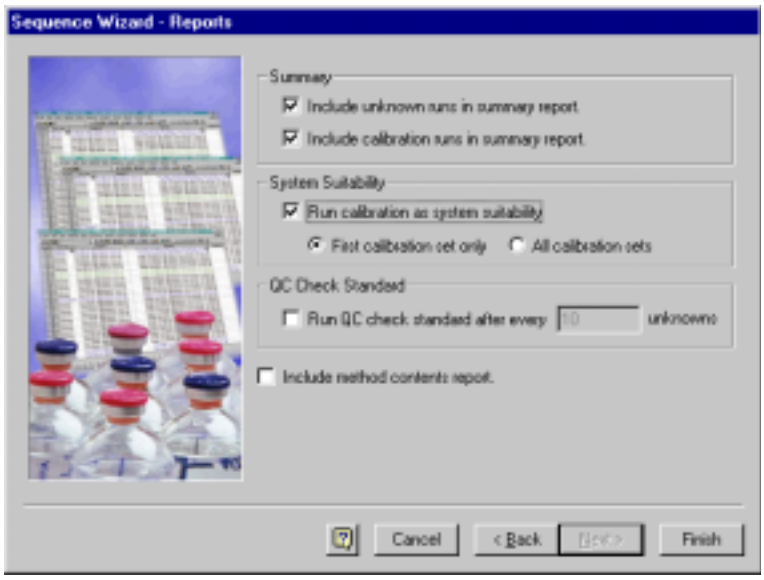
- Information about unknown and data file

Figure 82 Sequence Wizard - Calibration dialog box



- Calibration Information

Figure 83 Sequence Wizard - Reports dialog box



- Reports Information
- Summary
- System Suitability
- QC Check Standard

Viewing a Sequence

Figure 84 Instrument Window with File | Sequence | Open selected

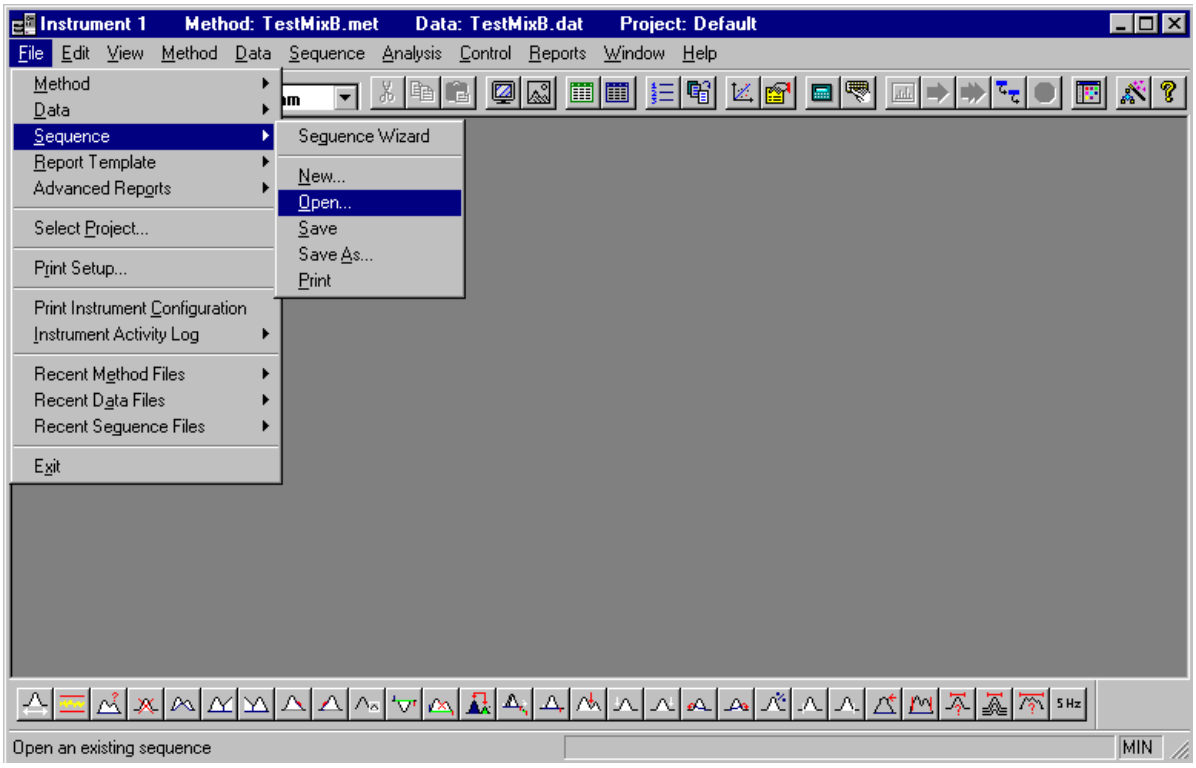
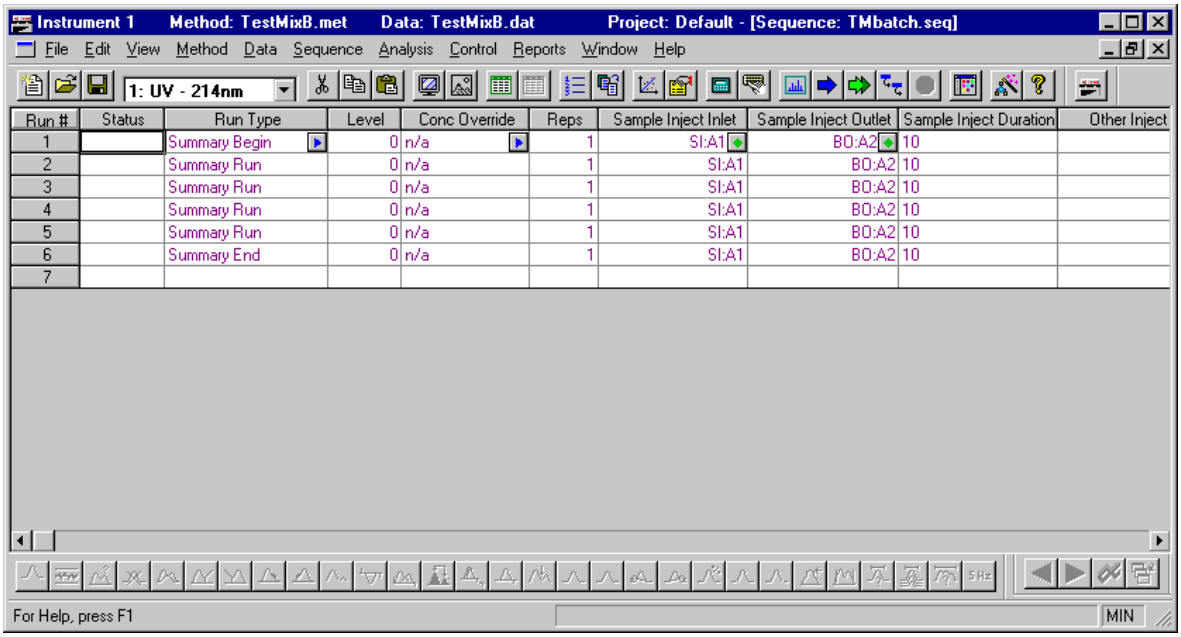


Figure 85 Sequence Table



- ❑ Status

- ❑ Run type

Clear All Calibration	Begin Summary
Clear Calibration at Level	Summary Run
Print Calibration Report	End Summary
Average Replicates	Vial Summary
Clear Replicates	QC Check Standard
Begin Loop	Unspiked
End Loop	Spiked
Shutdown	Spike 1 of 2
Print Additional Reports	Spike 2 of 2
Begin System Suitability	Duplicate
System Suitability Standard	Begin Calibration
End System Suitability	End Calibration

- ❑ Level

- ❑ Concentration Override

- Repetitions
- Sample ID
- Method
- Filename
- Sample Amount
- ISTD Amount
- Multiplier
- Action
- Description

Editing a Sequence

Figure 86 Instrument Window with Sequence | Edit selected

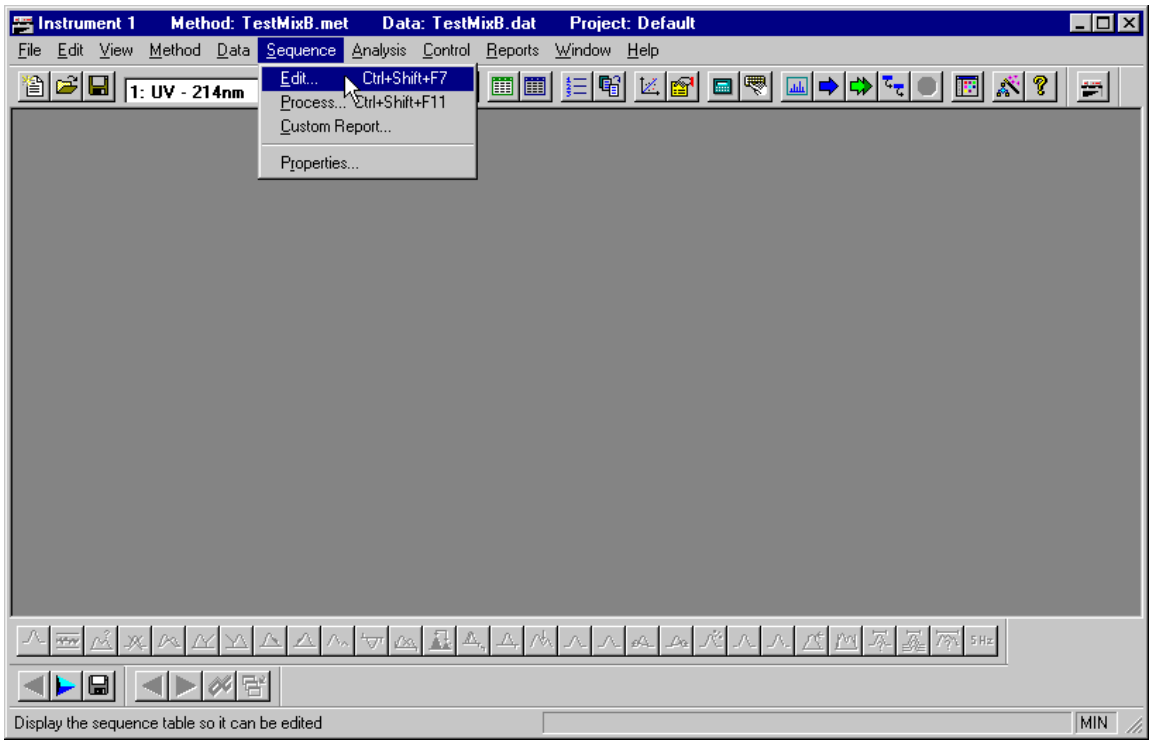
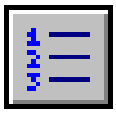
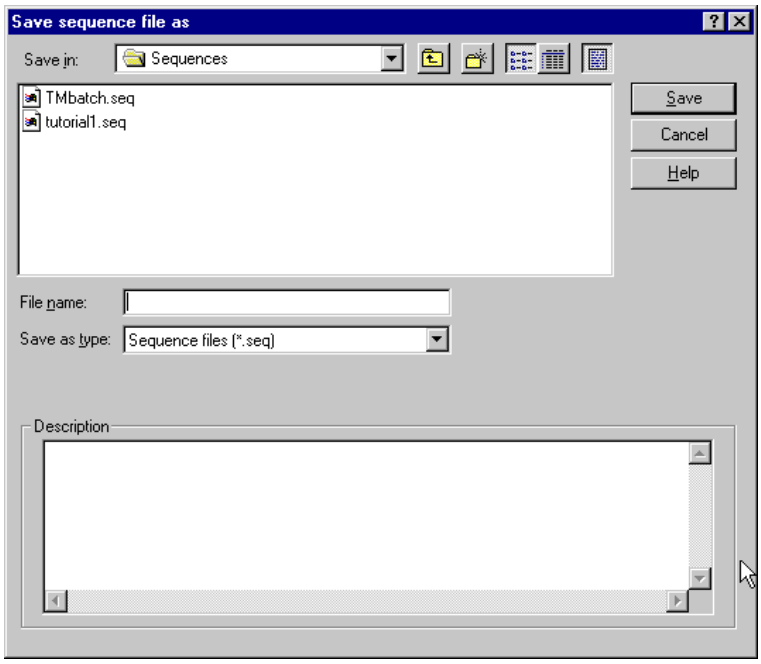


Figure 87 Edit Sequence icon



Saving a Sequence

Figure 88 Saving Sequence dialog box



- Save Sequence
- Save Sequence As

Running a Sequence

Figure 89 Instrument Window with Control | Sequence Run selected

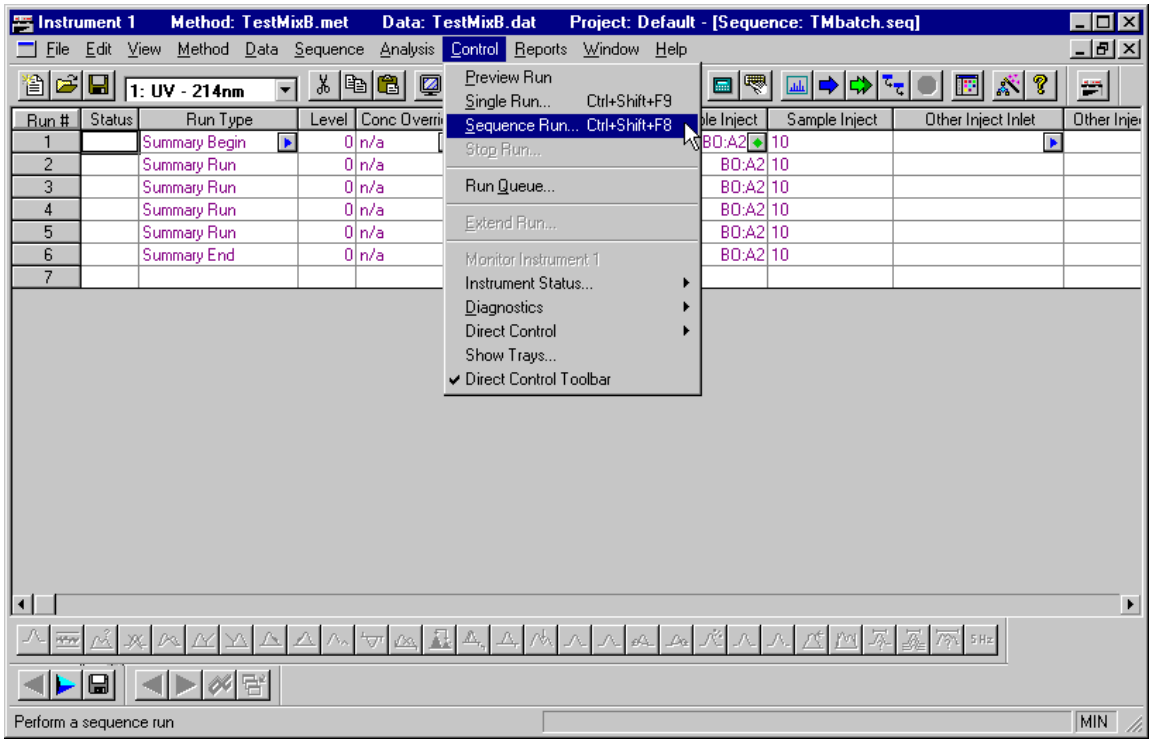


Figure 90 Sequence Run icon

Figure 91 Run Sequence dialog box

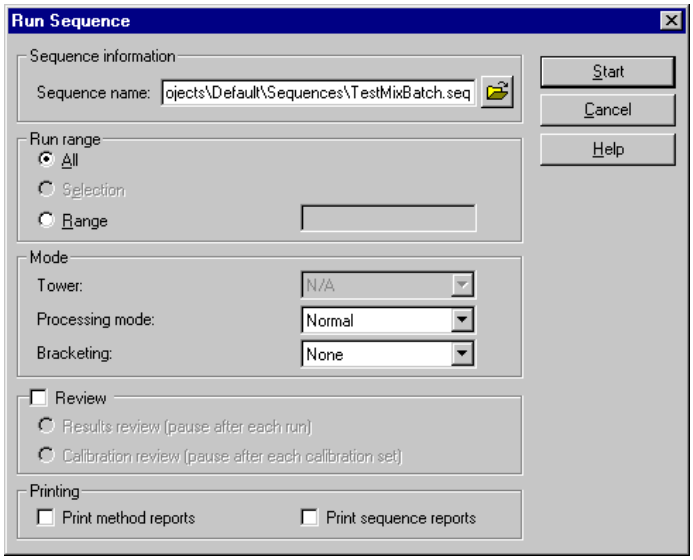
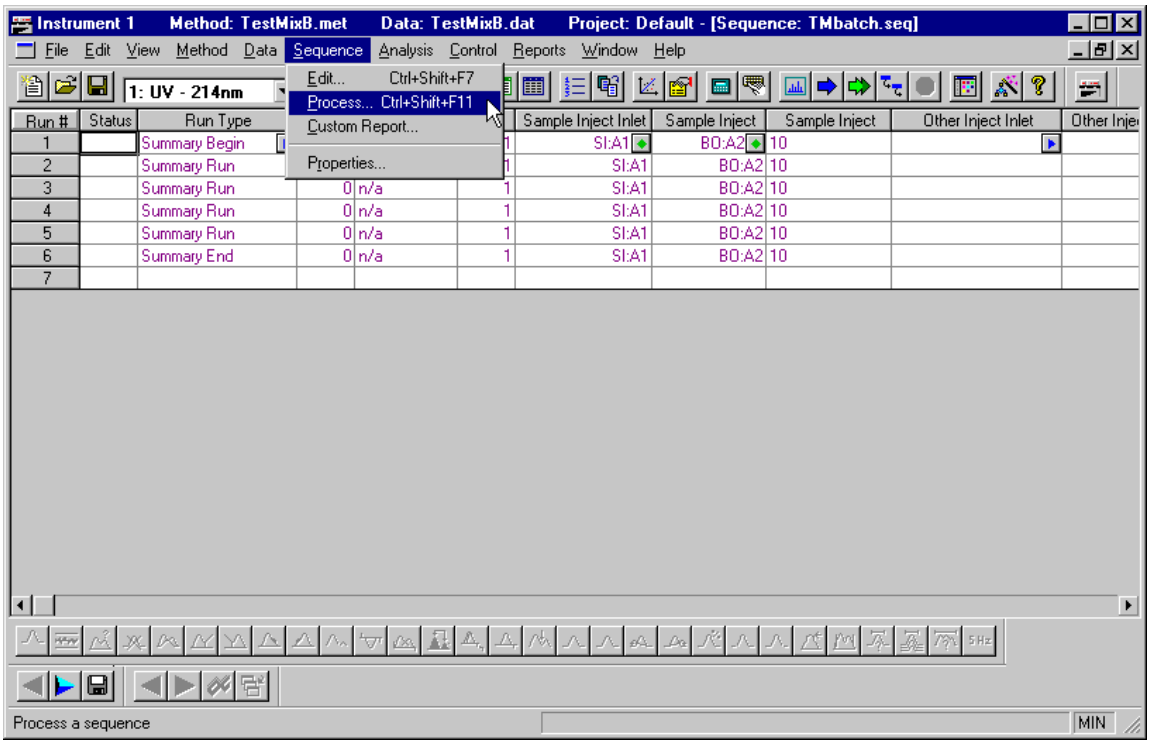
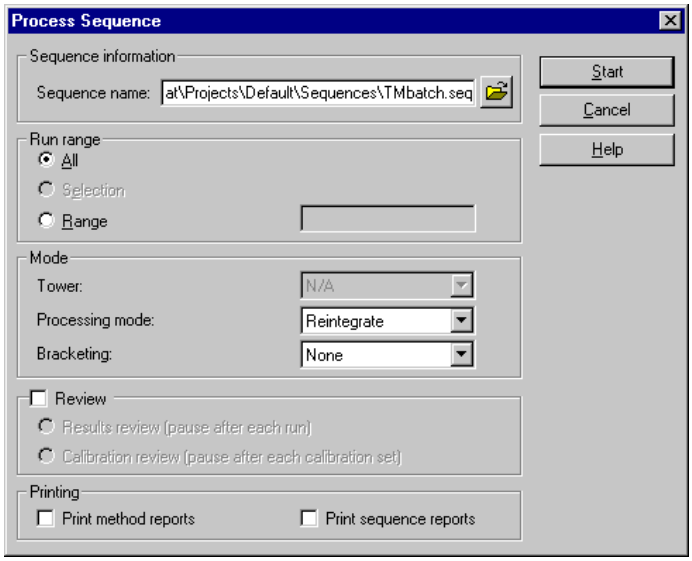


Figure 92 Instrument Window with Sequence | Process selected



- ❑ Process

Figure 93 Process Sequence dialog box



- Sequence Information
- Run Range
- Mode
- Review
- Printing

Skill Check

Upon completion of this section, you should be able to do the following:

1. Run the same method (TestMixB.met) three times.
2. Specify sample vial SI:A1 as the sample for line 1, vial SI:F10 as the sample for line 2 and vial SI:C8 as the sample for line 3.
3. Specify sequential file names for the data.
4. Do NOT run the sequence table at this time.

Summary

This completes the Sequence portion of the 32 Karat Software Basic Instrument Training. We can now automate running and processing the data of multiple samples.

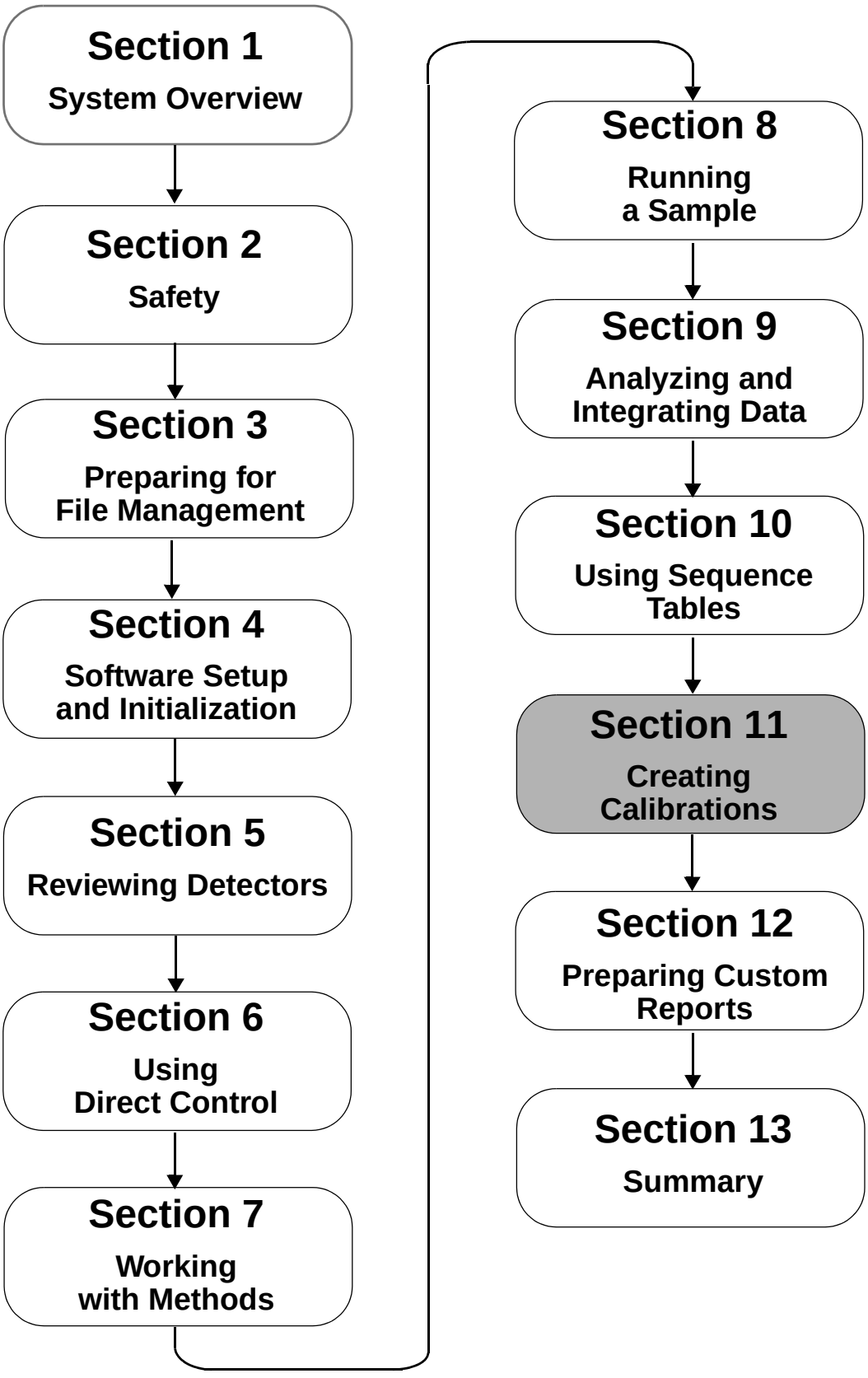
In the next section we will take a look at the steps necessary to automatically generate and apply calibration data.

Section 11-Creating Calibrations

Overview

The Peak ID and Sequence Tables have entry columns that we have not yet discussed. These parameters are used for generating and updating the calibration data for a given method. To generate a calibration curve we will:

- Edit a Peak ID Table for calibration
- Create a Calibration Sequence Table
- Run a Single Level Calibration Sequence
- Review Calibration Curves
- Final Skill Check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Editing the Peak ID Table

Figure 94 Instrument Window with Method | Peaks | Groups selected

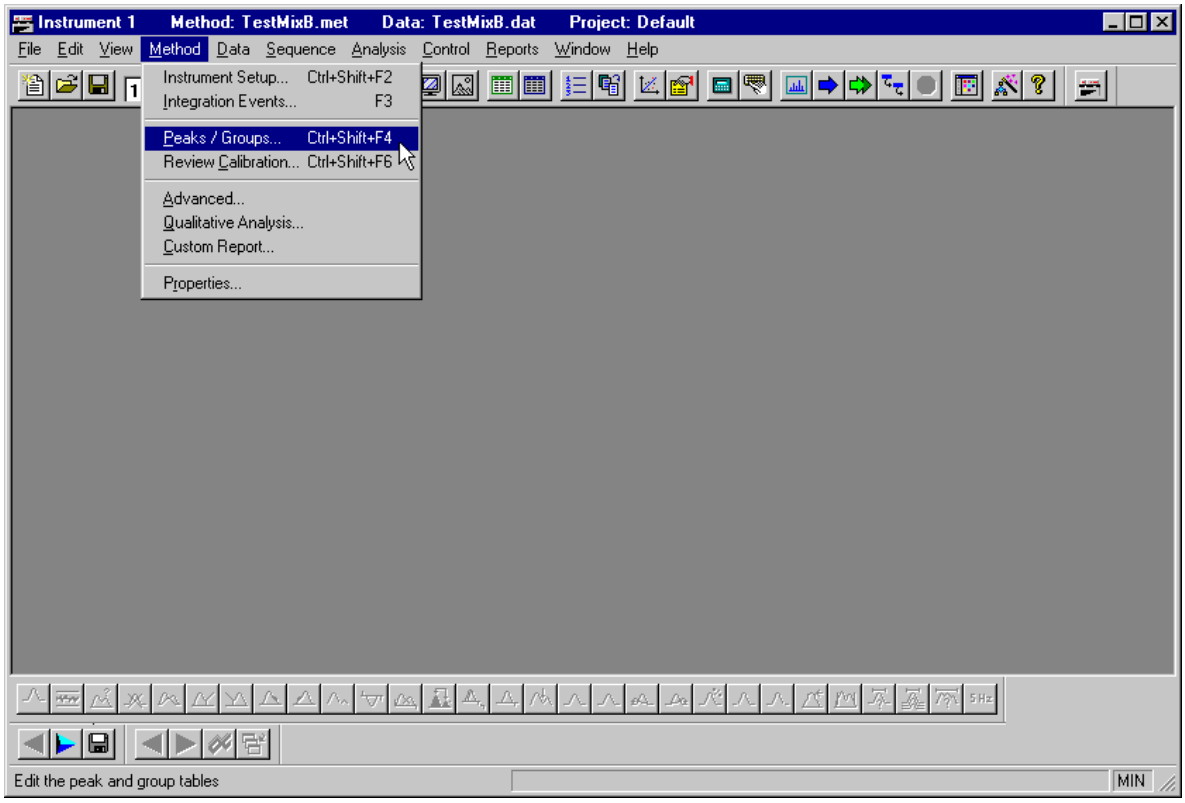
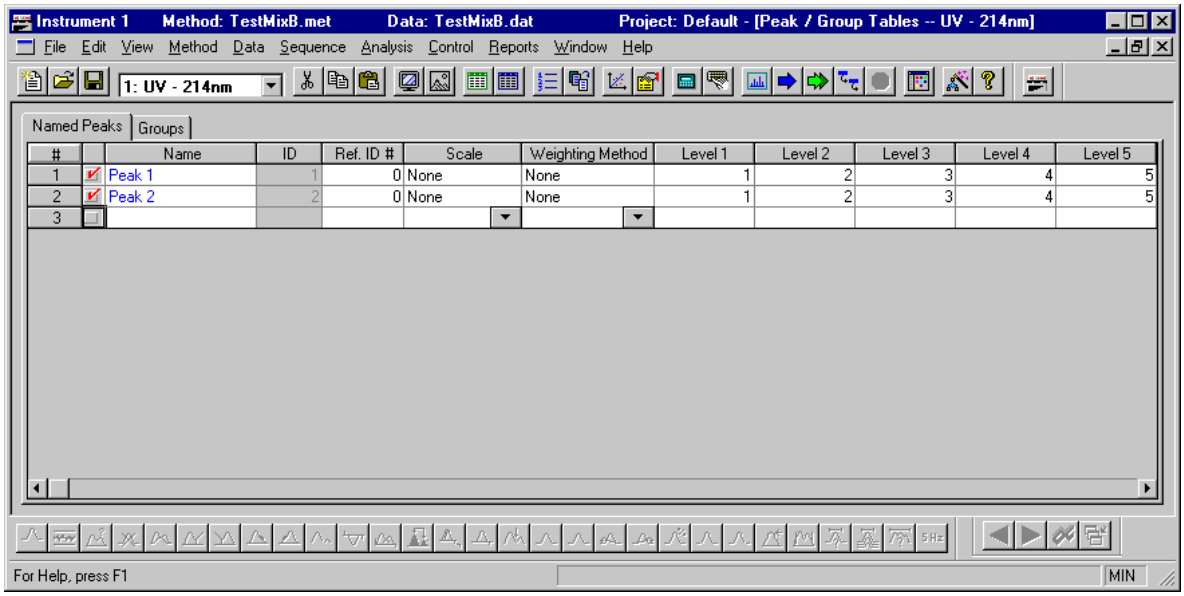


Figure 95 Peak ID Table set for Calibration



- ❑ Properties - Select parameters

Parameter Options:

Name	Weighting Method
ID	10 Levels
Ref ID #	STD ID #
ISTD ID #	STD Mult.
Units	Low Conc
Analysis Channel	High Conc
Quantitate	Check Std 1 Conc
Fit Type	Check Std 1%RD
Zero	Spike 1 Amount
Calib Flag	Spike 2 Amount
Calib Weight	Dup %RD Limit
% Calib Margin	RF %RSD Limit
Scale	

Creating a Calibration Sequence with the Sequence Wizard

Figure 96 Instrument Window with File | Sequence | New selected

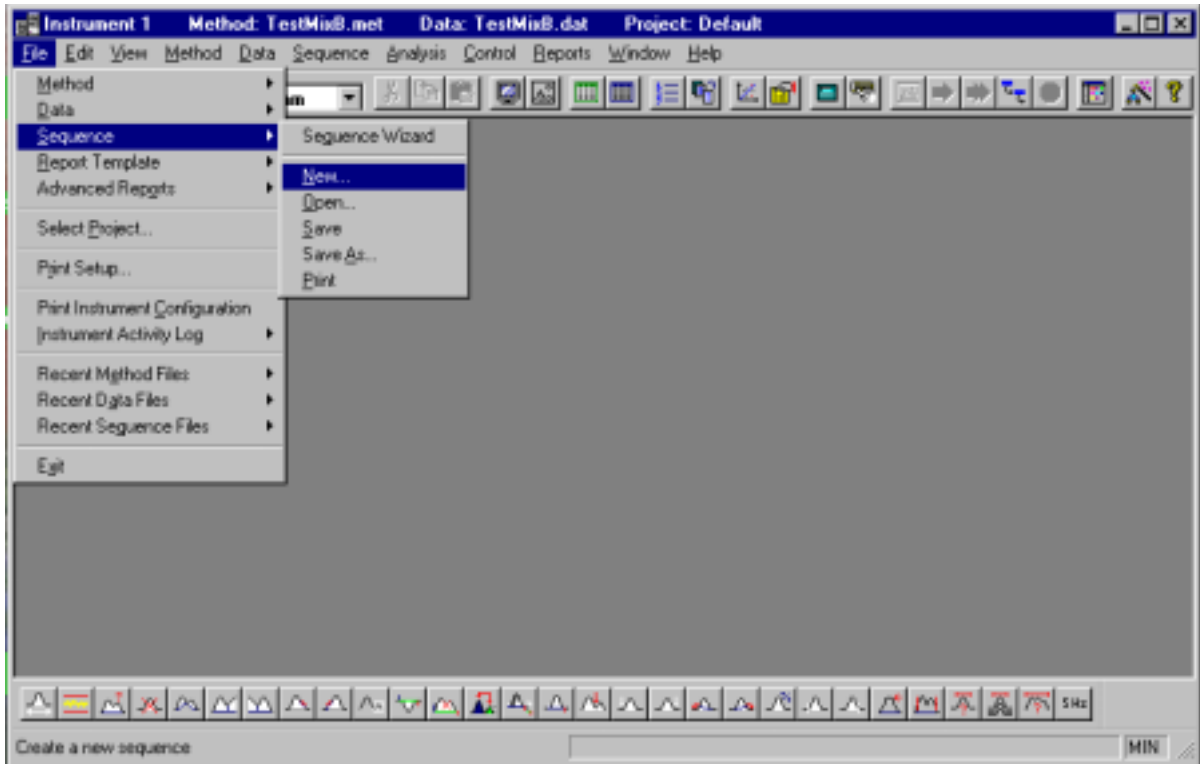
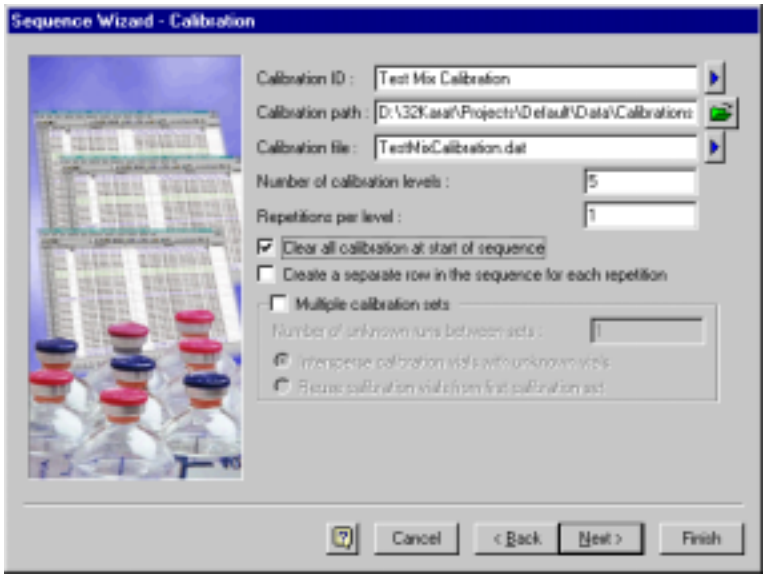
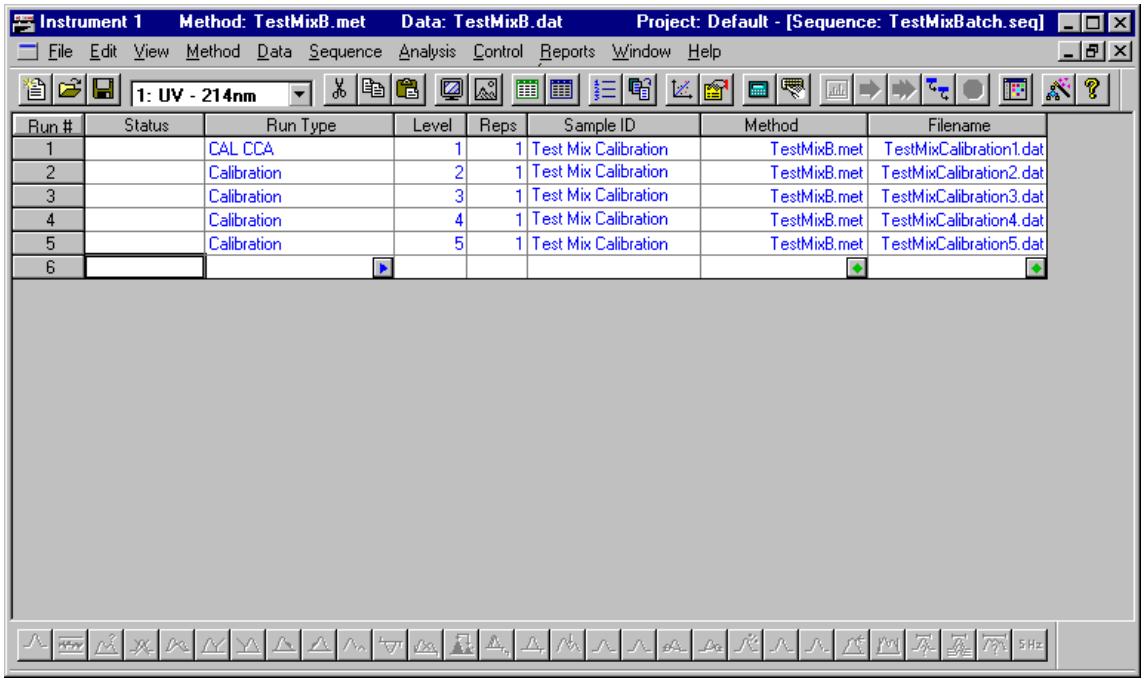


Figure 97 Sequence Wizard - Calibration dialog box



- Calibration ID
- Calibration Path
- Calibration file
- Number of levels
- Number of Repetitions per level

Figure 98 Completed Sequence



Running a Calibration Sequence

Figure 99 Instrument Window with Control | Sequence Run selected

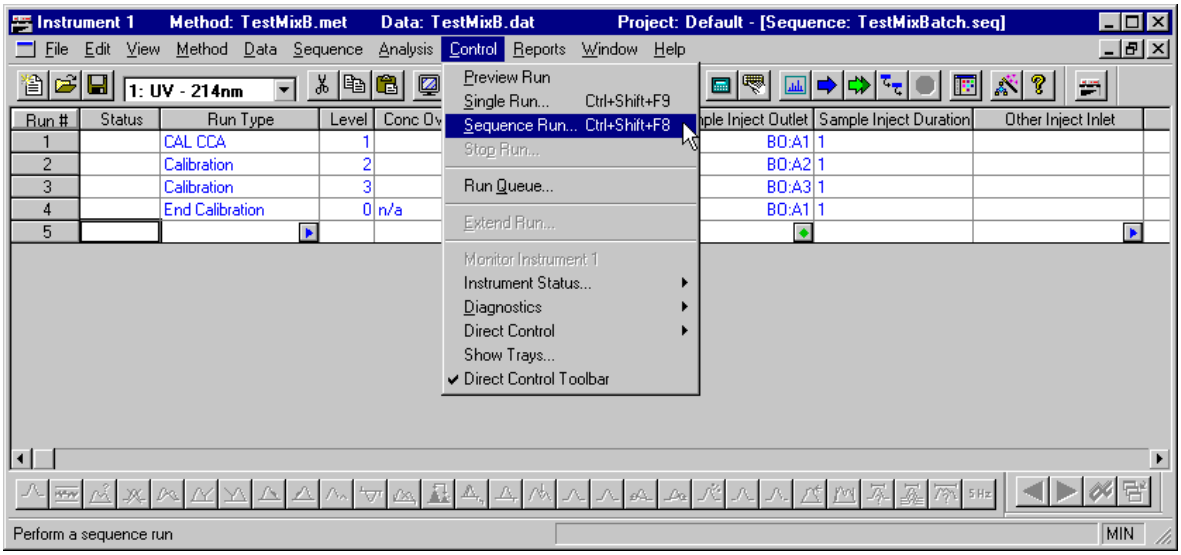


Figure 100 Run Sequence icon

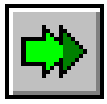
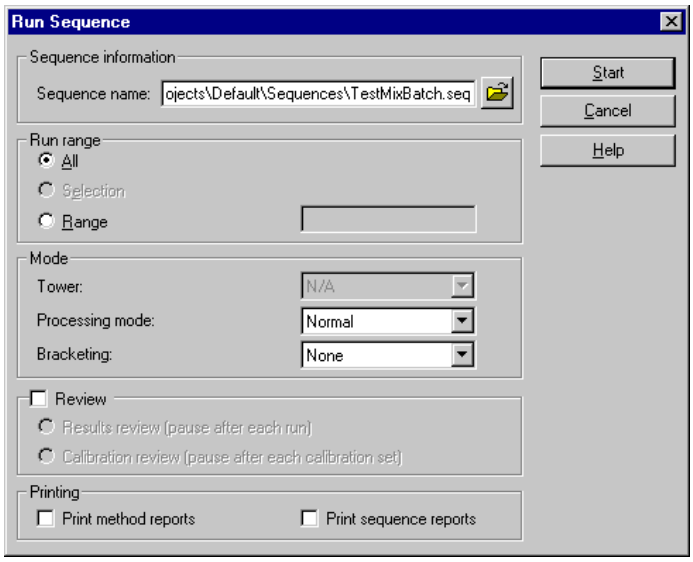


Figure 101 Run Sequence dialog box



Reviewing Calibration Curves

Figure 102 Instrument Window with Method | Review Calibration selected

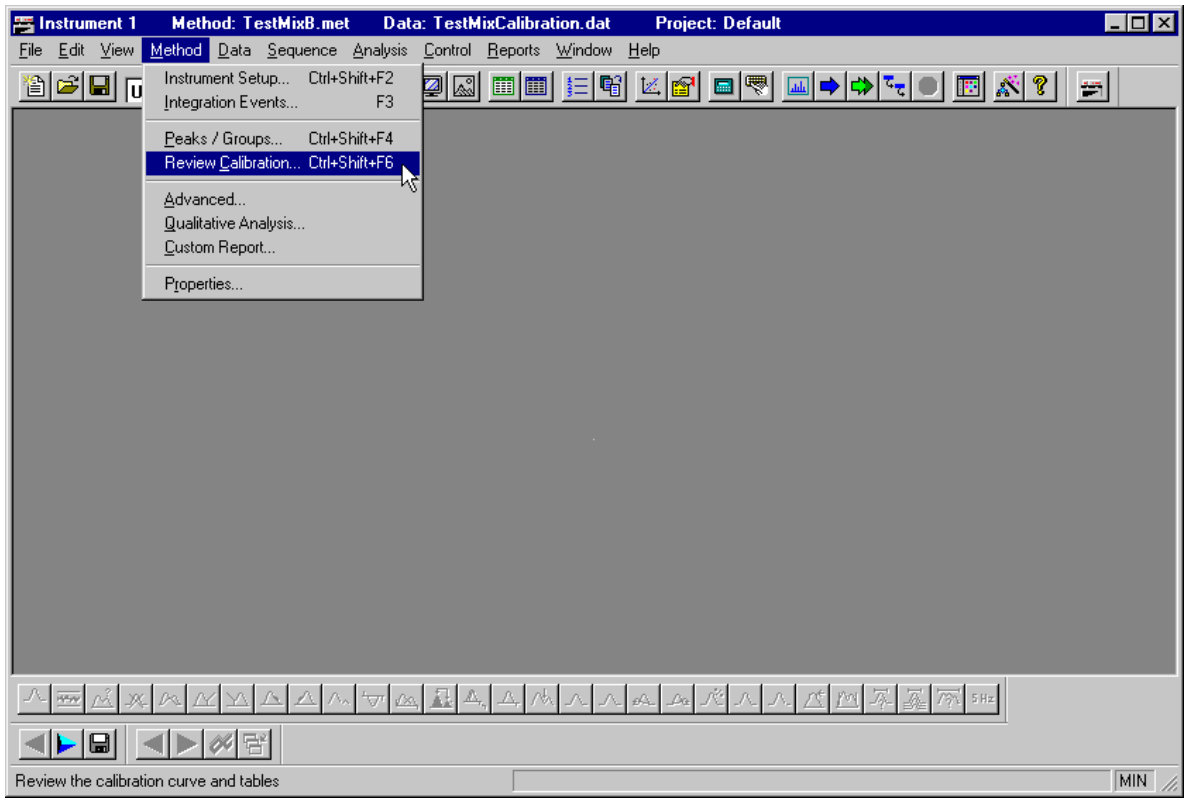


Figure 103 Review Peak Calibration icon

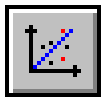
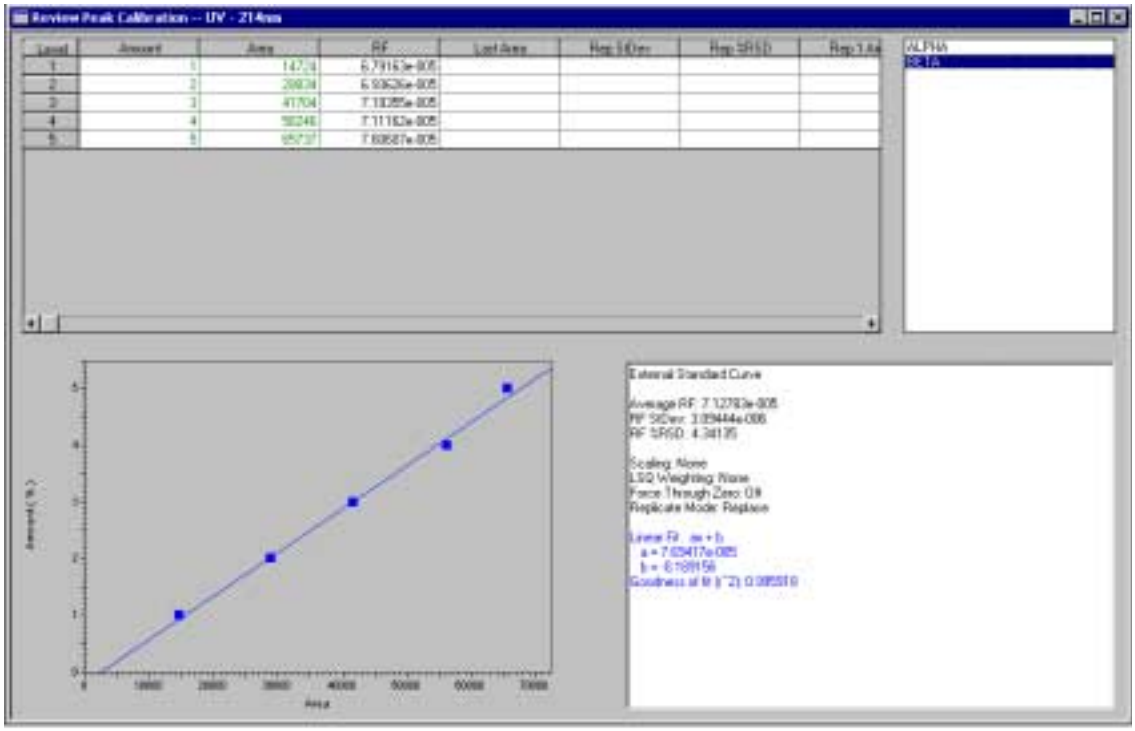


Figure 104 Review Peak Calibration Window



- Selecting a curve to review
- Deleting data points
- Equation and goodness of fit

Final Skill Check

Upon completion of this section, you should be able to do the following:

1. Edit the peak ID table in your method to specify three calibration levels. (Five level calibration is shown in this section.)
2. Modify the sequence table you created in the previous section to specify the run types as calibration (enter the level number in the Level column to change run type from Unknown to Calibration).
3. Dilute the test mix to create three levels of concentrations for calibration.
4. Specify sequential file names for the calibration standards.
5. Use Direct Control to bring the trays to the load position. Verify that the Test Mix vials are in the appropriate positions.
6. Run the Sequence table.
7. When the run is complete, review your calibration data.

Summary

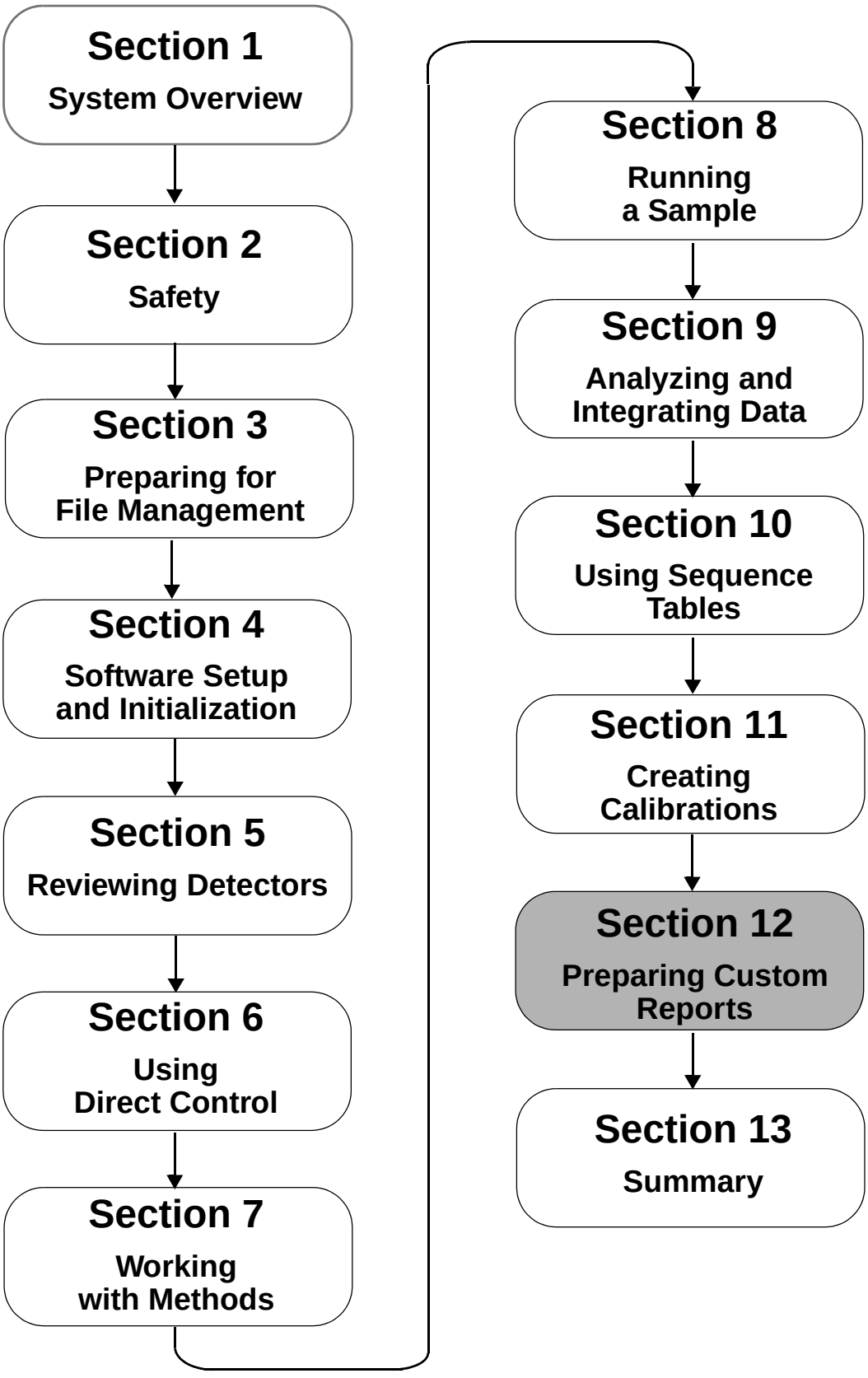
You now know the basics of generating, analyzing and reporting electrophoretic data. Next we will set up customized reports and sequence reports.

Section 12-Preparing Custom Reports

Overview

This section considers the creation of custom reports. We will discuss:

- Accessing a Custom Report
- Editing a Custom Report
- Creating a Report
- Skill Check


Section 1
System Overview
Section 2
Safety
Section 3
Preparing for File Management
Section 4
Software Setup and Initialization
Section 5
Reviewing Detectors
Section 6
Using Direct Control
Section 7
Working with Methods
Section 8
Running a Sample
Section 9
Analyzing and Integrating Data
Section 10
Using Sequence Tables
Section 11
Creating Calibrations
Section 12
Preparing Custom Reports
Section 13
Summary

Accessing and Editing a Custom Method Report

Figure 105 Instrument Window with Method | Custom Report selected

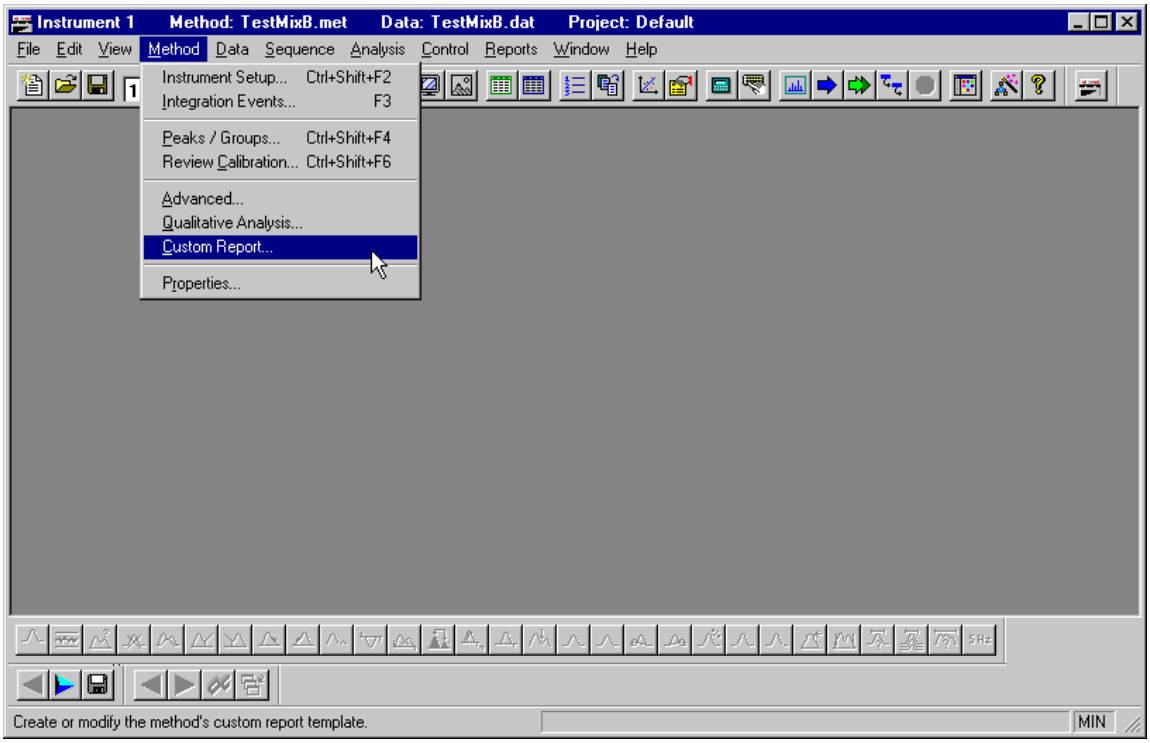


Figure 106 Instrument Window with File | Report Template selected

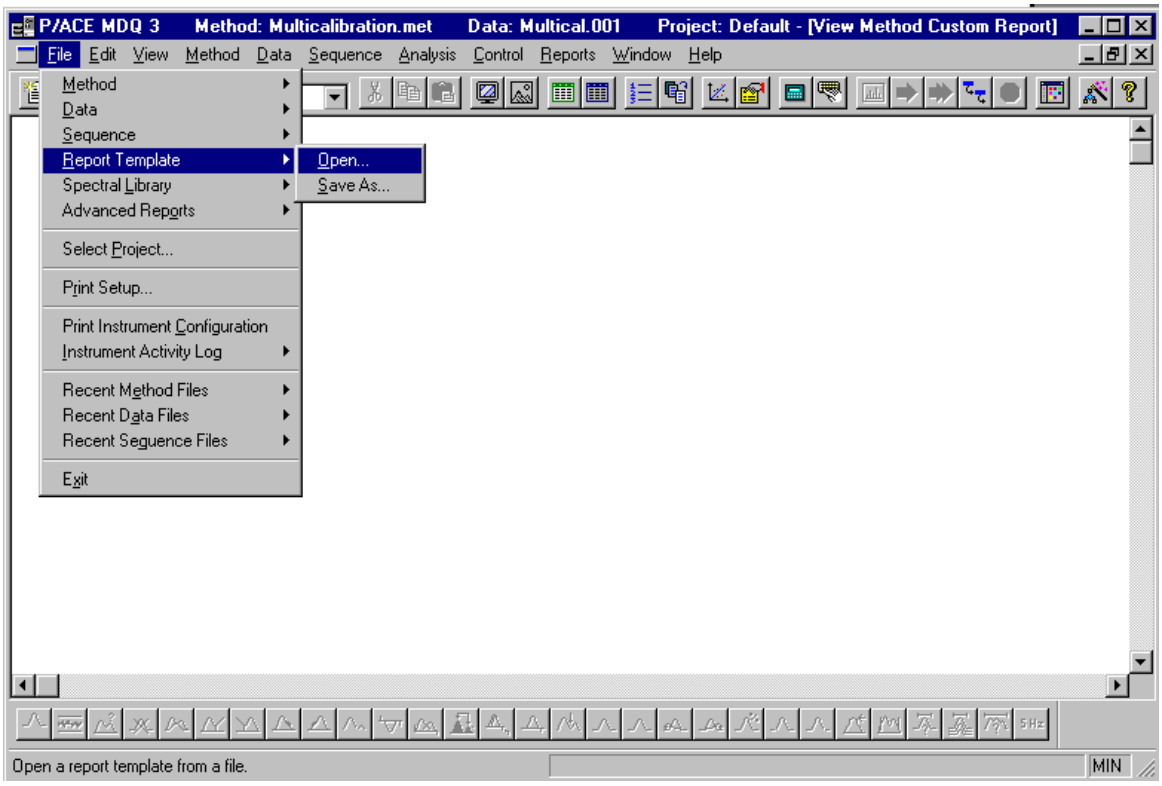


Figure 107 Report Template Open dialog box

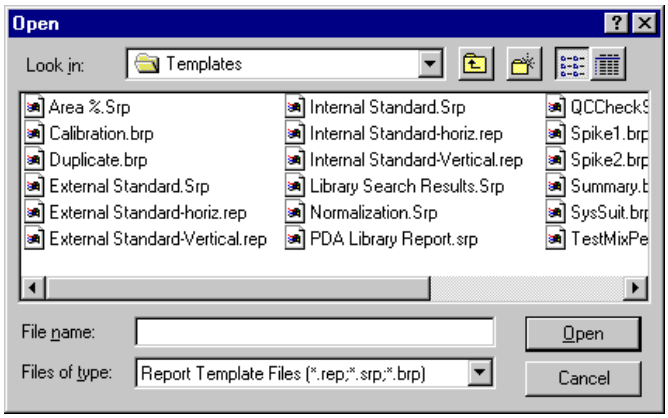
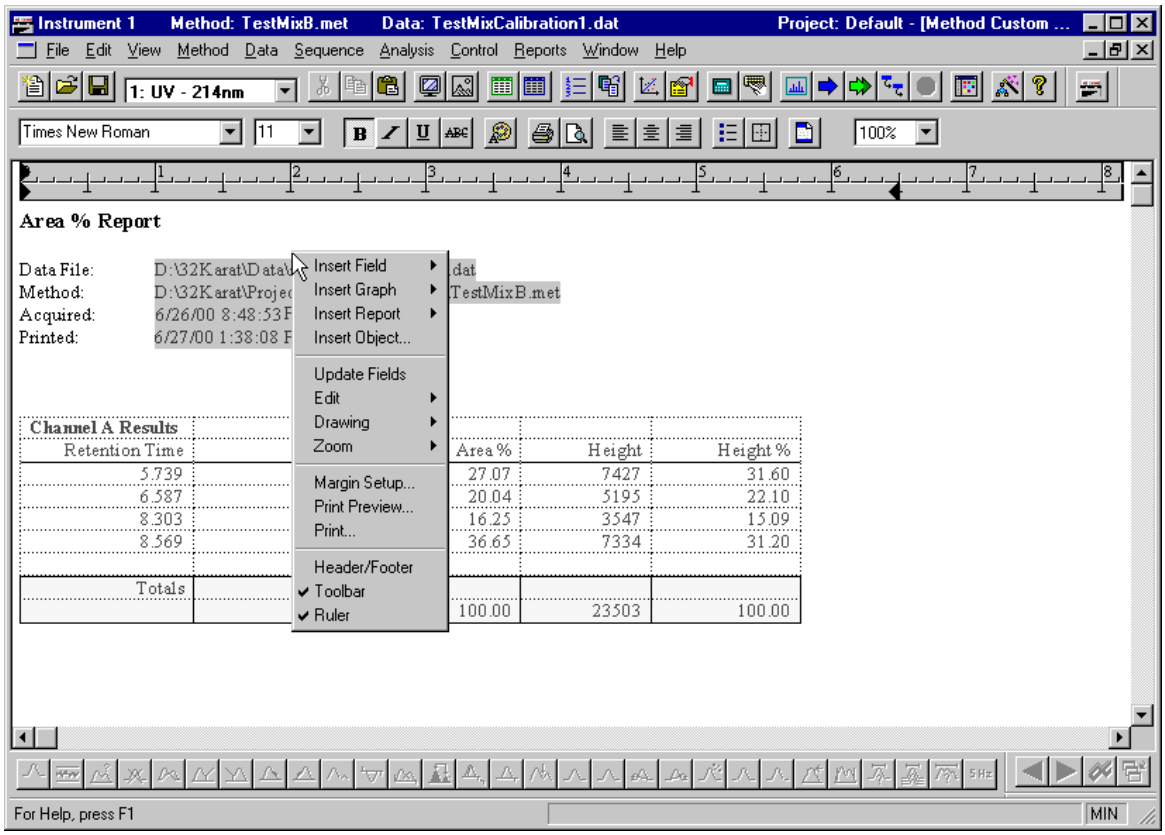


Figure 108 Method Report Template with right-click menu displayed



Creating a Custom Method Report

Figure 109 Instrument Window with the Custom Report open and right click menu displayed

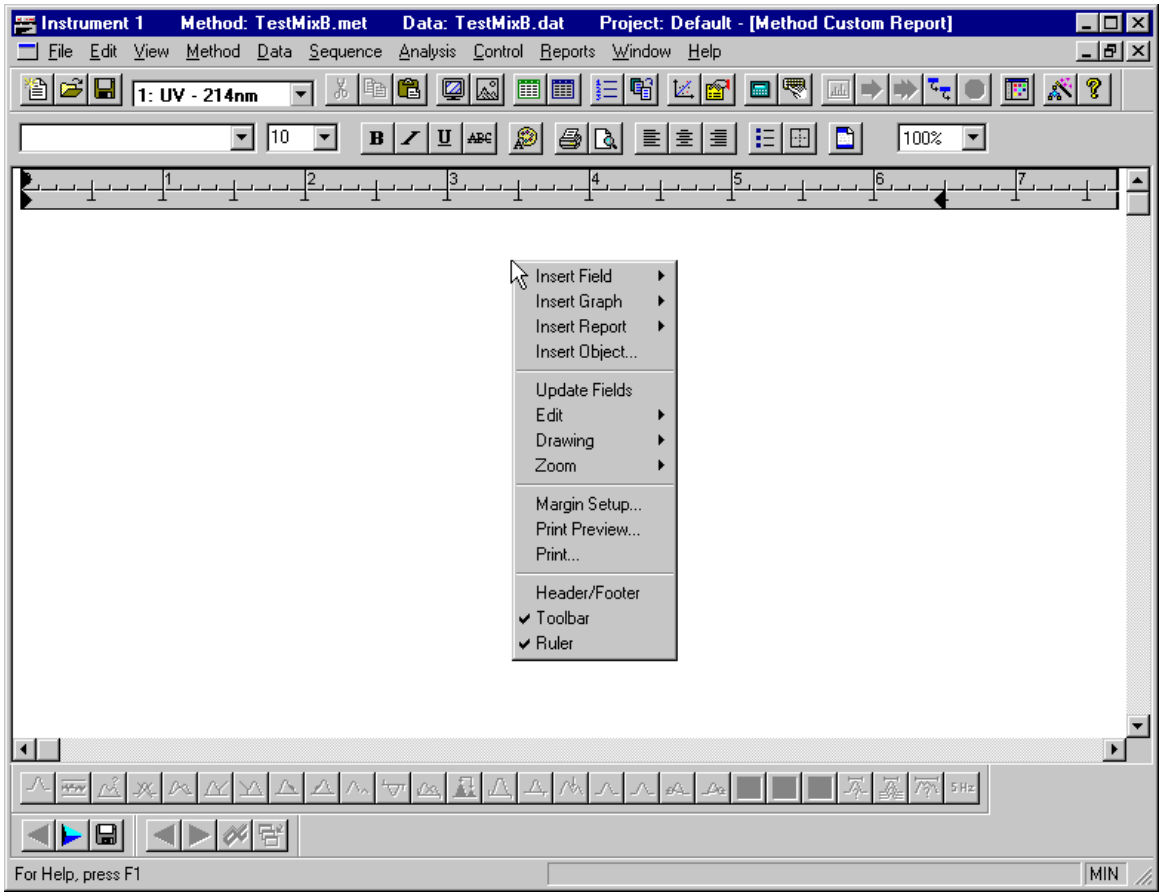
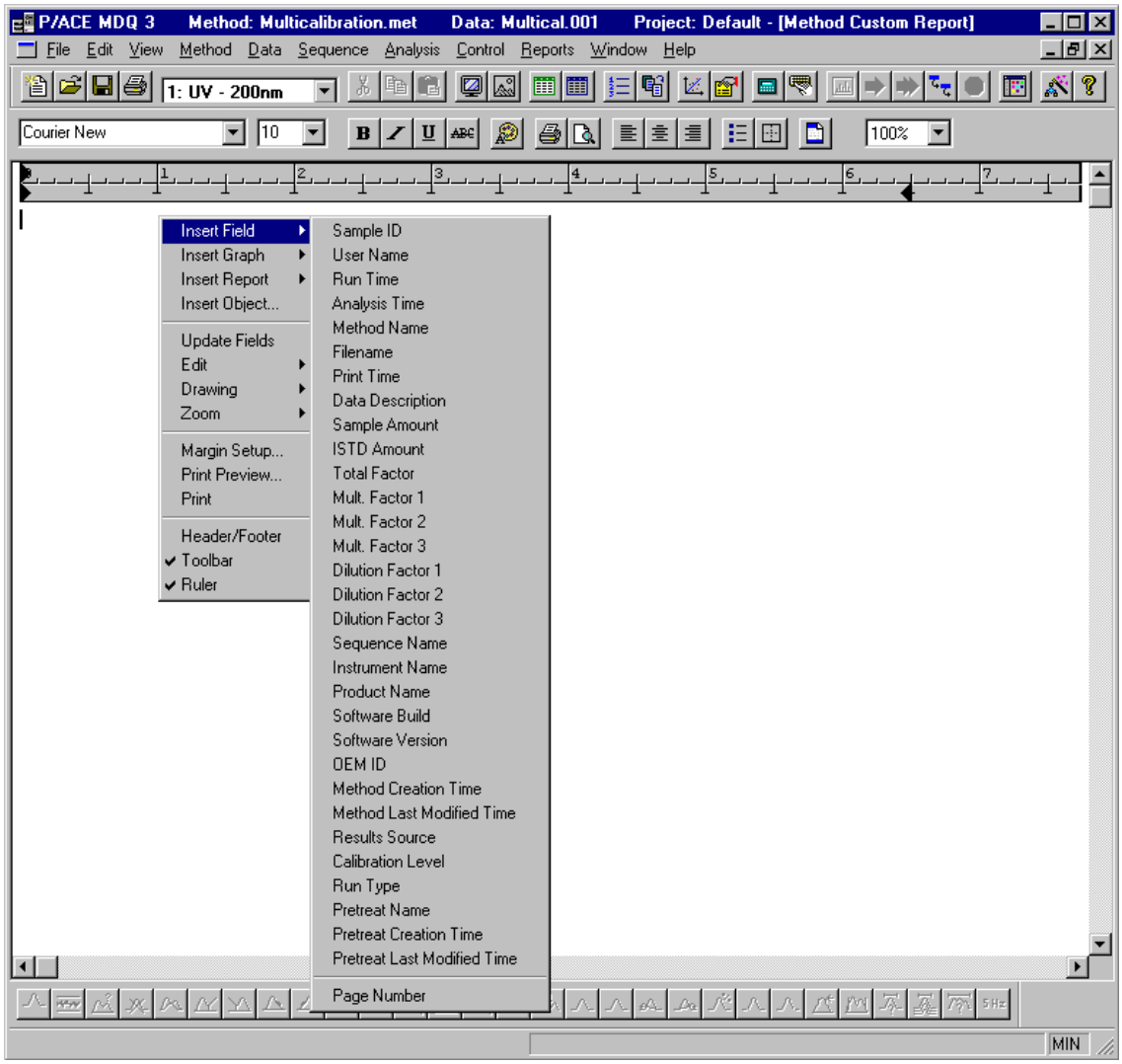
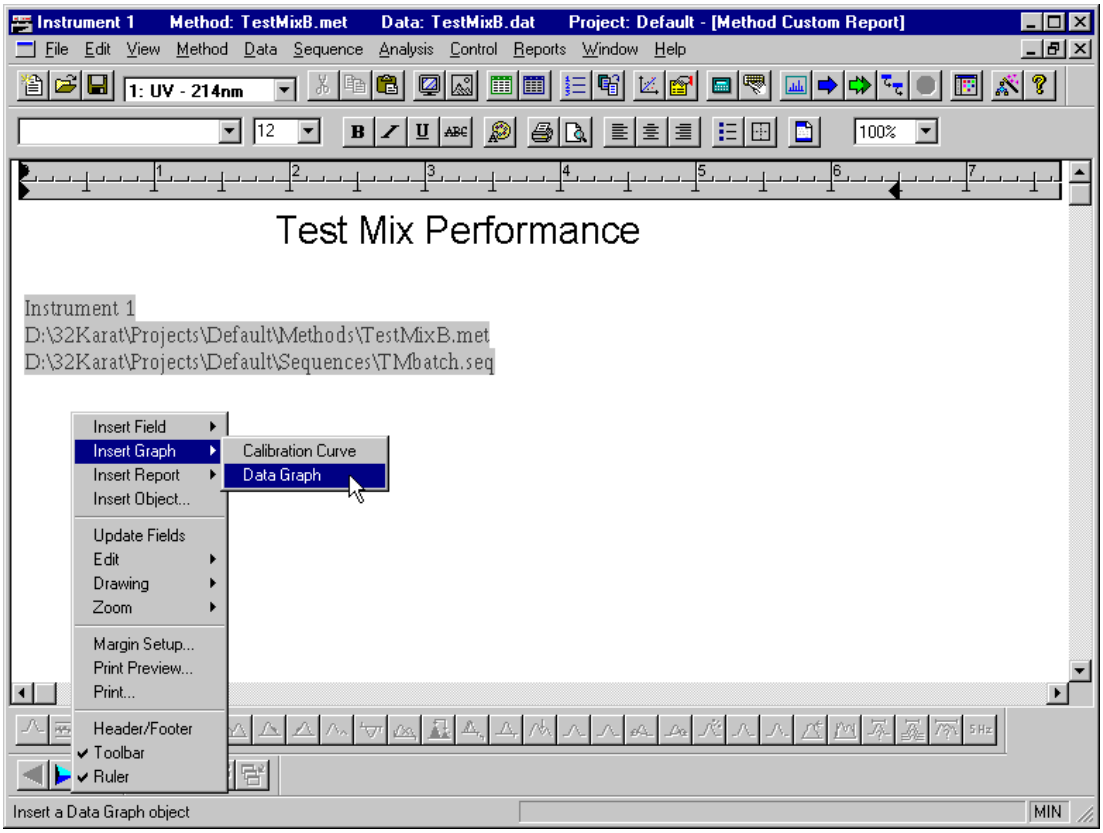


Figure 110 Instrument Window with the Custom Report open; right click menu displayed and Insert Field selected



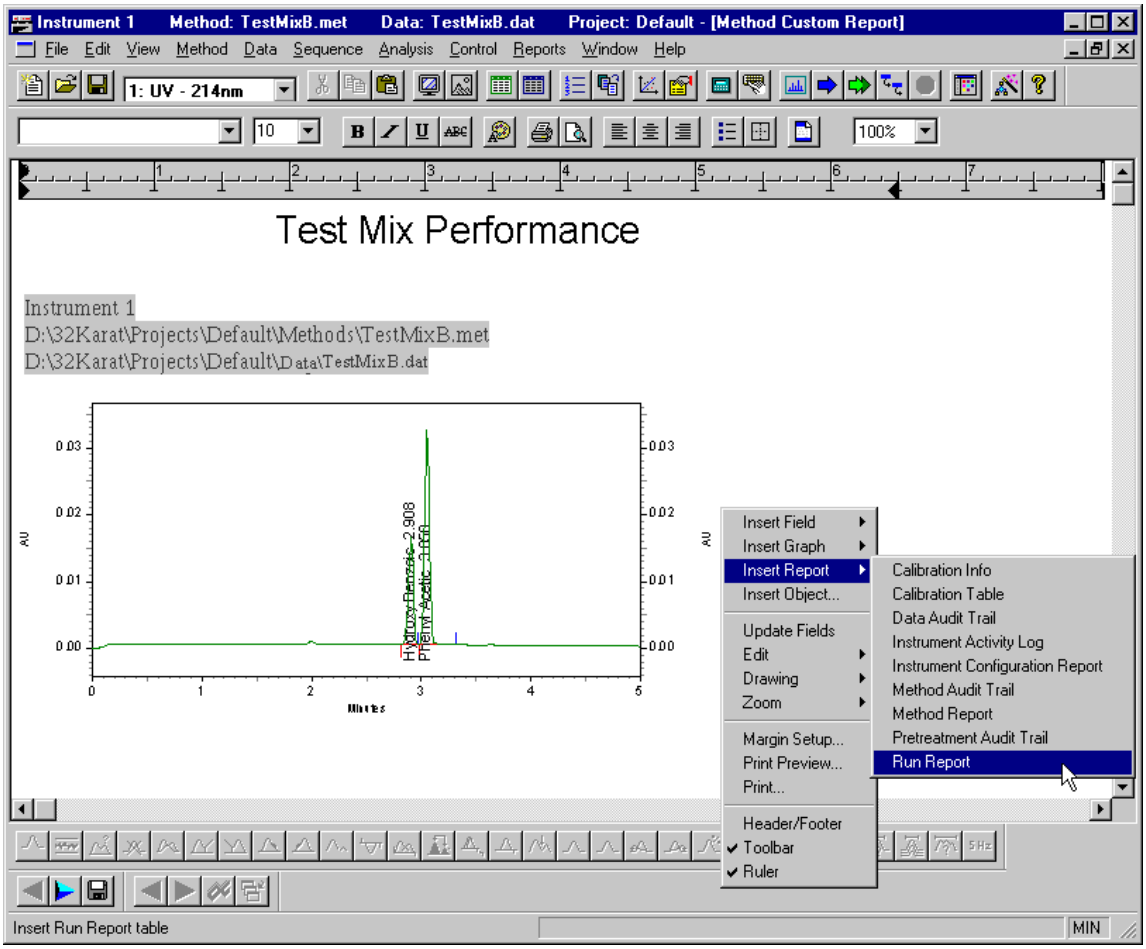
- ❑ Inserting a Field

Figure 111 Instrument Window with the Custom Report open; right click menu displayed and Insert Graph selected



- Inserting a Graph

Figure 112 Instrument Window with the Custom Report open; right click menu displayed and Insert Report Selected



- ❑ Inserting a report
- ❑ Format columns

Figure 113 Run Report dialog box

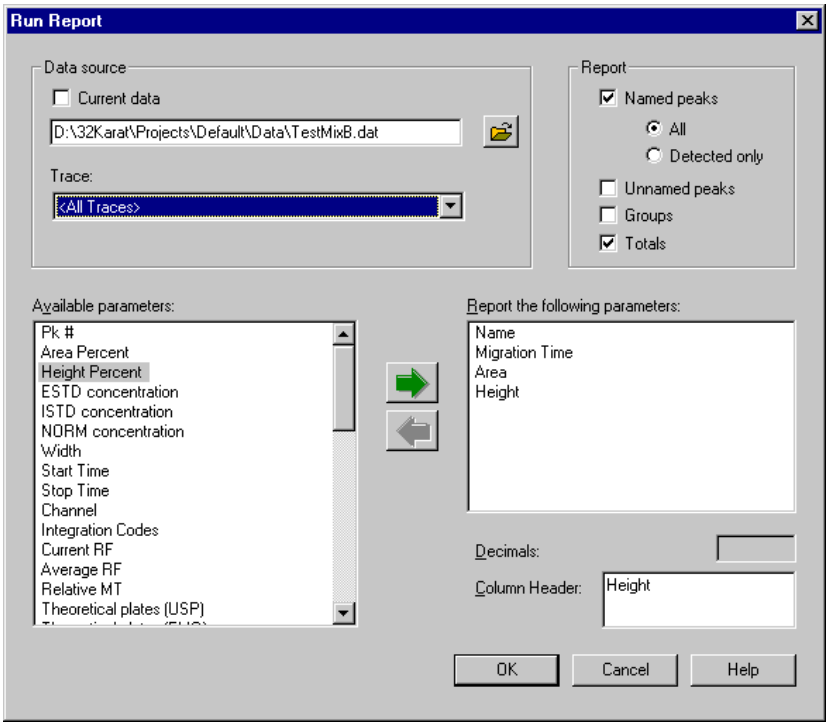
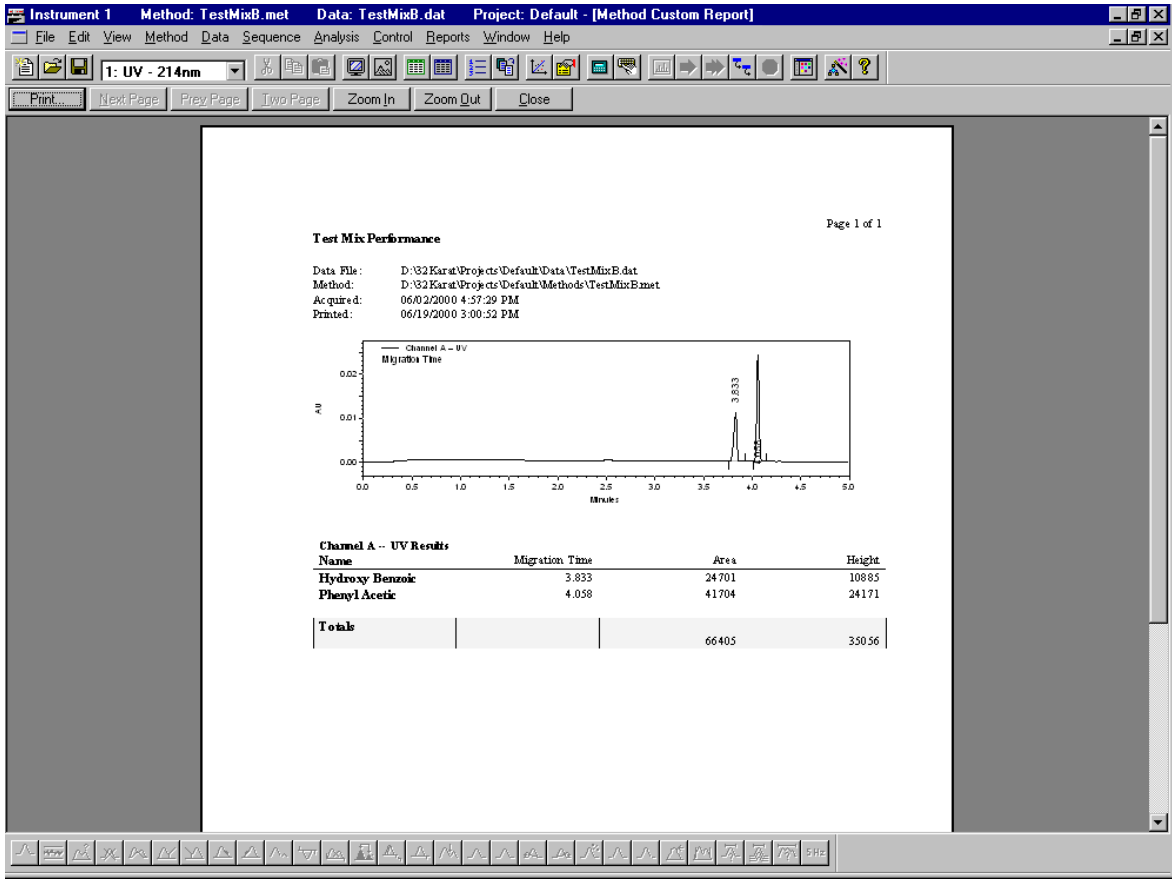


Figure 114 Formatted Custom Report



Skill Check

Upon completion of this section, you should be able to do the following:

1. Start and configure 32 Karat Software.
2. Establish initial conditions to run the method used to generate your first electropherogram.
3. Run a sample of test mix.
4. Analyze the data and generate a custom report that includes:
   - A header and footer
   - Information fields
   - An electropherogram with identified peaks (data graph)
   - A run report
5. Save the report as a template and print the final report.

Summary

Congratulations! You have successfully completed 32 Karat Software Basic Instrument Training. We suggest that you repeat these exercises on your own before beginning work with your own methods and samples.

Section 13-Summary

Advancing Your Skill

We sincerely hope that you are pleased with your new P/ACE MDQ system.

32 Karat Software has many additional features and functions that are beyond the scope of this introduction. These include:

- System Administration
- System Suitability
- Data Export
- User defined data manipulation
- Many detailed conveniences throughout the software

To help you benefit from these advanced features, we have provided you with On-line Help. This Help is also available as an on-line manual which can be found on the 32 Karat Software Manual CD-Rom. You can purchase a printed version of 32 Karat Software Manual, P/N 149927. Please take some time to familiarize yourself with these references. If you would like to enroll in one of our advanced seminars or purchase additional in-lab training, please contact your local service office at 1-800-551-1150.

Record of Operator Training

Training Summary

The following pages list the contents of 32 Karat Software Basic Training Workbook. Items initialed by the instructor are relevant to the system trained and were covered. Items marked with an “x” are not relevant to the system trained and were not covered.

Instructor Name_____

Operator Name_____

Operator Name_____

Checklist:

- ❑ System Overview
- ❑ Hardware Terminology
- ❑ Safety Features
- ❑ Safety Notices
- ❑ Chemical/Biological Safety
- ❑ Electrical Safety
- ❑ Electrostatic Discharge
- ❑ Windows NT Explorer
- ❑ Accessing 32 Karat Software
- ❑ Configuring 32 Karat Software
- ❑ Starting Newly Configured Instrument
- ❑ Accessing Direct Control
- ❑ Using Direct Control
- ❑ Using the Method Wizard
- ❑ Creating a Method
- ❑ Saving a Method
- ❑ Editing a Method
- ❑ Printing a Method
- ❑ Other Method Functions
- ❑ Running a Single Sample
- ❑ Stopping / Aborting Methods
- ❑ Displaying Data
- ❑ Opening Data Files
- ❑ Optimizing Integration
- ❑ Defining and Naming Peaks
- ❑ Identifying Peaks using Migration
- ❑ Identifying Peaks using Mobility
- ❑ UV, PDA or LIF Initial Conditions
- ❑ PDA Setup
- ❑ UV, PDA or LIF Data Display
- ❑ LIF Calibration Wizard
- ❑ Using the Sequence Wizard
- ❑ Viewing a Sequence
- ❑ Editing Sequences
- ❑ Saving Sequences
- ❑ Running Sequences
- ❑ Accessing Custom Reports
- ❑ Creating Custom Reports
- ❑ Editing Peak ID Table for Calibration
- ❑ Creating Calibration Sequences with Sequence Wizard
- ❑ Running Calibration Sequences
- ❑ Reviewing Calibration Curves

Signatures:

Operator _____Date_____

Operator _____Date_____

The person(s) listed above have received basic instruction from the representative signed below.

Instructor _____Date_____