

Empower 3

Getting Started Guide

General information

Copyright notice

© 2002 – 2017 WATERS CORPORATION. PRINTED IN THE UNITED STATES OF AMERICA AND IN IRELAND. ALL RIGHTS RESERVED. THIS DOCUMENT OR PARTS THEREOF MAY NOT BE REPRODUCED IN ANY FORM WITHOUT THE WRITTEN PERMISSION OF THE PUBLISHER.

The information in this document is subject to change without notice and should not be construed as a commitment by Waters Corporation. Waters Corporation assumes no responsibility for any errors that may appear in this document. This document is believed to be complete and accurate at the time of publication. In no event shall Waters Corporation be liable for incidental or consequential damages in connection with, or arising from, its use. For the most recent revision of this document, consult the Waters website (waters.com).

Trademarks

ACQUITY® is a registered trademark of Waters Corporation.

Empower® is a registered trademark of Waters Corporation.

THE SCIENCE OF WHAT'S POSSIBLE® is a registered trademark of Waters Corporation.

Waters® is a registered trademark of Waters Corporation.

Windows® is a registered trademark of Microsoft Corporation in the US and/or other countries.

All other trademarks are property of their respective owners.

Customer comments

Waters' Technical Communications organization invites you to report any errors that you encounter in this document or to suggest ideas for otherwise improving it. Help us better understand what you expect from our documentation so that we can continuously improve its accuracy and usability.

We seriously consider every customer comment we receive. You can reach us at tech_comm@waters.com.

Contacting Waters

Contact Waters with enhancement requests or technical questions regarding the use, transportation, removal, or disposal of any Waters product. You can reach us via the Internet, telephone, fax, or conventional mail.

Waters contact information

Contacting medium	Information
Internet	The Waters Web site includes contact information for Waters locations worldwide. Visit www.waters.com
Telephone and fax	From the USA or Canada, phone 800-252-4752, or fax 508-872-1990. For other locations worldwide, phone and fax numbers appear in the Waters Web site.
Conventional mail	Waters Corporation Global Support Services 34 Maple Street Milford, MA 01757 USA

Table of contents

General information	ii
Copyright notice	ii
Trademarks	ii
Customer comments	ii
Contacting Waters	iii
1 Getting Started using the Empower System.....	6
1.1 Software concepts and organization	6
1.1.1 Key concepts	6
1.1.2 Organization of this guide	10
2 Empower Software Interface Features	12
3 Prerequisites and Starting Up	16
3.1 Before you begin	16
3.1.1 Preliminary configuration of Empower	16
3.1.2 Configuring your printer	17
3.2 Starting up and logging in	17
3.3 QuickStart Interface tour	20
3.3.1 Using Empower Online Help.....	27
4 Developing Methods for Data Acquisition and Processing.....	29
4.1 Creating an instrument method	29
4.1.1 Setting solvent delivery system parameters	32
4.1.2 Saving the instrument method	35
4.2 Creating a method set.....	36
4.3 Acquiring data	39
4.4 Creating a processing method	43
4.5 Modifying the method set	57

4.6 Acquiring data using Run and Process	59
5 Creating a Sample Set Method	61
5.1 Using the New Sample Set Method Wizard	61
5.2 Entering Component Information	68
6 Creating a Processing Method Interactively	78
6.1 Creating a processing method in Review Data main window	78
7 Generating and Reviewing Results	94
7.1 Altering Samples	94
7.2 Processing the sample set	101
7.3 Reviewing the result set	105
7.4 Reporting	109
8 Backing Up and Restoring Projects	111
8.1 Backing up projects	111
8.1.1 Performing a backup	112
8.2 Restoring Projects	114
8.2.1 Restoring a project	114
A Creating Projects	118
A.1 How to create a project	118
B Creating Systems	124
B.1 Creating a chromatographic system	124

1 Getting Started using the Empower System

Empower is a software system for single or multi-system computers, linked to a set of chromatographic instruments, that performs acquisition, processing, and management of chromatographic information.

You should be familiar with the various configurations of Waters products that Empower supports. For additional background information, refer to the Waters website and documentation available for the individual products.

Note: This guide refers to and uses the Defaults project you received with your Empower installation. Ensure this project has been restored and is available before using the guide. Refer to [Section 8.2](#) to learn how to restore a project.

1.1 Software concepts and organization

Empower software provides a graphical, icon-based user interface to acquire, process, manage, and report chromatographic data in the Empower database.

Empower software supports Windows operating systems and their multitasking operations, allowing you to have multiple windows open at the same time. Windows multitasking allows you to view a real-time data acquisition run, while simultaneously producing summary results of previously acquired data, or fine-tuning integration parameters for any previous injection.

The base version of Empower software supports LC, GC, and IC data processing, data from photodiode array (PDA), and mass spectrometry (MS) detectors. Empower software options [Dissolution, System Suitability, Gel Permeation Chromatography (GPC), Gel Permeation Chromatography with Viscometry (GPCV), Light Scattering (LS), Chemical Structures, and Toolkit] are available for integrated operation with the base Empower software.

This section describes the key concepts of Empower and how Empower implements those concepts in the software. It also describes the organization of this guide.

1.1.1 Key concepts

This section provides the important concepts you should understand before starting to use Empower.

Project

The basic organizational unit of Empower software is the Project. A project is a user-defined collection of methods, results, peaks, custom fields, and raw data. A project may also include audit trail and sign-off information. Everything except the raw data is stored in a reserved area of tablespace within the Empower database. Project raw data is stored in a separate directory.

Method

The actions you want to perform in your project are known as Methods. In Empower, a method is equivalent to a set of instructions that describes how you want Empower to perform a task for you. There are several types of methods you can use for various purposes. A method can instruct Empower about how you want it to control a chromatographic system, or acquire, process, report, or export data. Empower stores the methods you create as part of your project. Methods exist independently and are added to a method set within a project to provide all the necessary instructions for chromatography runs.

Method, Sample, and Result Sets

You can also group methods together into a method set to perform multiple functions sequentially (such as running samples and then automatically processing, reporting, and exporting data). For multiple samples, you associate a method set with each sample to form a bound set of samples. After processing the sample set, you will have a bound set of results in the result set.

Requirement: At a minimum, for a single injection, you must create a method set that contains an instrument method to enable data acquisition.

Empower Workflow

Figure 1-1 illustrates the relationship between project elements and the flow of information within a project. The HPLC or UPLC instruments connect to an acquisition server or client (PC for personal and LAC/E for enterprise) and are controlled by the instrument method (IM) in the method set. Data is acquired in the Run Samples area of the software.

A sample set method defines which samples will be run, in which order, the number of injections, the injection volume, and the run time. Once the sample set method is run, a sample set is collected. A sample set is a bound collection of raw data consisting of the injections and all channels of data collected.

If the method set has a specified processing method (PM) then you can provide instructions to process the raw data and produce a result set. A result set is a bound collection of results. If the method set has a report method (RM), then you can provide instructions to format and print the results (hard copy or electronic copy).

Figure 1–1: Empower Workflow

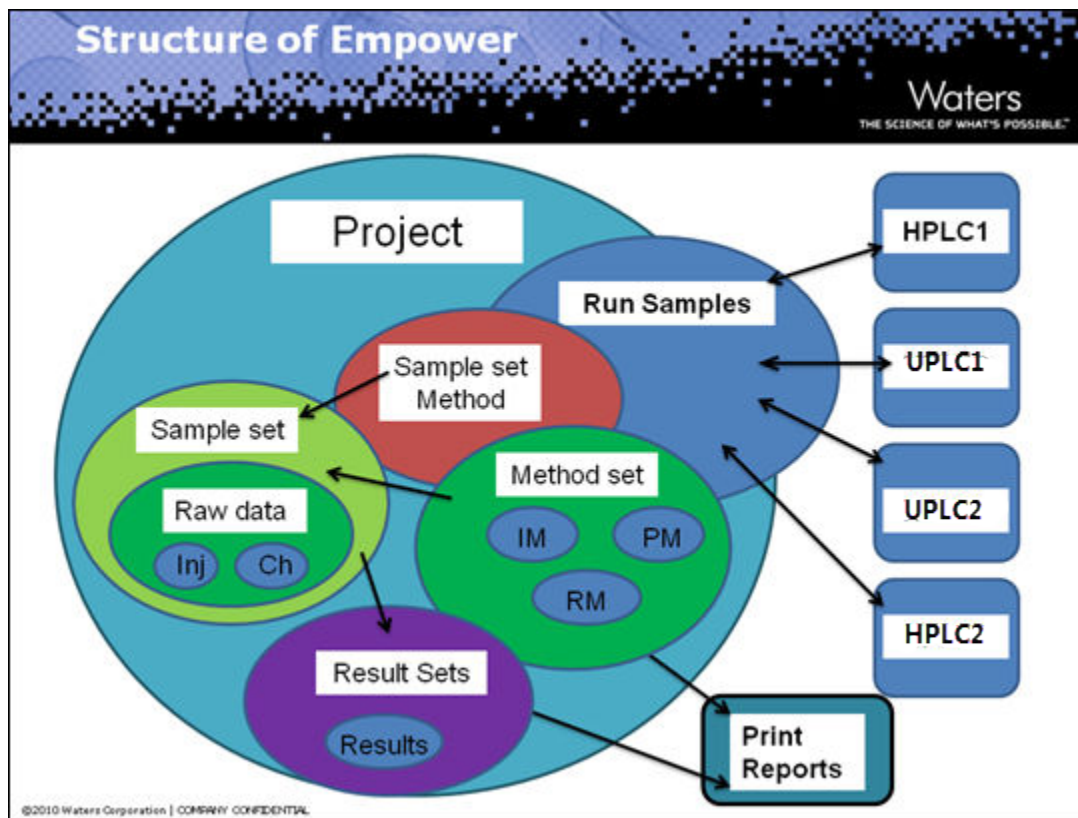


Table 1–1: Types of methods

Method	Description
Instrument	Specifies the control parameters for pumps, solvent management systems, detectors, autosamplers, sample management systems, and gas chromatographs.
Processing	Defines how you want Empower to process data from a 2D channel or a 3D extracted channel. It defines the integration parameters, calibration parameters (non-MS), and component identification. For example, you can specify whether to integrate peaks by determining peak start and peak end for each peak (Traditional integration), or by determining the peak apex (ApexTrack integration). You can also define how to calibrate standards and quantitate unknowns, define the range of allowable values for each component, and calculate detector noise and drift parameters.
Sample Set Method	Specifies functions and parameter settings that Empower uses to acquire data from a set of vials or samples.

Table 1–1: Types of methods (continued)

Method	Description
Sample Set Method Template	Serves as a template for a sample set method. It includes the preset sample parameters you define (so you do not have to reenter these values each time you run a sample), and accommodates for variations from one run to another (by prompting you for those parameters you do not define in the template). Tip: Creating a template for a sample set simplifies the process of creating new sample sets for frequently run analyses where some variables are expected to change.
Report	Contains the layout that will be used for data when you generate a report. This layout describes how your data (such as the results and calibration curves) will appear on a printed page.
Export	Specifies the data to export and file format to be used when exporting data. Available formats include ASCII, AIA, OpenLynx, PDF, or EMF.
Method Set	Contains a group of methods.

Data Acquisition

You can acquire, process, and analyze chromatographic data collected from both Waters instrumentation and third-party instrumentation using detection techniques, such as mass spectrometry (MS), photo diode array (PDA), and light scattering (LS), and analysis tools, such as Dissolution, System Suitability, and Chemical Structures.

You can inject and collect data for one sample at a time, quickly analyze a sample, or perform a test injection. When acquiring data from more than one sample, you can save time and ensure consistency by using a predefined set of conditions or instructions (defined in a sample set method) that specifies how and when to acquire data from each sample in a set. Samples can include standards for calibration (both internal and external), unknown samples, and control samples.

Tip: When you run samples to acquire data, Empower relies on the method set (which includes an instrument method) to communicate the control and acquisition parameters, such as the flow rate of a pump or the wavelength of a detector, to the instruments in a configured chromatographic system. It also relies on the sample set method to specify the number and order of samples to run, the function to apply to each sample (such as Inject Standards or Inject Samples), the run mode for a sample, when to equilibrate, calibrate, and quantitate, which method set or report method to use, and so on.

Data Processing

After you acquire data, you use a processing method to process the data and to calculate and analyze results. Processing data involves integrating the raw data, and then calibrating your standard samples, or quantitating your unknown samples. Depending on your department procedures, you may want to process data after acquisition, or process data that was imported from other sources or locations.

You can process data interactively or in the background.

When processing data, you can use a method set that contains all the methods, or you can specify individual methods for the various operations to perform, such as processing the data (processing method), printing the results (report method), or exporting the results (export method). If processing 3D data, use a method set that includes the instrument method, processing method, report method, and export method you created, and any derived channels needed to process data.

Tip: One of the best ways to take advantage of Empower's capabilities is to use a single sample set method to automatically run a sample set and calibrate standards, quantitate samples, analyze controls, generate results, evaluate suitability parameters, print and email reports, and export data.

Altering Samples

You may want to change sample identifiers, modify component amounts after data acquisition, or correct errors made while loading samples, defining sample identifiers, entering component amounts, acquiring sample sets, or changing channels.

Reviewing and Reporting

After you acquire and process your data, you can use Empower to review and compare your raw data or results. Then, after you analyze data, you will most likely want to generate and distribute a report to your team. You can generate reports from processed data, raw data, methods, peaks, or curves. To generate a report, use a previously-created report method to design the main body of your report. Before you distribute the report, you can preview its contents and modify the layout, as needed.

1.1.2 Organization of this guide

This guide emulates a basic chromatography run in your own laboratory. Use your own samples as you follow the example in the guide and obtain actual results from your own installation.

Note: Your instruments and nodes must be pre-configured, available, and accessible over your network to start using this guide. You must also have defined a project and system. See [Prerequisites and Starting Up](#).

As you work through the guide, you will perform the following activities in sequence.

Table 1–2: Basic chromatography run using your samples

Activity	Chapter or appendix location
Create a chromatographic system. This is usually performed by the Waters Field Service Engineer.	A

Table 1–2: Basic chromatography run using your samples (continued)

Activity	Chapter or appendix location
Create a project named <code>Training</code> . This is usually performed by the Waters Field Service Engineer.	B
In the "Training" project, create and configure an instrument method.	4.1
Create a method set named <code>Training Method Set</code> .	4.2
Configure plates, as needed.	4.3
Equilibrate the system, and then start a single injection and acquire the data.	4.4
Create a processing method. Configure integration and calibration parameters in the processing method.	4.5
Add the processing method to the method set.	4.6
Acquire more data using the Run and Process feature.	4.7
Create a sample set method, and then add standard brackets or samples.	5.1
Create a multilevel calibration curve by entering component amounts or concentrations, and then run the sample set.	5.2

Table 1–3: Advanced processing features using the Defaults project data

Activity	Chapter or Appendix Location
Change the project to Defaults . Create a processing method interactively, and then integrate, calibrate, and quantitate the data. Add it to the method set.	6.1
Use the Alter Sample Set feature to correct and add information related to the samples. Specify background processing and reporting, and then process the sample set. Review the results set. Generate and print a report.	7.1-4
Back up the project.	8.1
Restore the project.	8.2

2 Empower Software Interface Features

Empower software provides three different user interfaces for you to select at login:

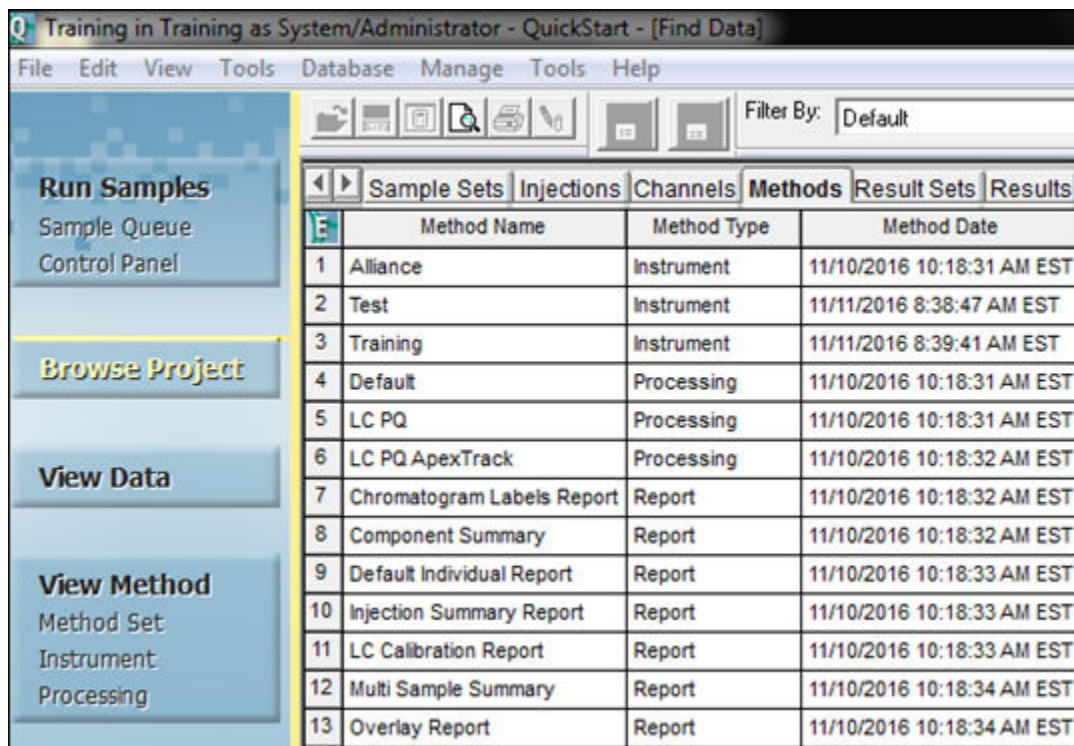
- QuickStart
- Pro
- Walk-Up

Each interface is designed to meet the needs of a particular type of user. Your system administrator selects which interface appears when you log in and grants access to other interfaces. If you have access to multiple interfaces, you can select a different interface by clicking the **Advanced** button in the Empower Login dialog box (see [Starting up and logging in](#)).

Empower QuickStart

The Empower QuickStart interface (Figure 2-1) enables you to perform the tasks required to acquire data, analyze results, and create reports. The one-screen design lets you navigate through the software easily. The **Show Me Help** drives the software so you can learn while performing common tasks and procedures. See [QuickStart Interface Tour](#).

Figure 2–1: Empower QuickStart Browse Project window

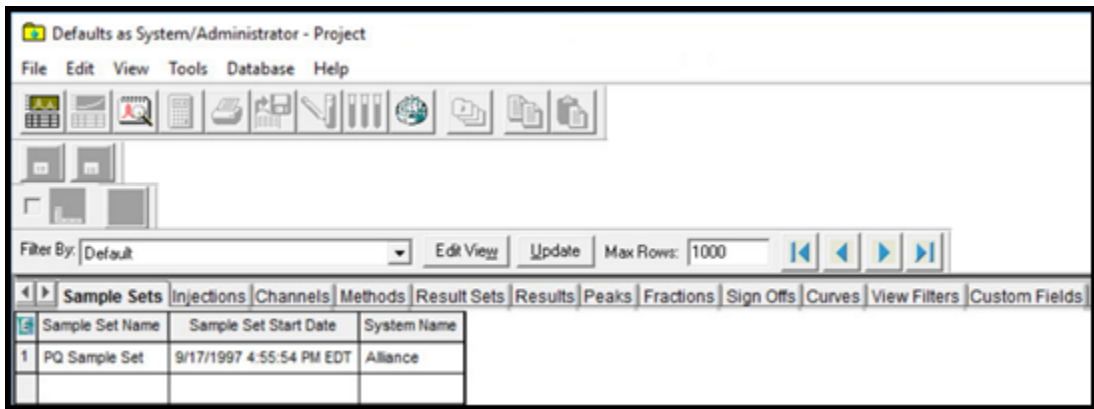


Empower Pro

The Empower Pro interface is designed for a user who requires total control and full access to all software features, such as a system administrator or advanced user.

Using the Empower Pro login window, you can access the three key software functions as shown in Figure 2-2. The second figure displays an example of the Pro interface displaying the components of a project contained in Empower.

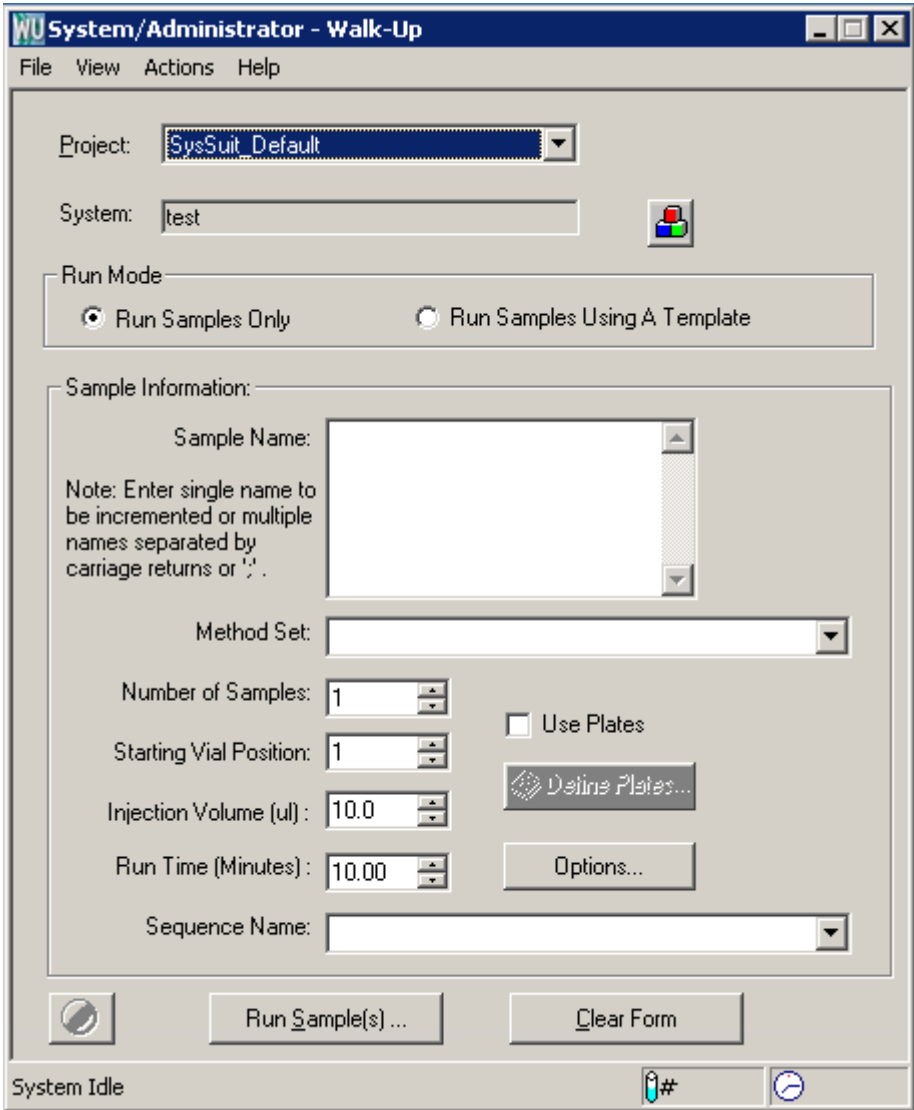
Figure 2–2: Empower Pro login and interface



Empower Walk-Up

The Walk-Up interface (Figure 2-3) allows a user to easily submit samples for routine analysis and generate results without extensive chromatography knowledge.

Figure 2-3: Empower Walk-Up interface



3 Prerequisites and Starting Up

You can work with your own instruments and components while following the example chromatography run and subsequent processing described in this guide. Make sure you have set up your configuration before starting Empower.

3.1 Before you begin

Note: Check the Waters web site for updated information and the latest release notes.

Ensure these conditions are met before using this guide:

- The Empower computer components (monitor, keyboard, and mouse) are installed and powered up with the Empower software as described in the *Empower 3 Installation, Configuration, and Upgrade Guide*
- You have installed the Empower software as described in the *Empower 3 Installation, Configuration, and Upgrade Guide*
- Your system includes, at a minimum, the following Waters instrumentation:
 - Solvent manager
 - Sample manager
 - Detector
- Your system's chromatographic instruments are connected to the acquisition server, instruments are powered up, any calibration and diagnostic routines are complete, and the instruments appear as a properly configured system in the Systems view of Configuration Manager.
- Solvents and samples are prepared.
- Optionally, your printer is properly configured in Windows and in Empower.
- The Defaults project is loaded.

3.1.1 Preliminary configuration of Empower

Before you start using this guide, ensure that either you or the Waters Field Service Engineer have created a system with the appropriate instruments for your chromatography run. The system should be connected to your acquisition system and have a name of your choosing.

The example we use in this guide has a project name of Training. The system includes an ACQUITY H-Class Separations Module and an ACQUITY PDA Detector with the name Hclass with PDA.

Note: The example in this guide is a general description of how to use Empower. Specific instructions will differ according to your individual configuration.

3.1.2 Configuring your printer

Before printing reports from Empower, verify that your printer is configured:

1. Select **Start > Programs > Empower > Register Acquisition Server Printers** (Windows 7 systems). In Windows 10, from **Start >** click the down arrow to display the Apps page > point to **Empower >** select **Register Empower Node**.
2. Verify that the list of printers is correct.

3.2 Starting up and logging in

This section describes how to start up the system and log in to your Empower software.

1. Power-on the system instrumentation as follows:
 - a. Chromatographic instruments (wait until all internal calibration and diagnostic routines are complete before powering-on the next instrument).
 - b. Peripheral devices connected to the Empower system, such as a printer.
 - c. Acquisition server.
2. To start Empower software, double-click the Empower icon on your desktop.

Figure 3–1: Login dialog box



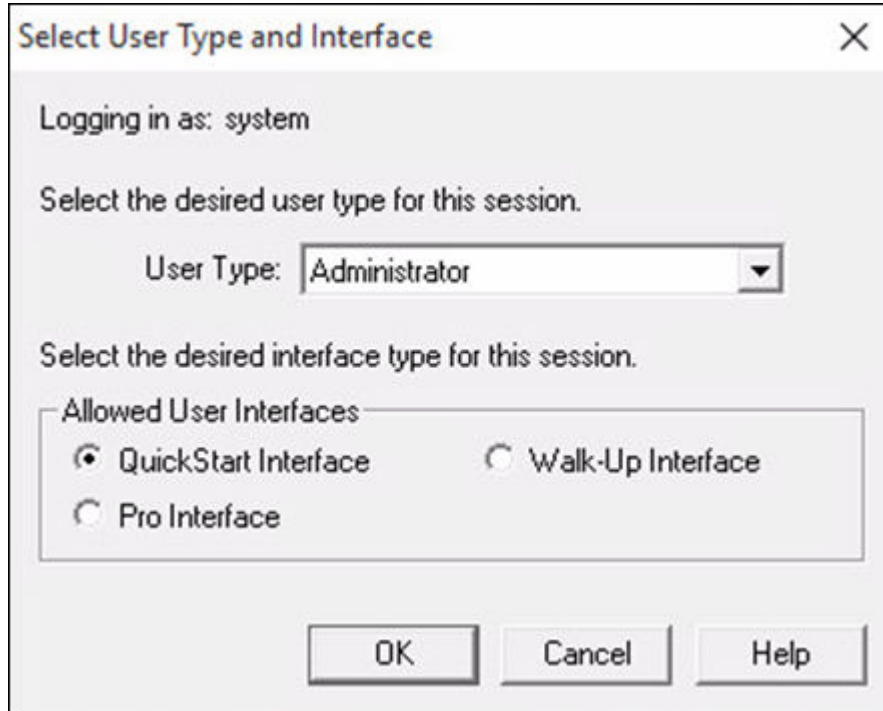
3. In the Login dialog box, enter your user name and password. You must enter your user name and password each time you log in.

Note: For a new installation, the default user name is `system` and the password is `manager`.

4. If you are using an Empower Workgroup or Enterprise system, select a database from the **Database** list. This list appears only when connected to a client/server system.
5. Click **Advanced**, then select **QuickStart Interface** from the **Allowed User Interfaces** list (Figure 3-2). The system administrator determines which interfaces appear in the list and which one is your default interface. Click **OK**.

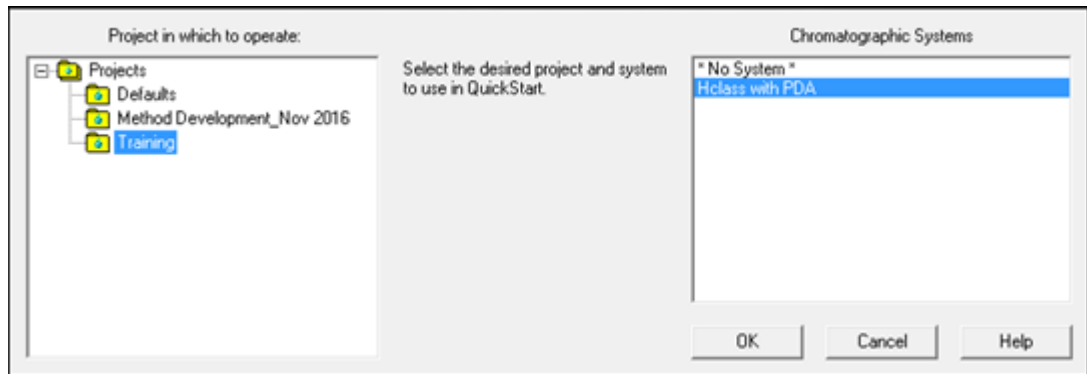
Note: This guide uses the QuickStart interface. If the QuickStart interface does not appear in the Allowed User Interfaces list, it must be enabled by a system administrator.

Figure 3–2: Allowed user interfaces selection



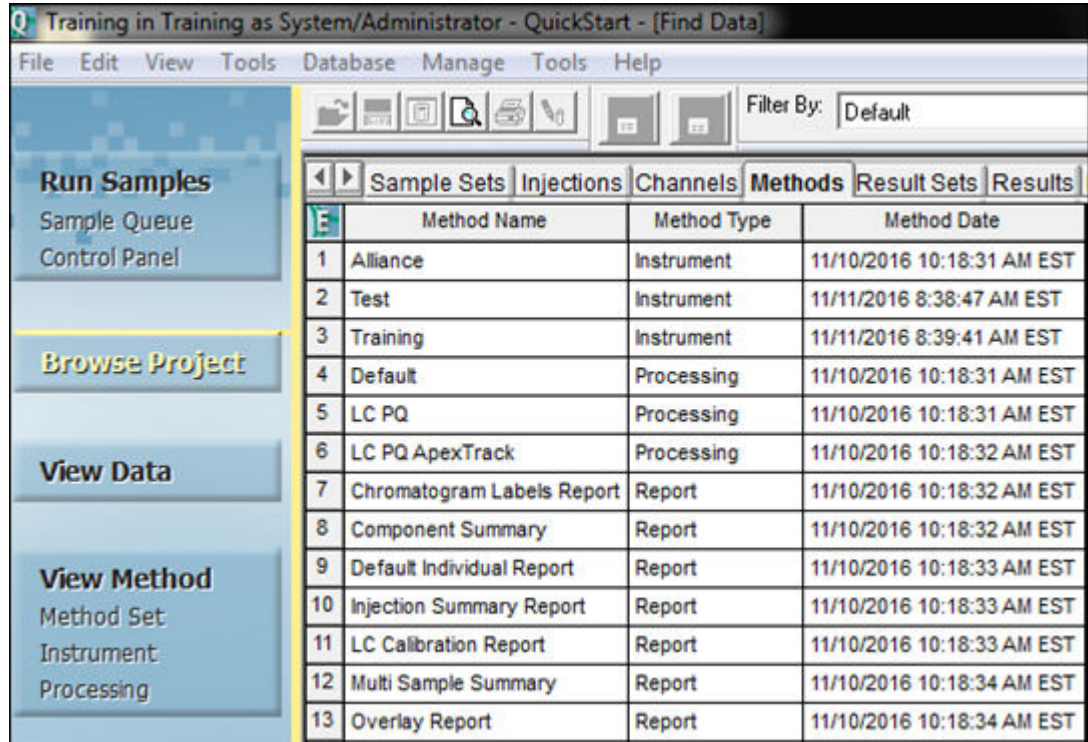
6. In the Select Project and System dialog box (Figure 3-3), select a project.

Figure 3–3: Select Project and System dialog box



7. Select the Training project and the H-Class system you created. Click **OK** to start the QuickStart interface.
8. The QuickStart interface (Figure 3-4) appears with **Browse Project** selected. Be sure to expand the screen for optimum viewing.

Figure 3–4: QuickStart Browse Project window



3.3 QuickStart Interface tour

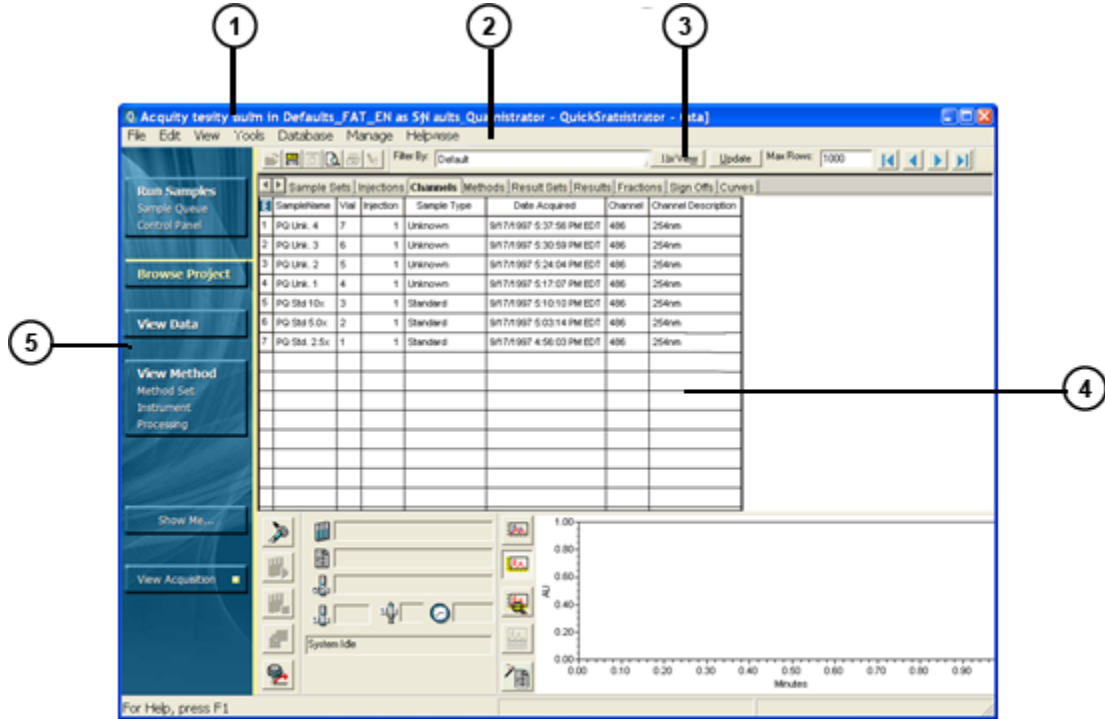
Though the functionality available from the various interfaces may vary, the procedures to execute tasks in the QuickStart and Pro interfaces are similar. The Walk-Up interface implements a subset of the Empower functionality. In this guide, procedures are performed using the Empower QuickStart interface.

When you open Empower using the QuickStart interface, one of the buttons in the Navigation Bar, such as the Browse Project button, is selected, and the Project window is displayed on the right side with tabs for various project-related activities, as shown below.

When you click a function in the navigation bar, the selected window opens in the work area. A highlighter in the navigation bar indicates which function is active in the work area. You use the **View Acquisition** check box in the navigation bar to choose whether to display or hide the system status, which displays information about the chromatographic system area and real-time plot, which displays your chromatogram or spectra as it is acquired.

Tip: When you point to an icon in the interface, the name of the icon appears in a Tool Tip window.

Figure 3–5: QuickStart Main Window with Browse Project selected



The main Empower QuickStart interface is separated into five areas.

- ① Title Bar - displays the current system name, project, user type, and interface.
- ② Menu Bar - options along the top of the Empower window vary based on which button is selected in the Navigation Bar. These menu options are for typical actions performed within the active window in the work area.
- ③ Tool Bar - tool icons provide quick access to primary functions. They also vary based on which button you have selected in the Navigation Bar. When you pause the cursor over a toolbar button, ToolTip text is displayed in a ToolTip box and in the status bar at the bottom of the window.
- ④ Work Area - this area on the right side of the Empower window changes based on the buttons you select in the Navigation Bar. This area is where you view, process, and report raw data and processed results. It is also where you define data acquisition and instrument control parameters and run samples for display in the real-time plot. For example, if you are developing a method, the work area contains the Method Editor window.

- ⑤ Navigation Bar - the buttons in the left-hand Navigation Bar open windows on the right side of your working environment for specific tasks, such as running samples. Toggle the View Acquisition button in the Navigation Bar to show or hide the work area used for data acquisition.

The Empower interface windows and dialog boxes map to the job-related tasks you perform. Because the order in which you perform these tasks may vary, you will have access to the various windows and dialog boxes when and where you need them.

The interface components you will commonly encounter as you use Empower are listed below. You will learn more about each of these components as you progress through this guide.

Click **Browse Project** in the left pane to access project information at any time.

Figure 3–6: Sections of the Browse Project window work area

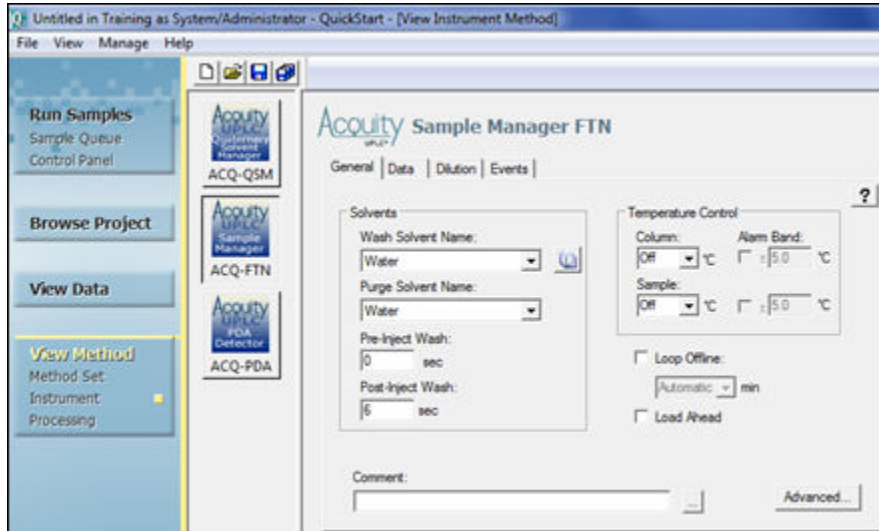
	Method Name	Method Type	Method Date
1	Alliance	Instrument	11/10/2016 10:18:31 AM EST
2	Test	Instrument	11/11/2016 8:38:47 AM EST
3	Training	Instrument	11/11/2016 8:39:41 AM EST
4	Default	Processing	11/10/2016 10:18:31 AM EST
5	LC PQ	Processing	11/10/2016 10:18:31 AM EST
6	LC PQ ApexTrack	Processing	11/10/2016 10:18:32 AM EST
7	Chromatogram Labels Report	Report	11/10/2016 10:18:32 AM EST
8	Component Summary	Report	11/10/2016 10:18:32 AM EST
9	Default Individual Report	Report	11/10/2016 10:18:33 AM EST

- ① Project tabs
- ② Filtering options
- ③ Data column heads
- ④ Project data displayed by component

Click **View Method** in the navigation bar to open the Method Editor, where you define methods for acquiring data, processing data, exporting data, and creating reports. When you click the

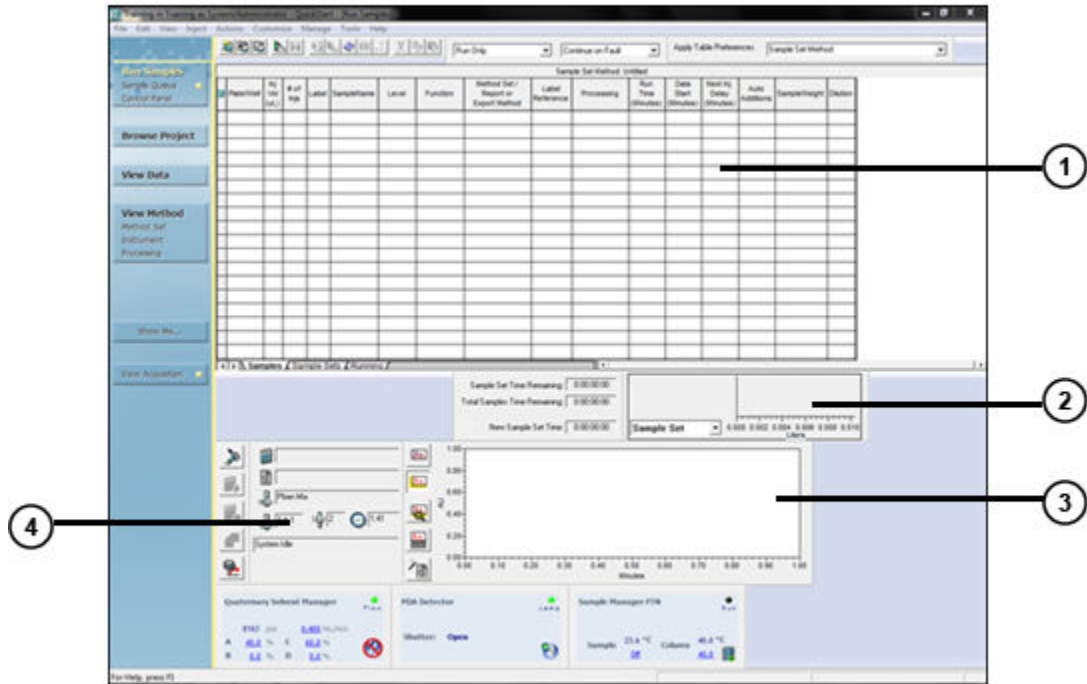
icons to the left of the work area, the system displays editable information about specific instruments in your chromatography system.

Figure 3–7: Method Editor window



Click **Run Samples** in the navigation bar to acquire data, monitor the acquisition, and control instruments.

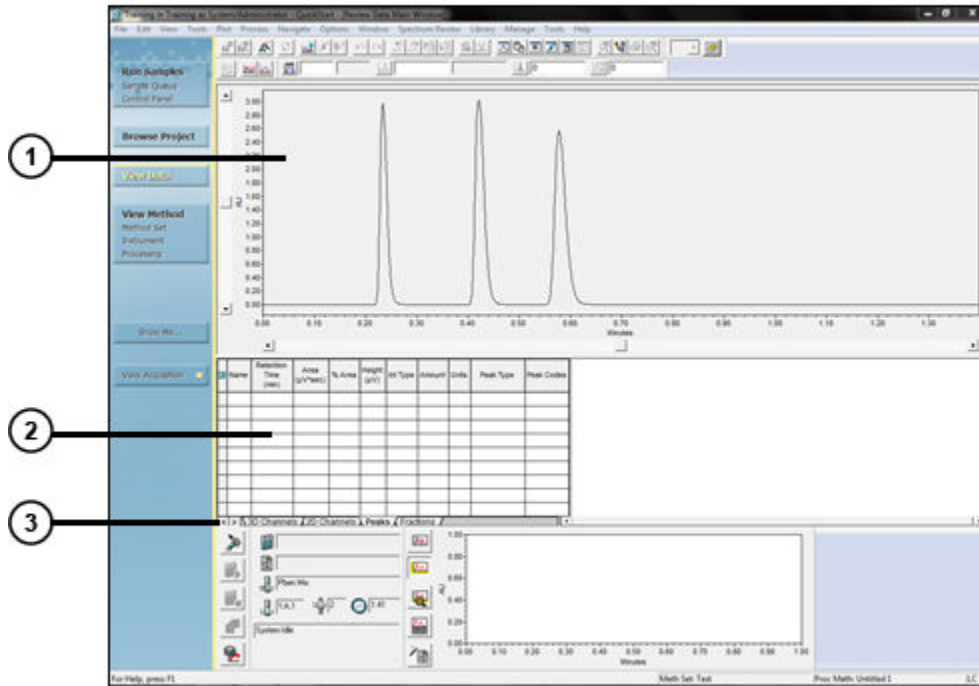
Figure 3–8: Run Samples window sections



- ① Sample set method
- ② Real-time run data
- ③ Real-time plot area
- ④ Run samples information, status, and controls

While in the Browse Project window, select **Channels**, select a channel of data, and then click **View Data** in the Navigation Bar to view data that has been collected.

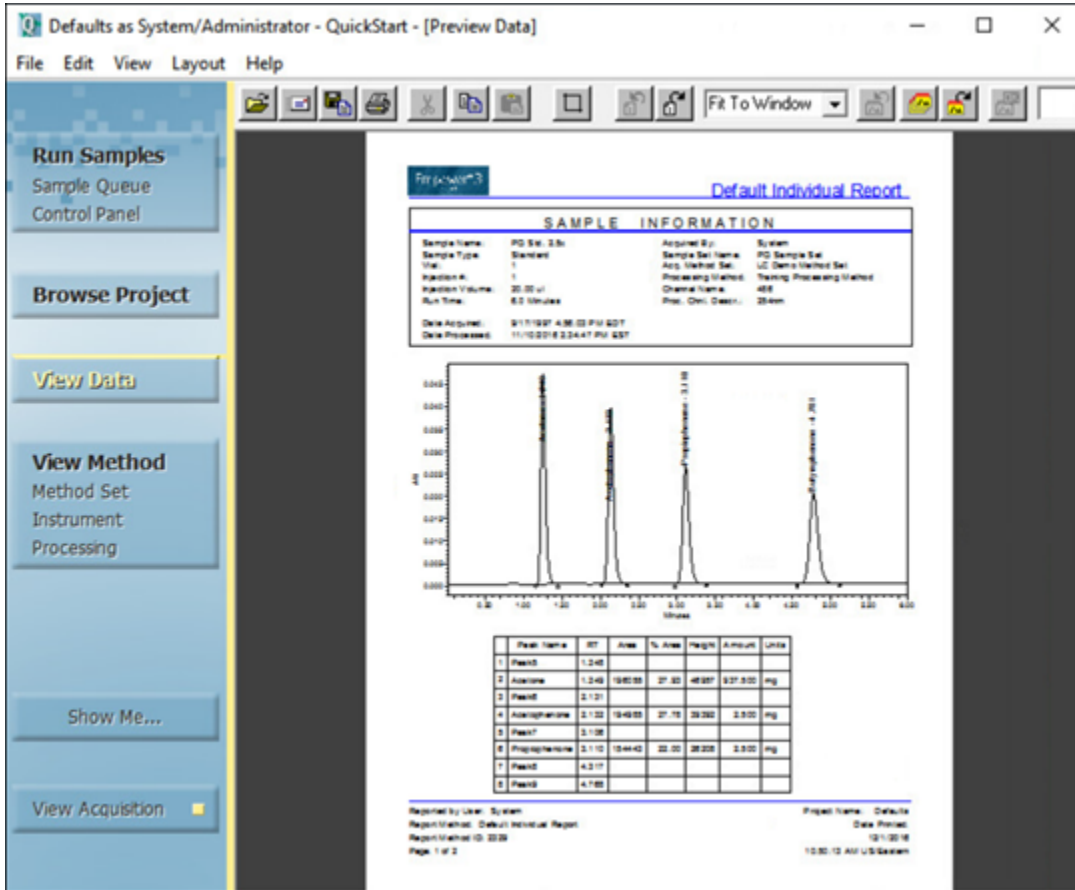
Figure 3–9: View Data window sections



- ① Data graphical plot area
- ② Data in table format
- ③ Tabs to change view to 2D and 3D channels, peaks, or fractions

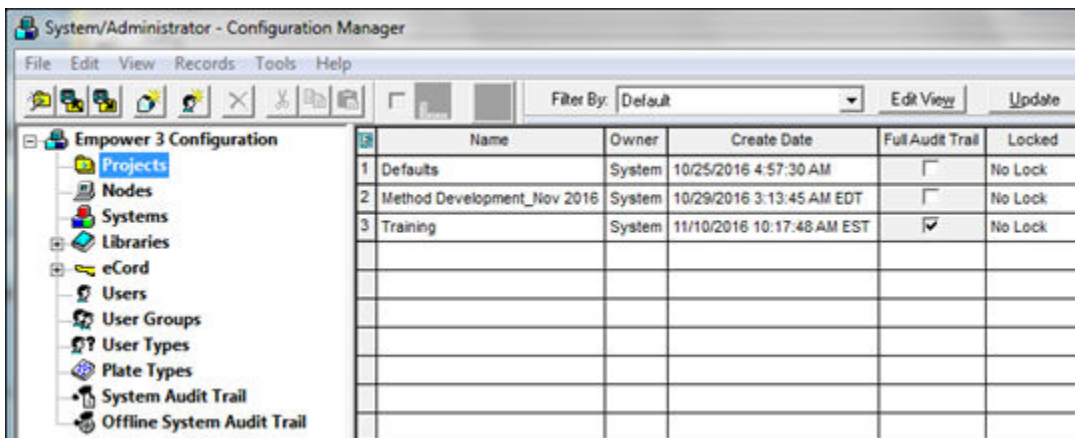
While in the Browse Project window, select the **Results** or **Result Sets** tab, select a result, and then click **View Data** in the Navigation Bar to open the data in report format.

Figure 3–10: View Data window - report view



Click **Browse Project** in the navigation bar. Click **Manage > Configuration** to open the Configuration Manager window. Use the Configuration Manager to perform administrative tasks, such as project creation, user permissions, and audit trail specifications.

Figure 3–11: Configuration Manager window section



3.3.1 Using Empower Online Help

Depending on the complexity of your application, you can perform procedures for data acquisition, processing, and report generation other than those outlined in this guide. See the Empower Help for more detailed information about individual topics.

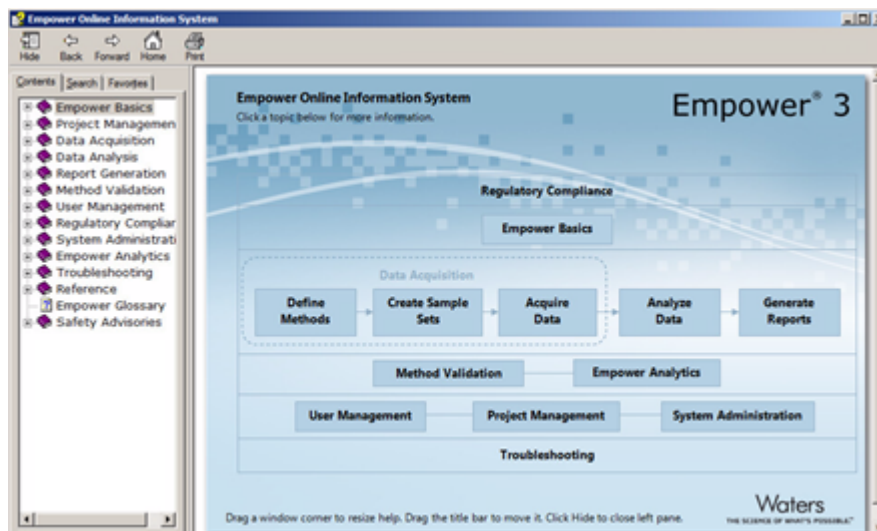
Notes: If you are using an Empower software option (for example, GPC), refer to the appropriate topics in the Empower Help or to the associated option's Getting Started Guide.

In addition to the traditional Empower Help, the "Show Me" Help, available in the QuickStart interface, guides you through many standard tasks.

To access Empower reference information:

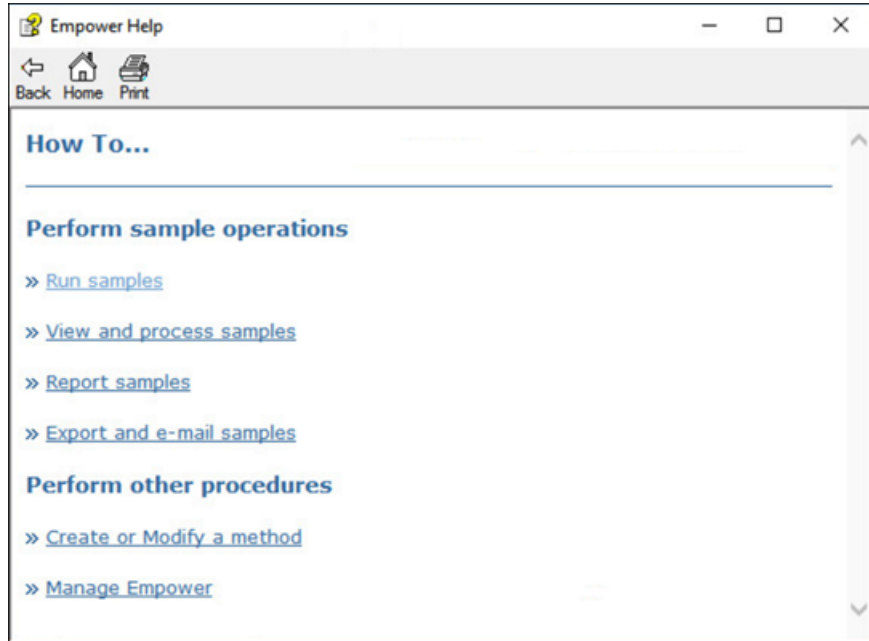
1. With the Empower main page open, click **Help** in the menu bar of an application window. The Help main page appears.

Figure 3–12: Help main page



2. To open a topic, click one of the topics in the main pane or click the **Contents** tab and browse the navigation tree.
3. Click the **Search** tab to search for a text string. Remember to enclose the text string with quotation marks.
4. Click the **Favorites** tab to add frequently viewed topics to a custom list.
5. To access Show Me Help from the QuickStart interface, click **Show Me...** in the navigation bar.

Figure 3–13: Show Me Help



4 Developing Methods for Data Acquisition and Processing

This chapter guides you through the process of acquiring and processing data from a single injection using the Run Samples and View Method features of Empower software.

You will learn how to:

- Create and save an instrument method for your chromatographic system
- Create a method set that includes your instrument method
- Equilibrate the system, make a single injection, and acquire data
- Create and save a processing method
- Make a single injection to acquire and process data automatically

Methods

To perform a run, you must first create a method set using the **View Method** feature of Empower. A method set contains all the instructions the software requires to acquire, process, and report data. It consists of several components:

- Instrument Method - Tells Empower software how to acquire data and control instrumentation included in your chromatographic system. The Instrument Method must be inside the Method Set to acquire data; the other methods are optional.
- Processing Method - Defines integration parameters, calibration parameters, and component identification.
- Report Method - Defines how the results are formatted before printing a hard copy or saving an electronic copy.
- Export Method - Defines how the results are exported to a specified location.

4.1 Creating an instrument method

The instrument method tells the Empower software how to control your chromatographic instrumentation. In this method, you specify solvent delivery system parameters, such as flow rate and solvent composition, and detector settings, such as wavelength and data rate. Using the Instrument Method Editor, you create the method and specify parameter settings for the selected instrument using the options provided in the editor.

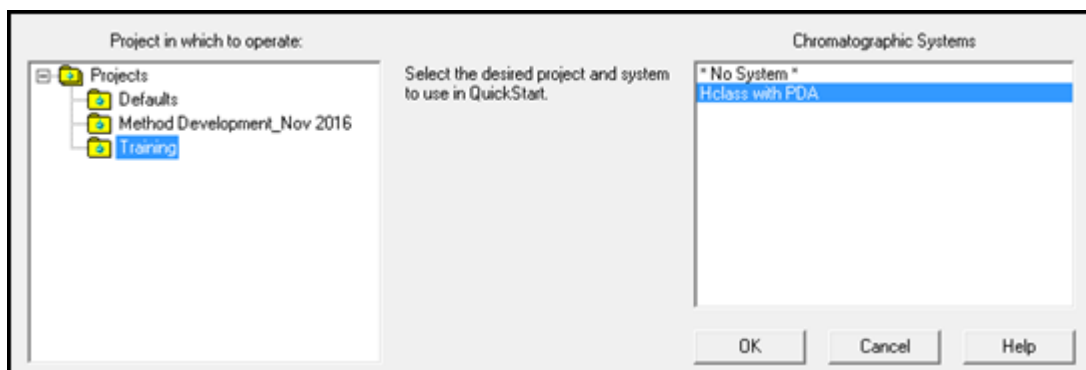
Note: The following procedure uses as an example a chromatographic system that includes an ACQUITY H-Class Separations Module and an ACQUITY PDA Detector. If you are using different instruments, the tabs that appear in the interface will differ from those shown and you must specify the parameter values appropriate for your instrumentation.

To create an instrument method:

Note: If you have logged in already, go to Step 4 in this procedure.

1. Log in to Empower software (see [Starting up and logging in](#)).
2. In the Select Project and System dialog box, do the following:
 - a. From the Project in which to operate list, choose your project. In this case, use the **Training** project. See [Creating Projects](#), to create the project if it does not appear in the list.
 - b. From the Chromatographic Systems list, select the **Hclass with PDA** system.

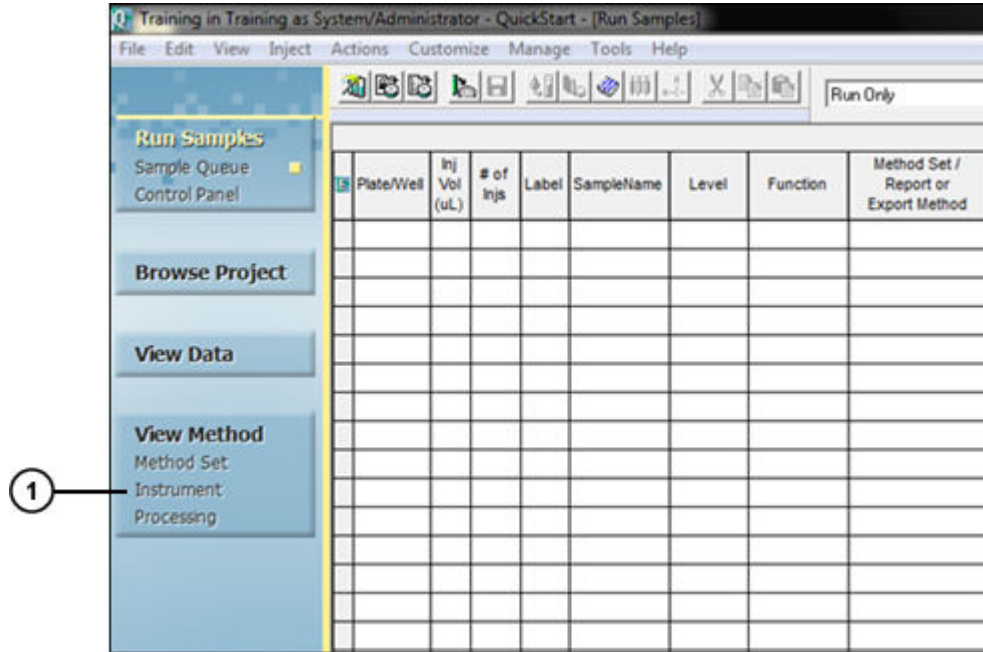
Figure 4–1: Select Project and System dialog box



3. Click **OK**.
4. In the Run Samples window on the navigation bar, under View Method, click **Instrument**.

Result: The View Instrument Method window displays an icon for each component in your selected chromatographic system (solvent delivery system, photodiode array detector, and autosampler). The **General** tab contains information for the first component.

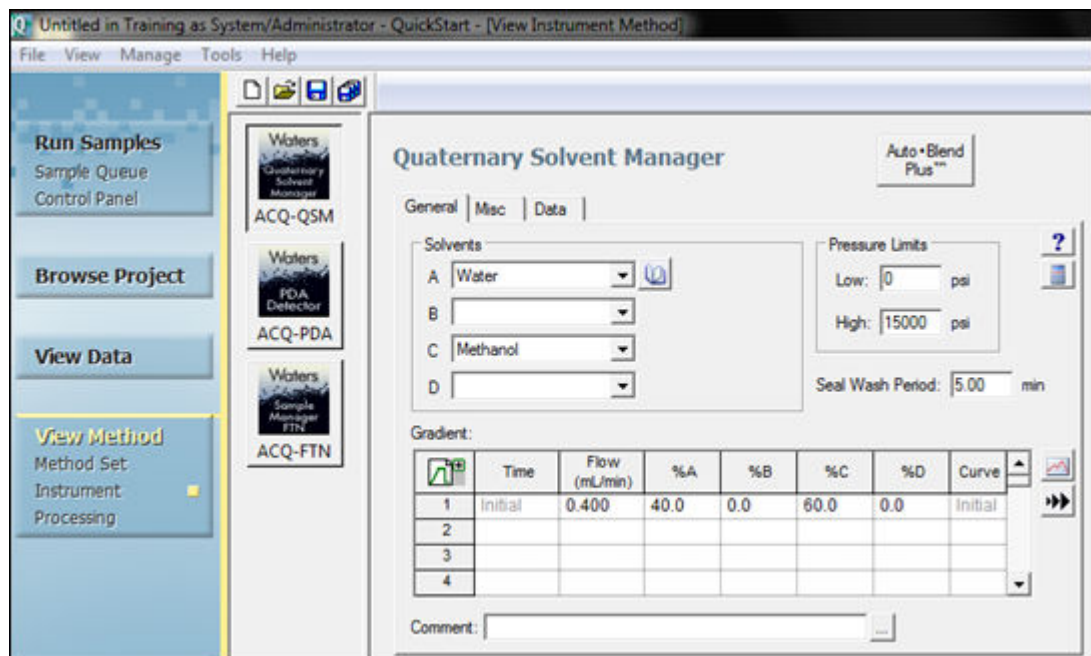
Figure 4–2: QuickStart Interface, Run Samples window



① View Method, Instrument Method

5. Click the icon for your solvent delivery system, in this case **ACQ-QSM** (Quaternary Solvent Manager).

Figure 4–3: View Instrument Method, ACQ-QSM, General tab

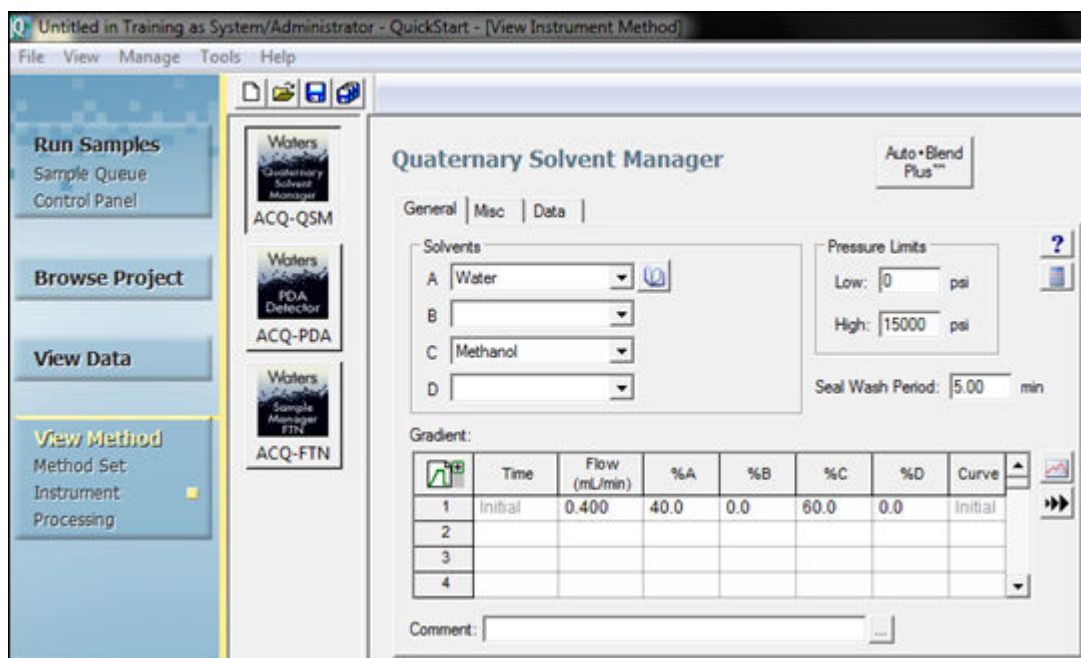


4.1.1 Setting solvent delivery system parameters

1. In the **General** tab, specify the following settings and accept the other default settings.
 - From the **Solvents** list, select **Water** for A and **Methanol** for C.
 - Set the **Flow** rate to 0.4.
 - Enter 40 for %A and 60 for %C.

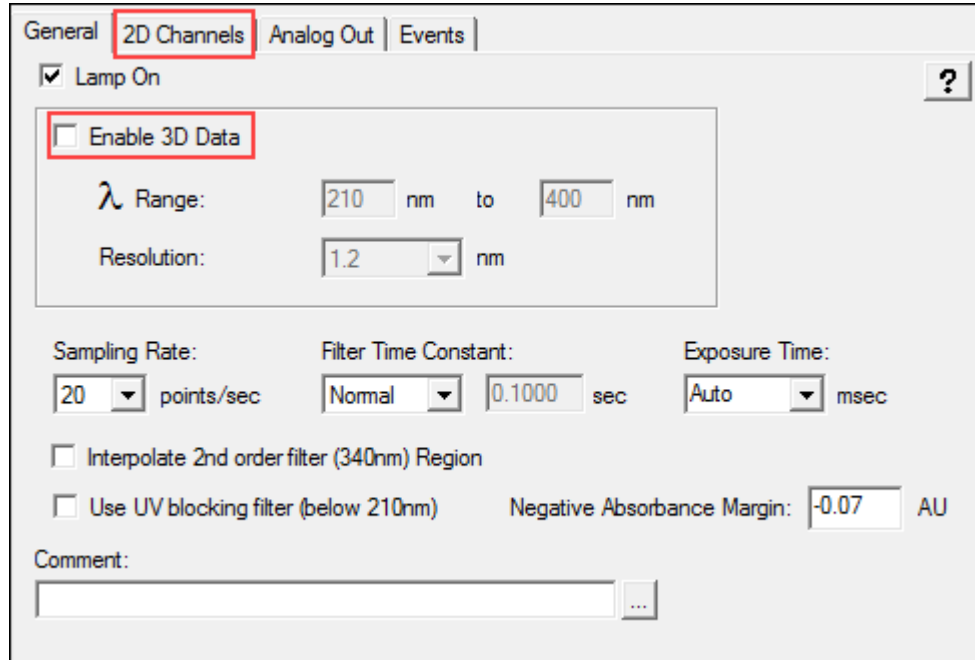
Note: You can assign the solvents to any of the available reservoirs in your instrument.

Figure 4–4: View Instrument Method - solvents assigned



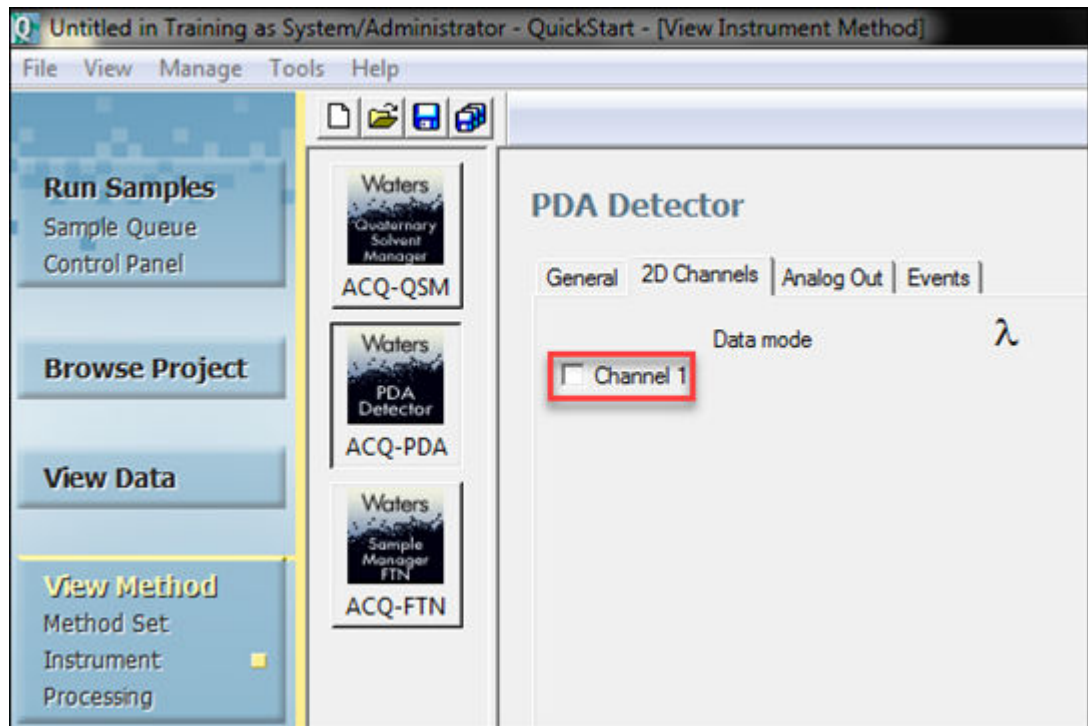
2. Click **ACQ-PDA**.
3. Clear the **Enable 3D Data** check box, do not change the other default settings, and then click the **2D Channels** tab.

Figure 4–5: Instrument Method Editor, ACQ-PDA detector, General tab



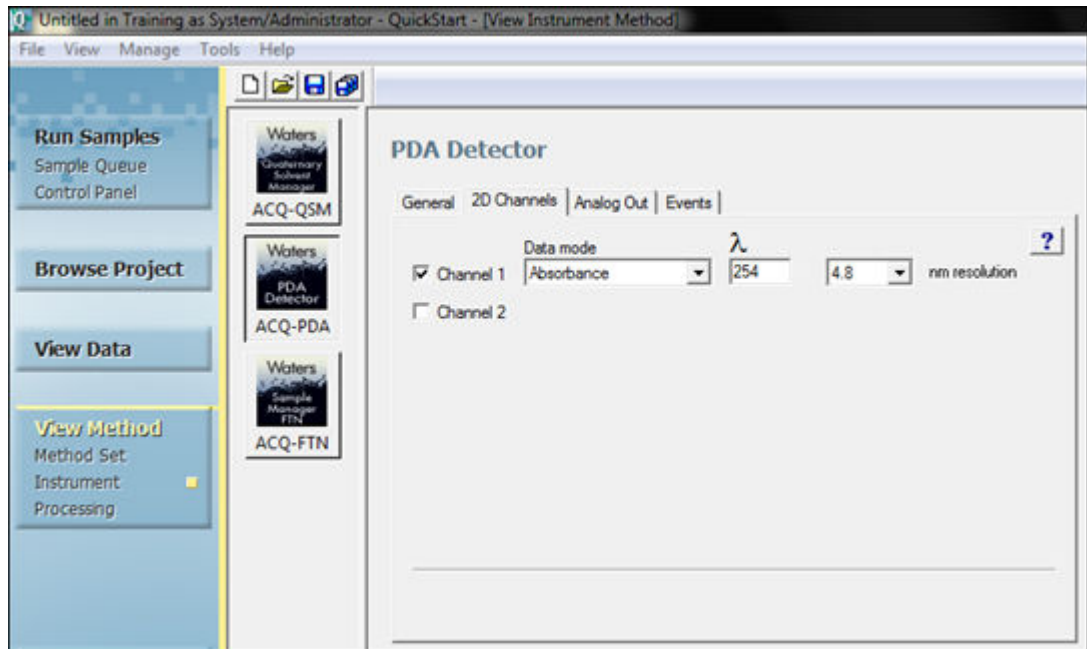
4. Select **Channel 1**.

Figure 4–6: Instrument Method Editor, ACQ-PDA detector, 2D Channels tab



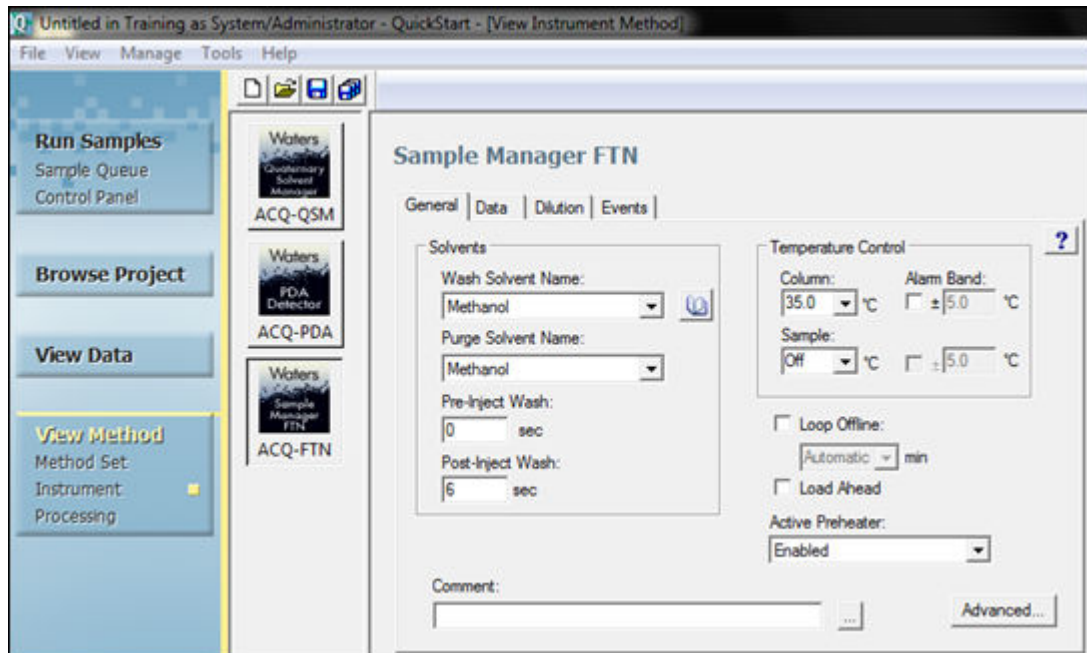
5. Ensure that the Data Mode is set to **Absorbance** and enter 254 for the wavelength.

Figure 4–7: Instrument Method Editor, ACQ-PDA detector, 2D Channels tab - with values



6. Click **ACQ-FTN** to display the parameters for the autosampler.

Figure 4–8: View Instrument Method, ACQ-FTN autosampler



7. Select the **Wash** and **Purge** solvents and the **Temperature Control** appropriate for your selected system.

- In this example, select Methanol for both.
- In the Temperature Control pane, set a temperature of 35 in the **Column** field.

4.1.1.1 Instrument method settings for TUV detector

The figure below illustrates the settings that you specify if you are using a TUV detector as part of your system.

Figure 4–9: Instrument Method Editor, TUV detector, 2D Channels tab - with values

TUV Detector

Wavelength Mode
 Single Dual

Channel A | Analog Out 1 | Events

Lamp On ?

Wavelength: 254 nm Data Mode: Absorbance

Sampling Rate: 20 points/sec Autozero On Inject Start

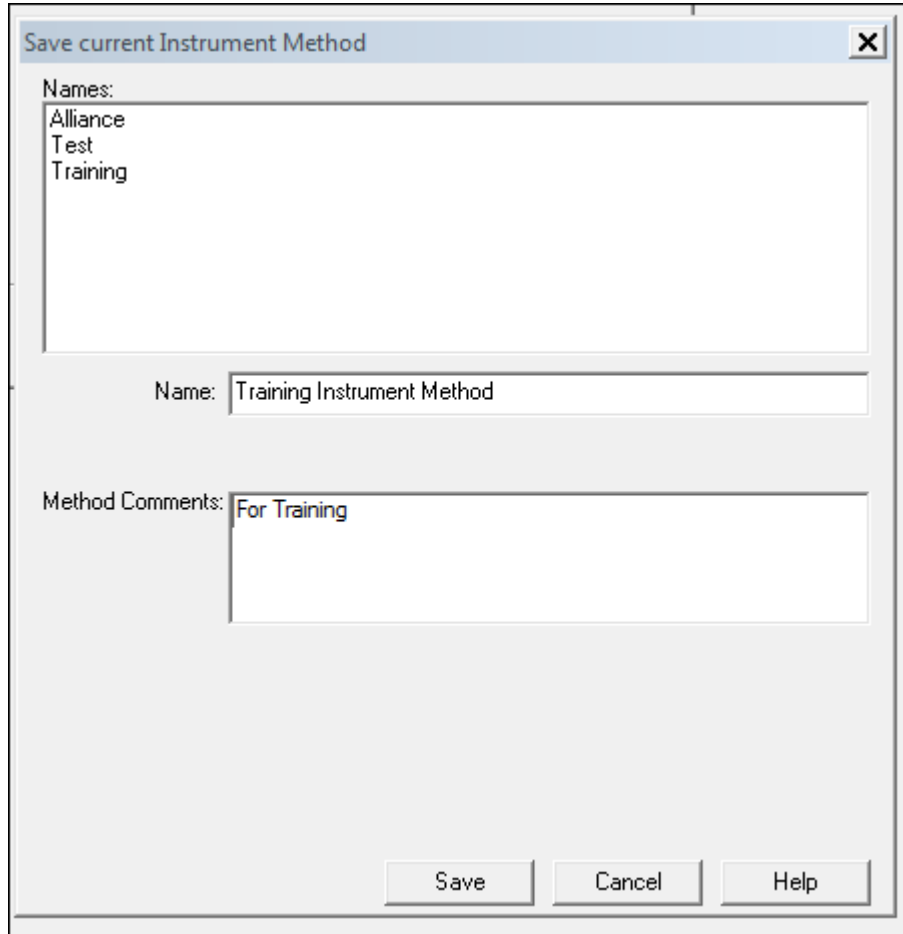
Filter Time Constant: Normal 0.1000 sec Autozero On Wavelength Changes: Maintain Baseline

Comment: ...

4.1.2 Saving the instrument method

1. Select **File > Save As**.

Figure 4–10: Save Current Instrument Method dialog box



2. In the Save current Instrument Method dialog box, enter `Training Instrument Method` for the instrument method name, add any necessary comments, and then click **Save**.

Note: If a message indicating that an instrument method with the same name exists, click **Yes** to overwrite the method.

Result: The View Instrument Method window reappears and the name of the method appears in the status bar.

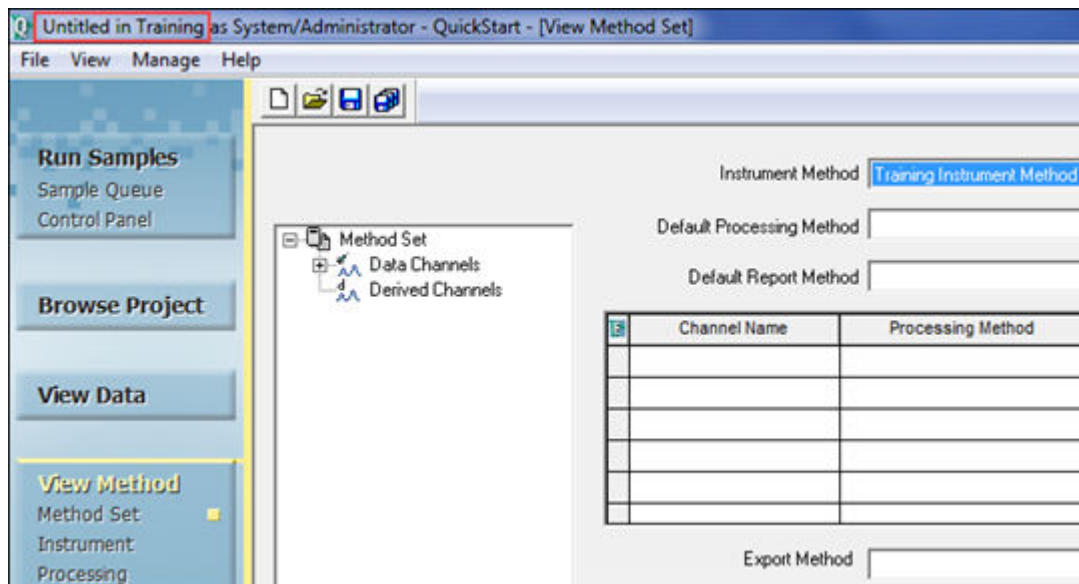
4.2 Creating a method set

After you create an instrument method, you use the **View Method** feature to add it to a method set. You can then save the method set and select the plate configuration.

To create a method set:

1. Under **View Method**, click **Method Set**. Notice that the method set name is **Untitled** in the Title Bar.

Figure 4–11: Creating a new method set



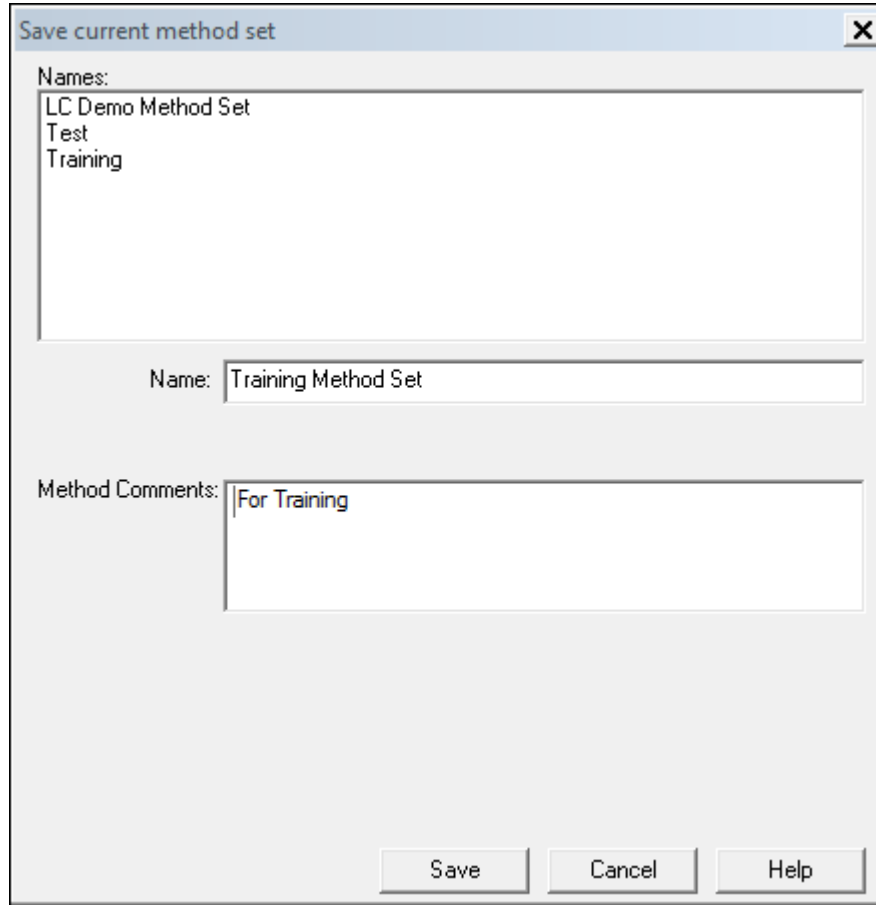
2. From the **Instrument Method** list, select **Training Instrument Method**.

Note: Leave the **Default Processing Method** blank.

3. Select **File > Save As**.
4. In the Save Current Method Set dialog box (Figure 4-12), enter the name `Training Method Set`, add any comments describing the method set, and then click **Save**.

Result: The method set name appears in the Status Bar.

Figure 4–12: Save current method set dialog box




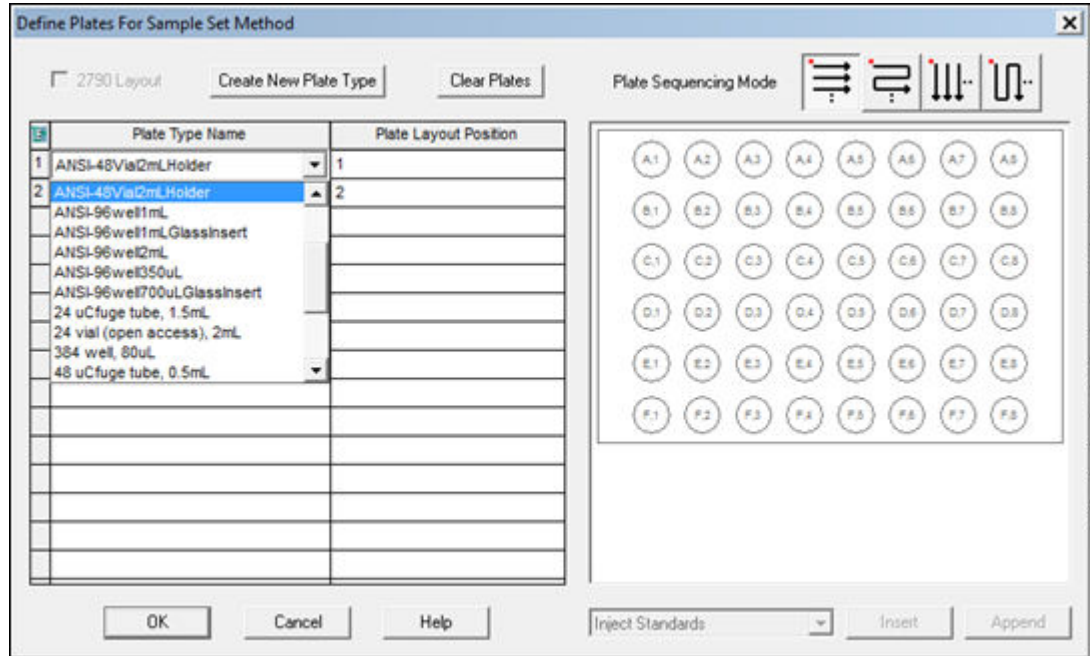
5. Click **Run Samples** in the navigation bar.
6. To define the plate configuration for the ACQ_FTN autosampler, click **Edit Plates**  in the Run Samples toolbar.
7. If necessary, click the Plate Type Name field, select the plate type for your instrument, and then click **OK**.

Figure 4–13: Plate Type Name field

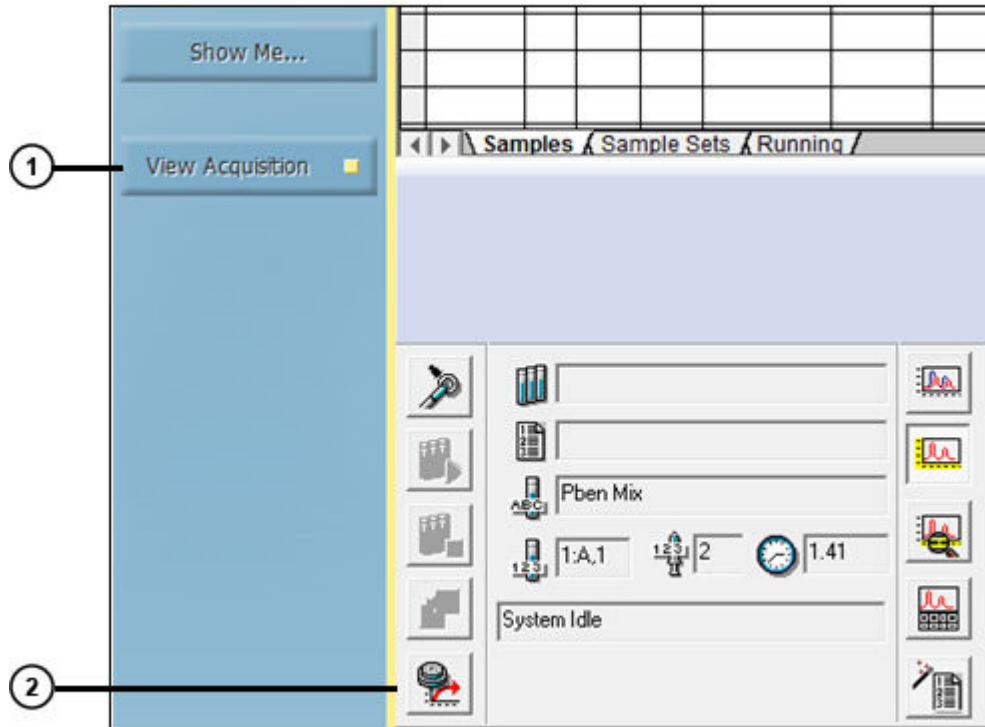


4.3 Acquiring data

After you create a method set, your goal is to inject a sample and acquire data for processing. First, you equilibrate the system. Then, you inject the sample and acquire raw data. You can then use the acquired data to create your processing method.

1. Click **Run Samples** on the navigation bar.

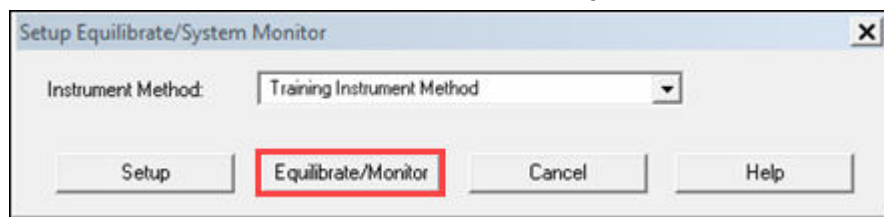
Figure 4–14: Run Samples-Samples tab



① View Acquisition button

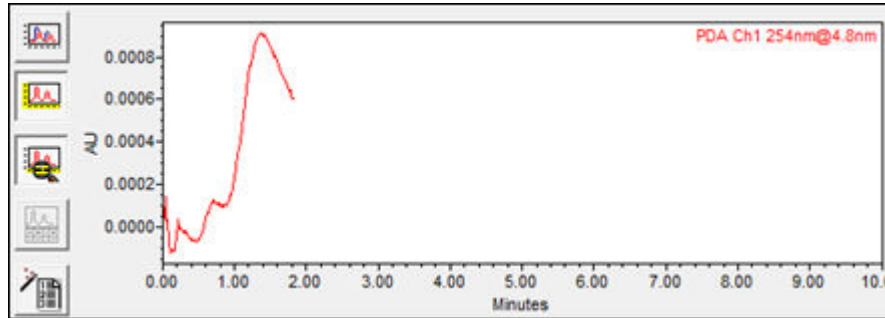
② Equilibrate System/Monitor Baseline icon


2. To equilibrate the system, ensure that **View Acquisition** is selected on the navigation bar.
3. In the **Acquisition** bar, click **Equilibrate System/Monitor Baseline**.
4. In the Setup Equilibrate/System Monitor dialog box, select **Training Instrument Method** from the Instrument Method list, and then click **Equilibrate/Monitor**.



5. A baseline appears in the real-time plot area of the window. The baseline appearance differs for each system.

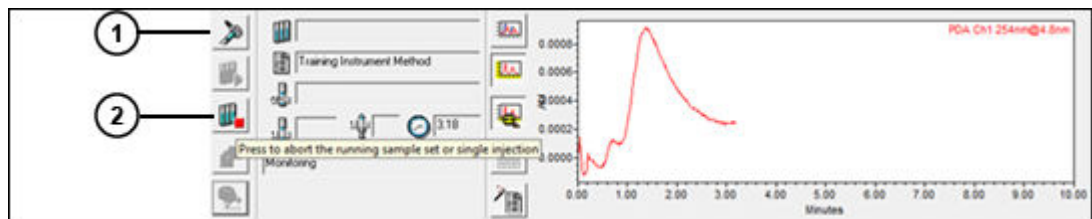
Figure 4–15: Monitoring baseline



6. After the baseline stabilizes (becomes relatively flat), click **Abort**  to stop the monitoring process (Figure 4-16).

Note: Because the software auto-scales the Real-Time plot, the baseline can appear noisy. Check the scale of your y-axis to adjust the minimum and maximum values for the appropriate range.

Figure 4–16: Stopping the Monitoring Process




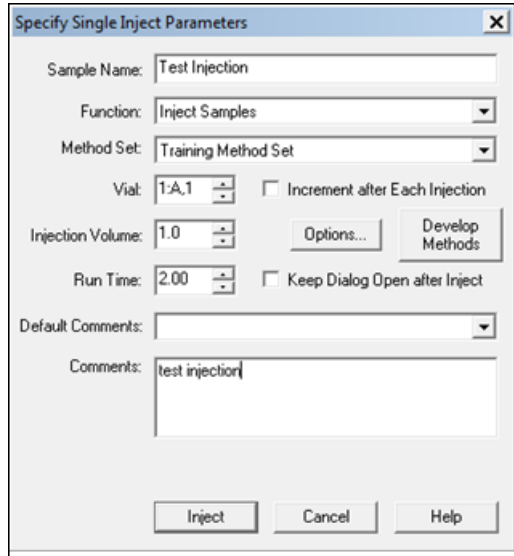
1. Inject
 2. Abort
7. Place the sample vial in the autosampler in position 1:A,1.
 8. Click **Inject** .
 9. In the Specify Single Inject Parameters dialog box, specify `Test Injection` as the sample name, select **Training Method Set** from the Method Set list, and then enter the appropriate vial, injection volume, and run time.

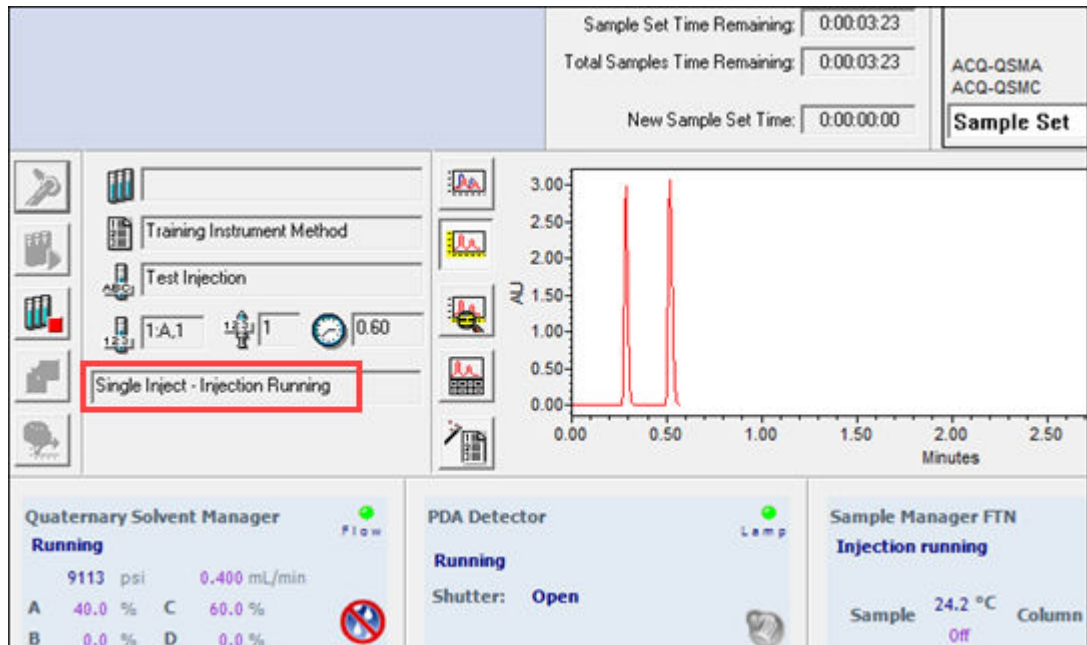
Figure 4–17: Specified single inject parameters



- Click **Inject** to begin data acquisition.

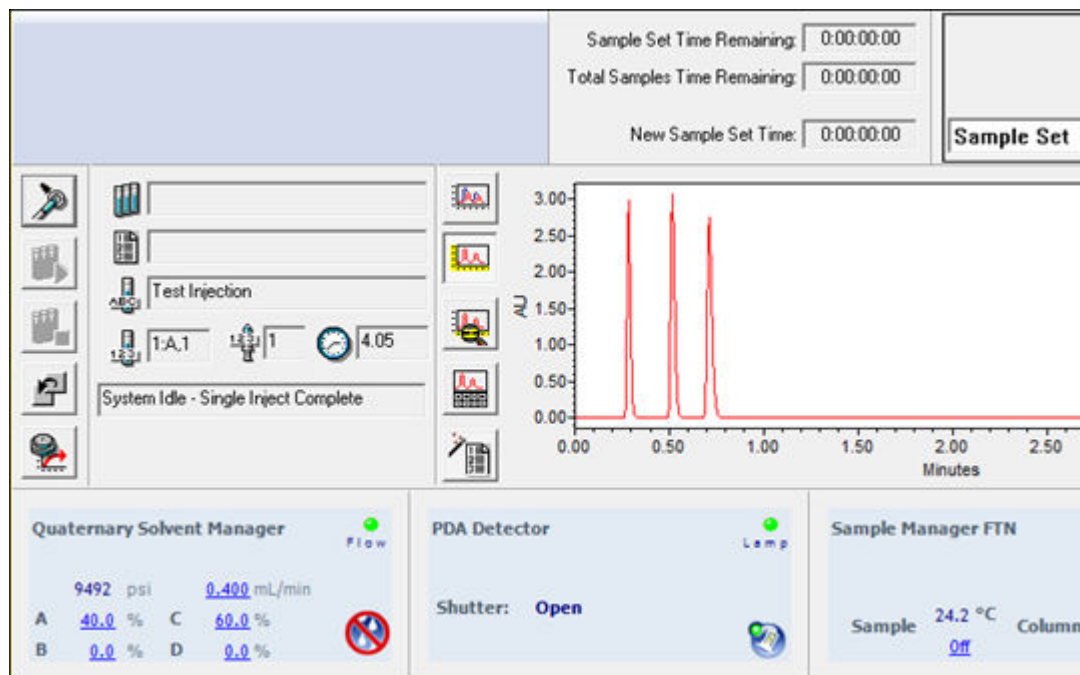
Result: The status bar indicates when the injection is made and is running. The chromatographic data is acquired and displayed in the real-time plot.

Figure 4–18: Single injection running



- After the single injection is complete (as indicated in the status bar), the system is ready for the next injection(s).

Figure 4–19: Single Injection Complete



4.4 Creating a processing method

A processing method defines how Empower software processes raw data. The processing method is included in a method set to instruct the software how to:

- Integrate data
- Calibrate standards
- Quantitate unknowns

When you create your processing method, you define the region for peak detection and integration. You modify the region by specifying peak width and threshold, and then performing a process of peak rejection. In the calibration phase, you specify names, retention times, and default amounts.

Note: You must acquire data before defining the processing and reporting methods. See [Acquiring data](#).

Note: In addition to using the Processing Method Wizard, you can build a processing method interactively (see [Chapter 6, Creating a Processing Method Interactively](#)). Interactive processing method development offers more options than using the wizard.

See Also: *Empower 3 Data Acquisition and Processing Theory Guide*

To create a processing method:

1. On the navigation bar, click **Browse Project**.
2. Click **View Acquisition** to hide the Acquisition pane.

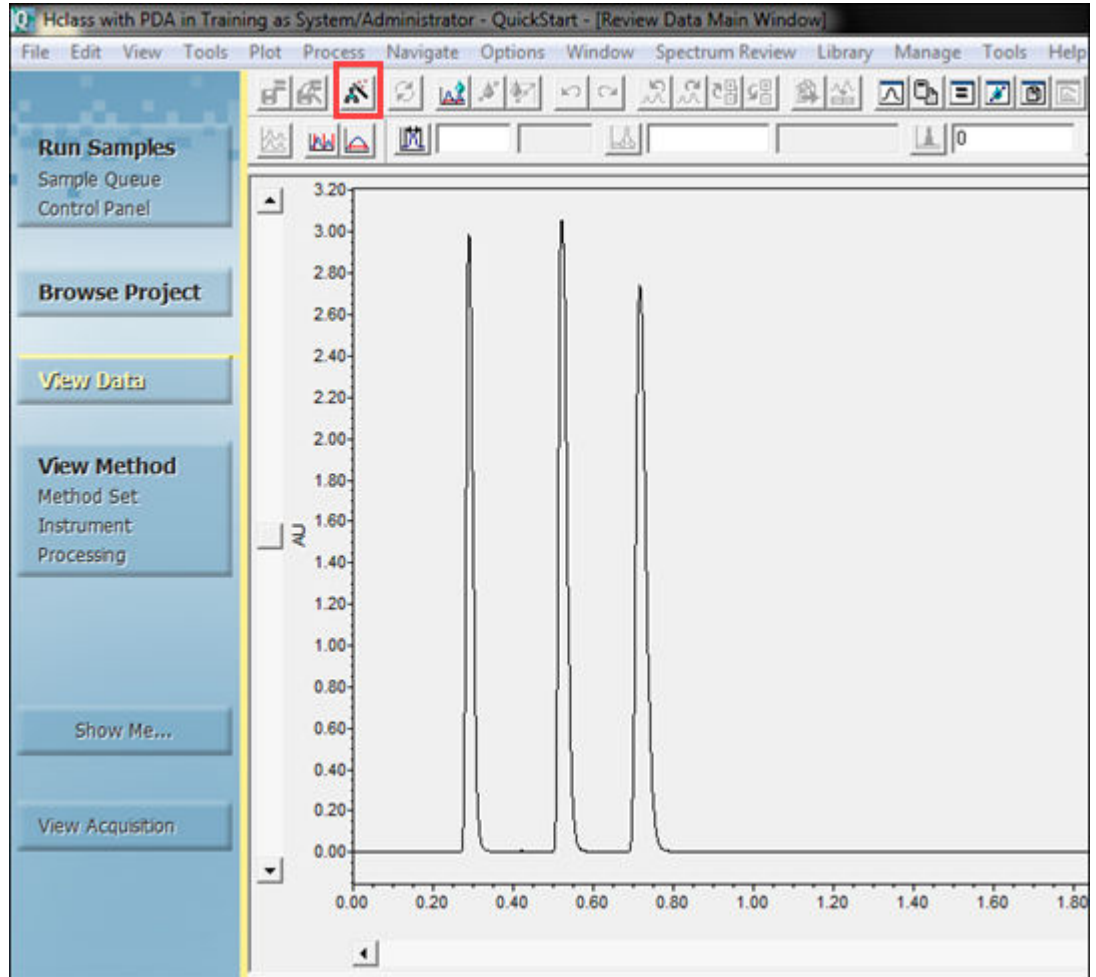
Figure 4–20: Browse Project window

SampleName	Vial	Injection	Sample Type	Date Acquired	Channel	Channel Description
1 Test Injection	1:A,1	1	Unknown	11/11/2016 9:14:46 AM EST	PDA Ch1 254nm@4.8nm	PDA Ch1 254nm@4.8nm
2 Pben Mix	1:A,1	2	Unknown	11/10/2016 10:50:35 AM EST	PDA Spectrum	PDA Spectrum (210-400)nm
3 Pben Mix	1:A,1	2	Unknown	11/10/2016 10:50:35 AM EST	PDA Ch1 254nm@4.8nm	PDA Ch1 254nm@4.8nm
4 Pben Mix	1:A,1	1	Unknown	11/10/2016 10:43:10 AM EST	PDA Spectrum	PDA Spectrum (210-400)nm
5 Pben Mix	1:A,1	1	Unknown	11/10/2016 10:43:10 AM EST	PDA Ch1 254nm@4.8nm	PDA Ch1 254nm@4.8nm

3. Click the **Channels** tab, select the **Test Injection** row, and then click **View Data** in the navigation bar.

Result: The Review Data main window appears with the data loaded from the test injection (Figure 4-21).

Figure 4–21: Review Data Main window, Peaks tab



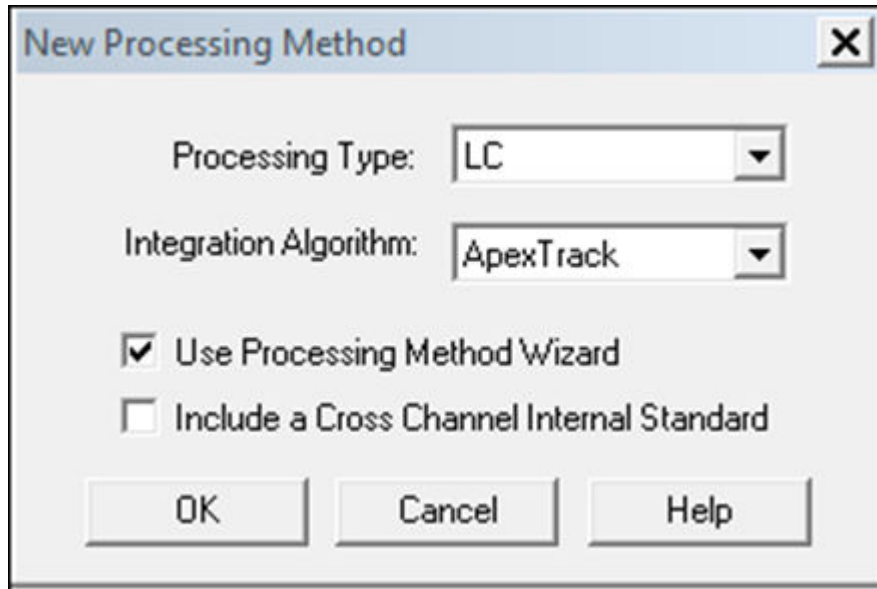
4. If you do not see your chromatogram, select **View > 2D Layout**. If you use data acquired with a PDA detector, you must extract a 2D chromatogram from the 3D data to successfully complete this section of the guide. For more information, see the "Extracting Chromatograms from PDA Data" topic in the Empower Help .
5. On the Empower toolbar, click **Processing Parameters Wizard**.

Figure 4–22: Processing Method Wizard dialog box



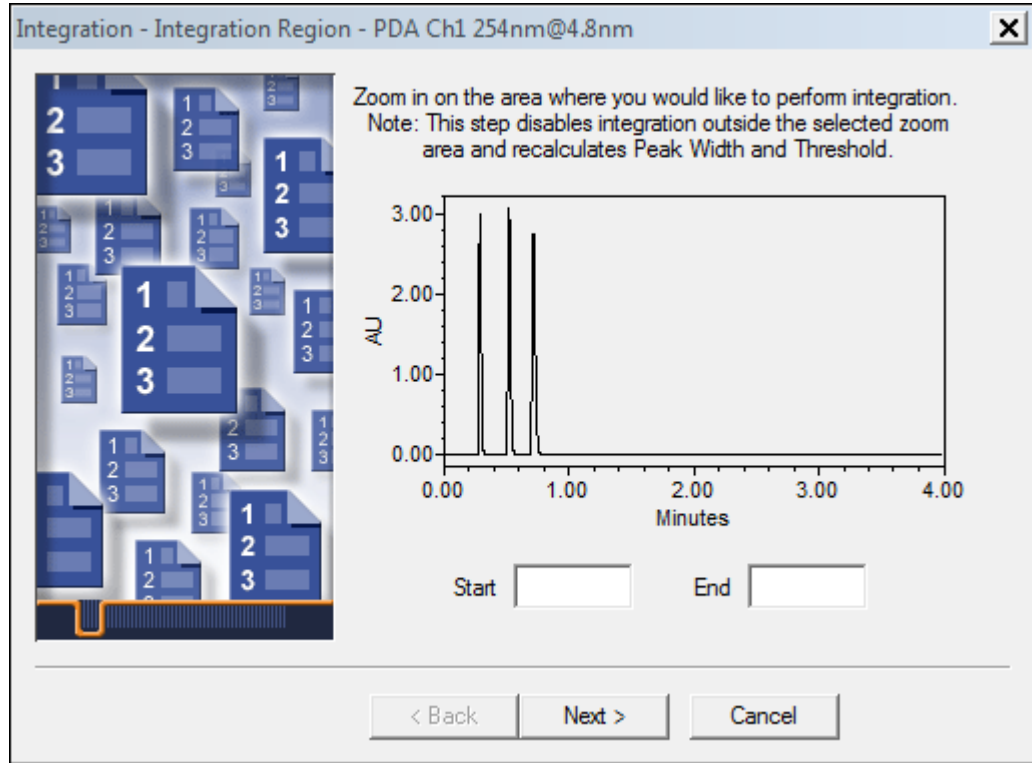
6. Select **Create a New Processing Method**, and then click **OK**.

Figure 4–23: New Processing Method dialog box



7. Select the settings as shown above, and then click **OK**.

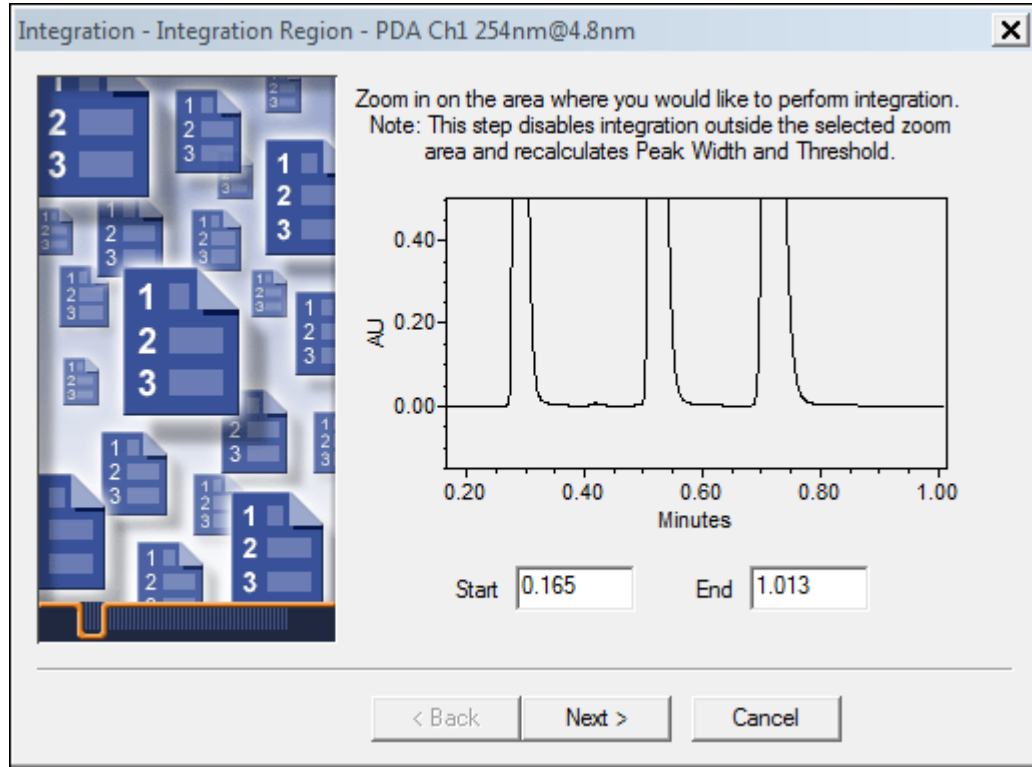
Figure 4–24: Processing method wizard, Integration Region page



8. You use the Integration Region page to set the region for peak detection and integration. Follow the wizard instructions and use the mouse to zoom in on the area of interest (zoom in by clicking a spot in the chart and dragging the mouse over an area).

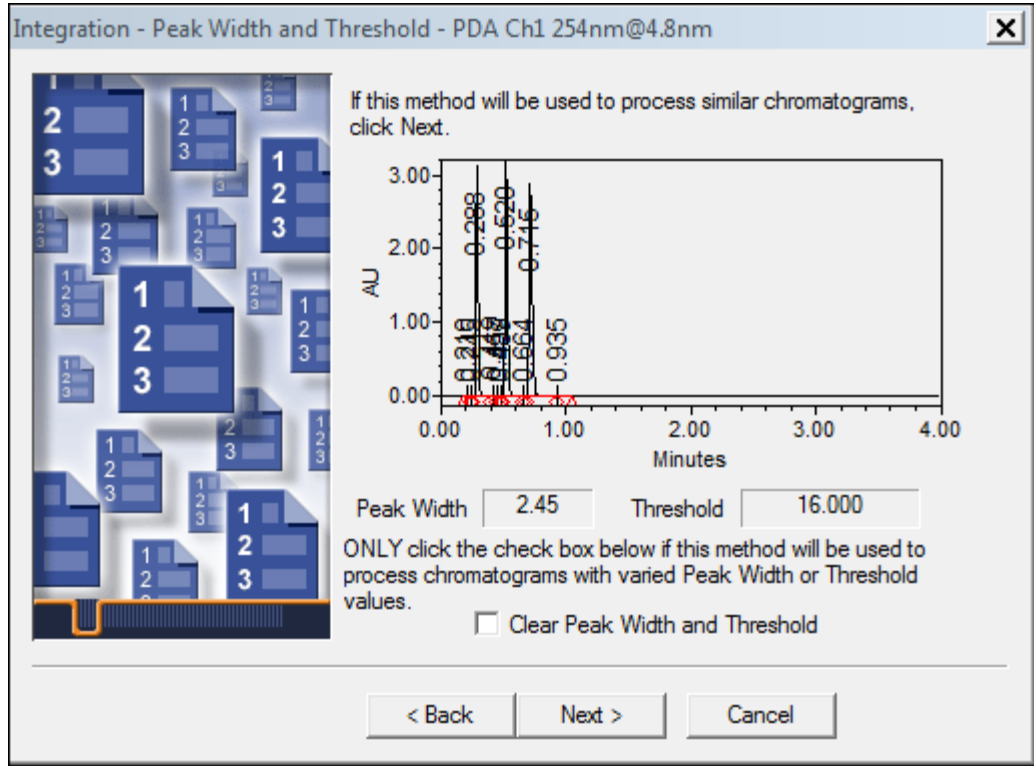
Note: Right-click the plot to access the Full View/Unzoom shortcut menu selections.

Figure 4–25: Processing Method Wizard with integration region selected



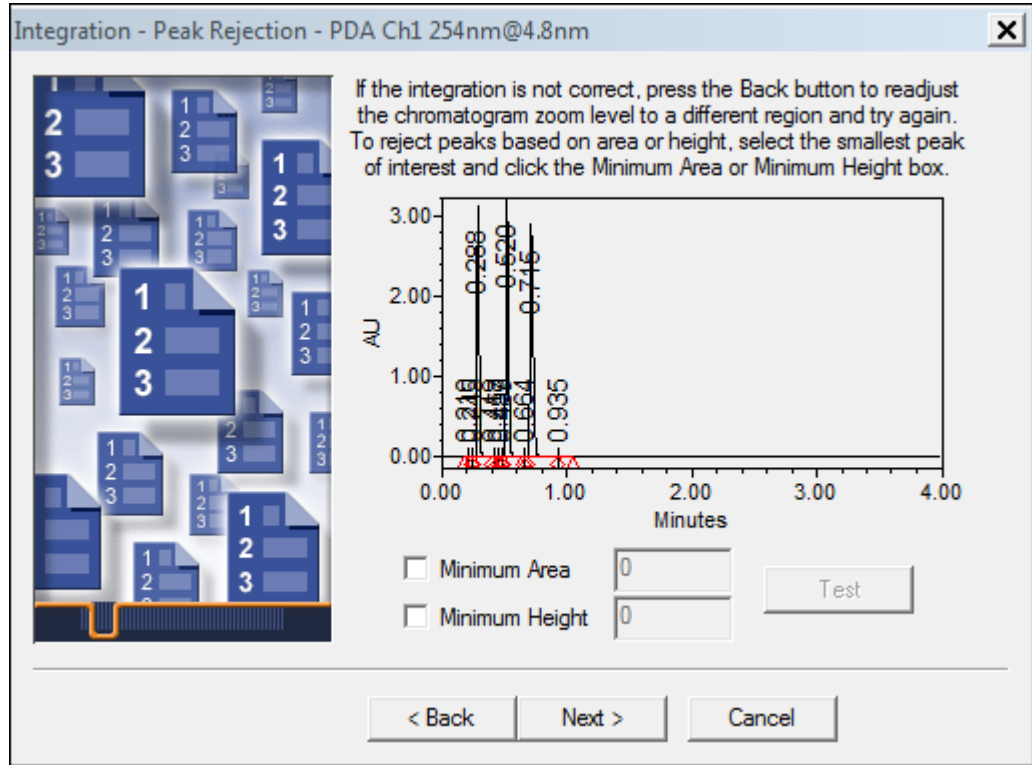
9. Click **Next**.
10. Empower has determined the optimum peak width and threshold values for the region and these values are now displayed. To accept the peak width and detection threshold, click **Next**.

Figure 4–26: Processing Method Wizard, Integration – Peak Width and Threshold page



11. Specify the criteria for rejecting peaks below a defined area or height.

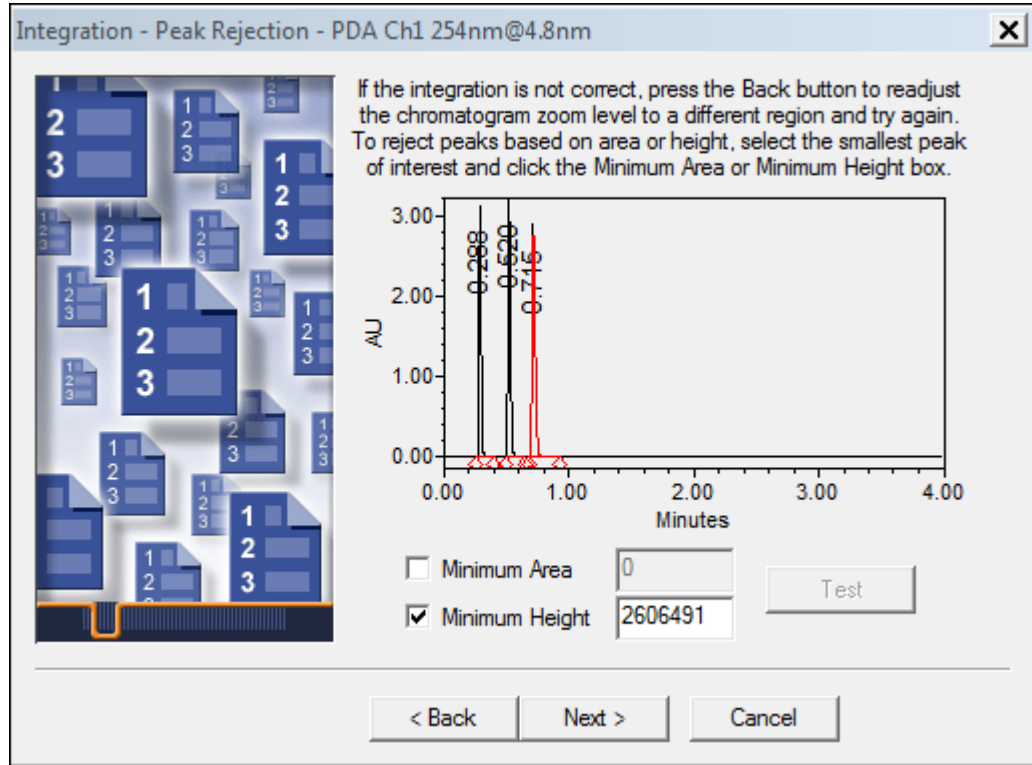
Figure 4–27: Processing Method Wizard, Peak Rejection page



For this example, use the shortest peak to set the Minimum Height. Select the peak by clicking the middle of the peak (the peak turns red). Then click the Minimum Height check box (Figure 4-28). Empower calculates 95% of the selected peak's height (the value appears in the Minimum Height field), and then reintegrates the chromatogram. Note that only three peaks appear (Figure 4-28), because peaks with a height less than 2606491 are not integrated.

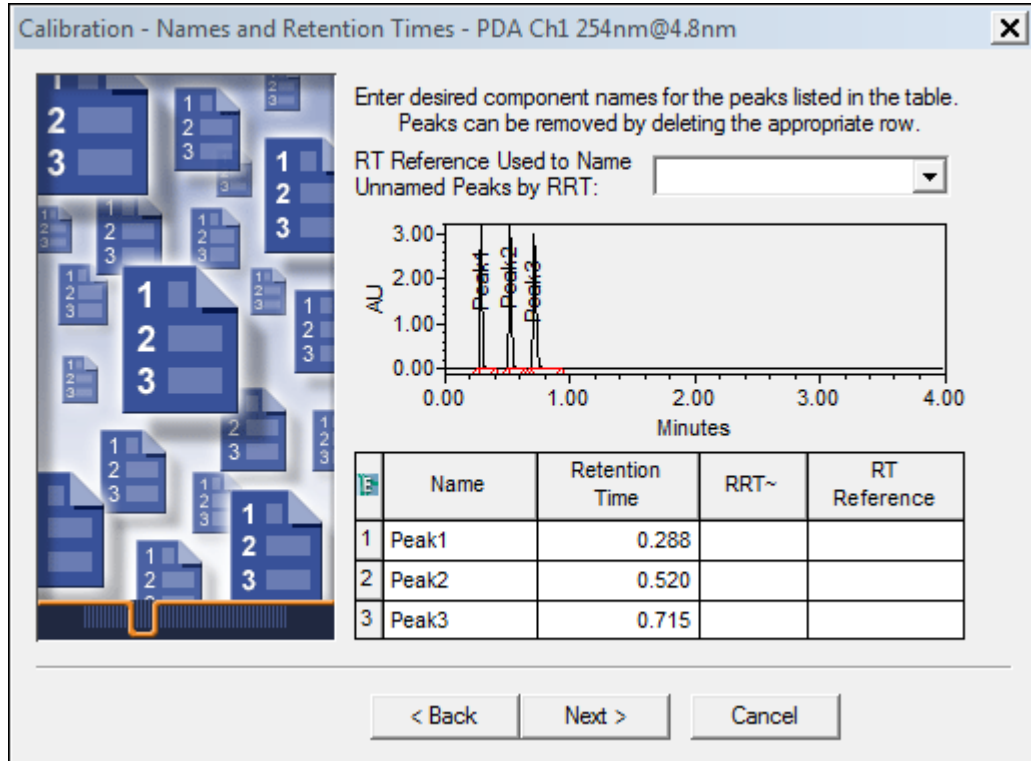
Note: If you manually enter values in these fields, you can click **Test** to view how the values you entered affect the integration. If the software enters the values, it automatically tests them, and the **Test** button remains disabled.

Figure 4–28: Processing Method Wizard, Integration – Peak Rejection page



12. When you are satisfied with the integration, click **Next**.
13. In the Calibration – General page, do not change the default settings, and then click **Next**.
14. A message appears asking if you want to add channel names to the new components. Click **No**.

Figure 4–29: Calibration – Names and Retention Times page



15. In the Calibration – Names and Retention Times page, rename the peaks as follows (Figure 4-30):

- Peak 1:Uracil
- Peak 2:Ethyl Paraben
- Peak 3:Propyl Paraben

Figure 4–30: Calibration and Retention Times page with peak names entered

Enter desired component names for the peaks listed in the table.
Peaks can be removed by deleting the appropriate row.

RT Reference Used to Name Unnamed Peaks by RRT:

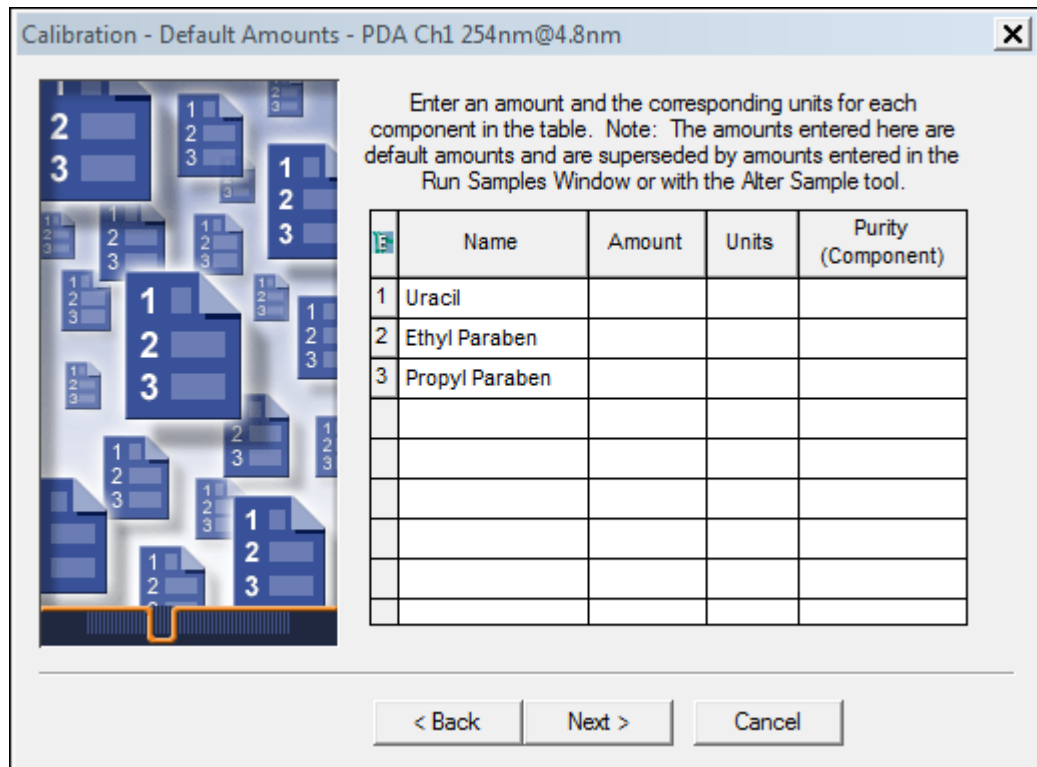
Name	Retention Time	RRT~	RT Reference
1 Uracil	0.288		
2 Ethyl Paraben	0.520		
3 Propyl Paraben	0.715		

< Back Next > Cancel

Note: Enter the appropriate peak names for your standard.

16. Click **Next**.

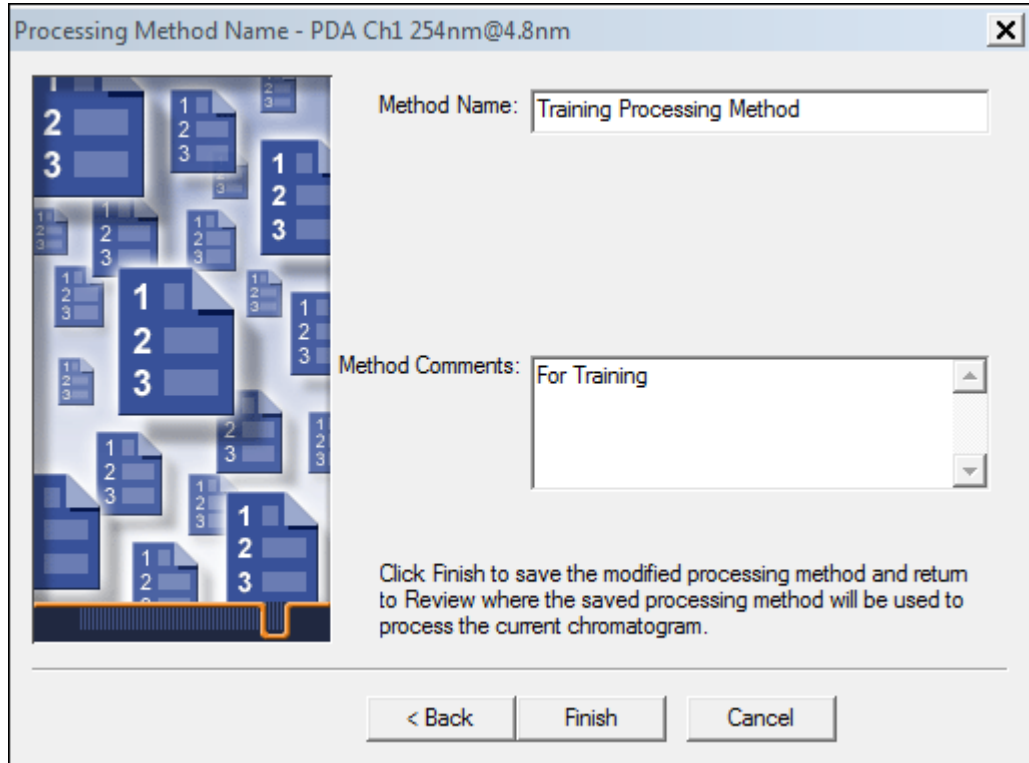
Figure 4–31: Calibration – Default Amounts page



The Calibration – Default Amounts page appears with the new component names in the table. The table has a row for each integrated peak displayed in the chromatogram.

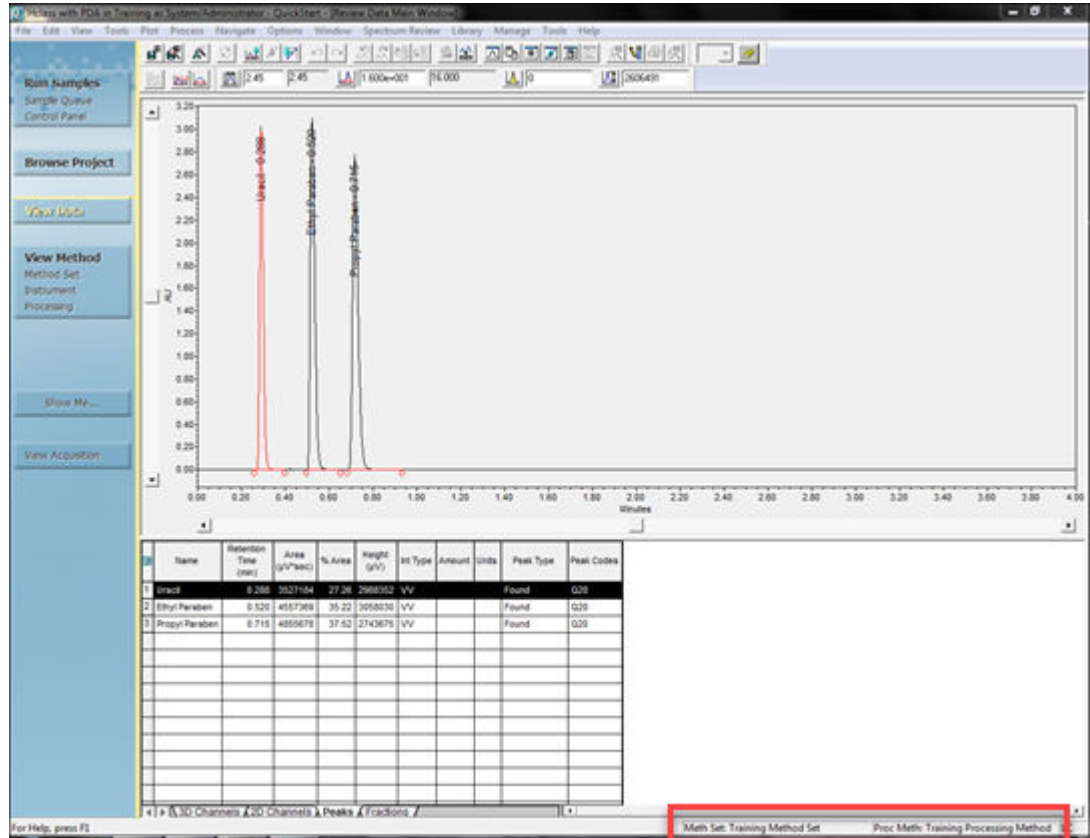
17. The Processing Method Wizard only allows you to specify a single-point calibration curve. Multi-point calibration curves will be described in a later section of this guide. Click **Next**.
18. In the Calibration - Internal Standards page, do not change the default selection of **External Standard Calibration**, and then click **Next**.

Figure 4–32: Processing Method Name page



19. Specify `Training Processing Method` as the method name, and any necessary comments, and then click **Finish**.

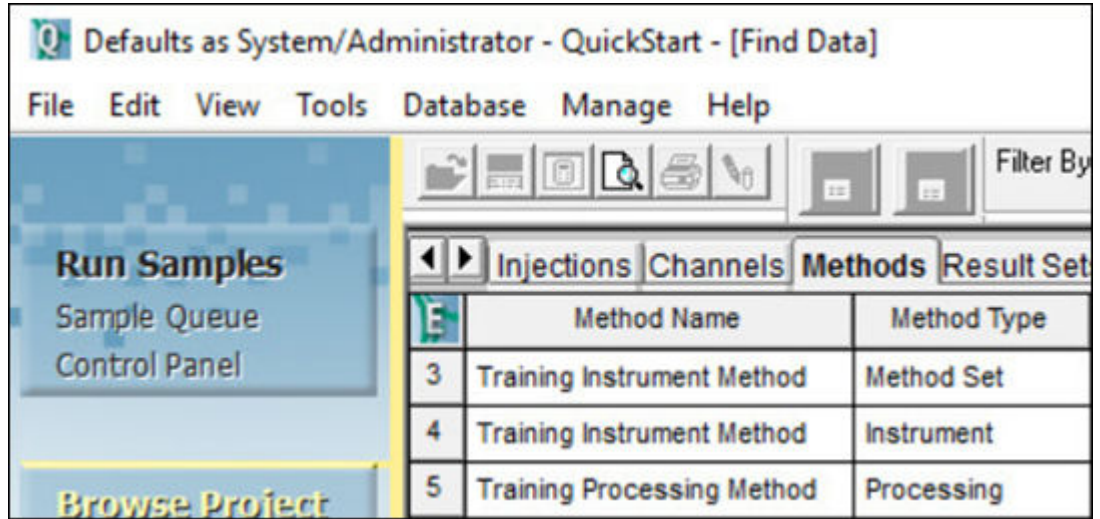
Figure 4–33: Review Data Main Window with processing method name



Empower software integrates the chromatogram using the established parameters. The name of the newly created processing method appears in the lower right corner of the window.

20. All of the Training methods are listed in the project. To view them, click **Browse Project > Methods**.

Figure 4–34: Training methods displayed in Methods tab



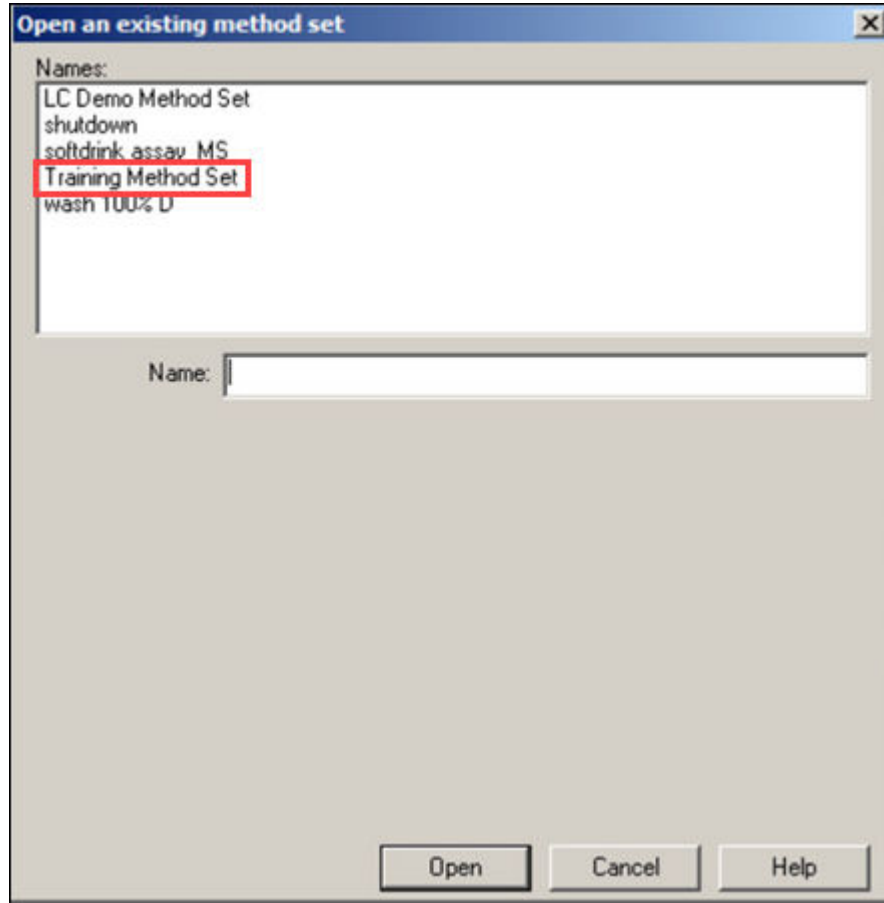
4.5 Modifying the method set

After you create the processing method, add it to the method set.

To modify the method set:

1. In the navigation bar under **View Method**, click **Method Set**.
2. Select **File > Open**.

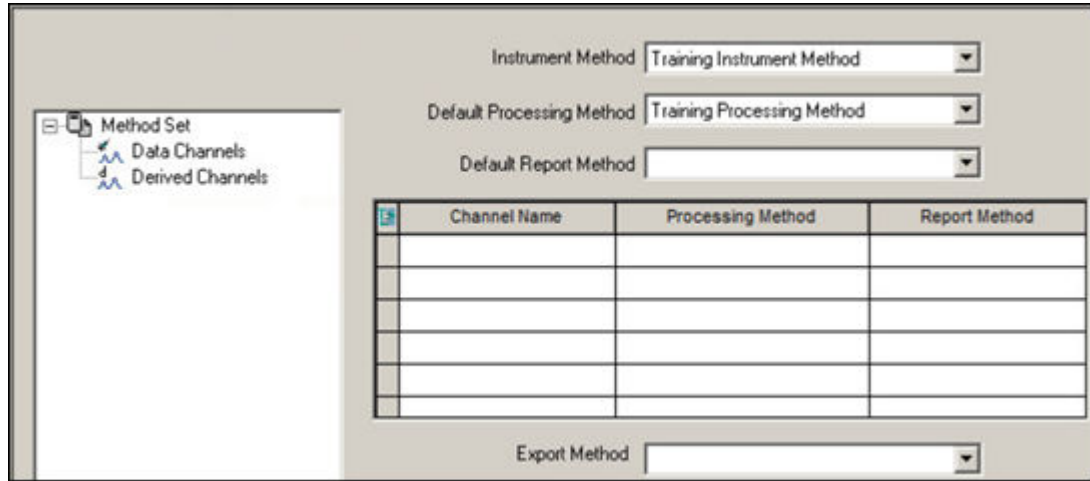
Figure 4–35: Open an existing method set dialog box



3. In the Open an existing method set dialog box, select **Training Method Set**, and then click **Open**.
4. In the Method Set window, select **Training Processing Method** from the Default Processing Method list.

Note: You may have to scroll down in the list.

Figure 4–36: Method set window



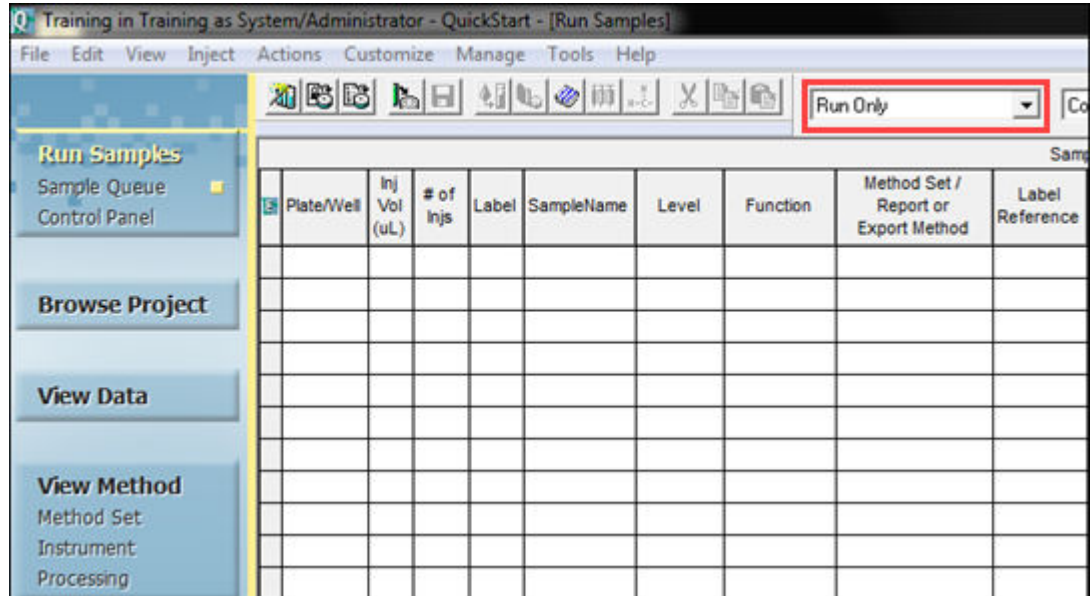
5. Verify that **Training Instrument Method** displays in the **Instrument Method** list.
6. Click **Save**.

4.6 Acquiring data using Run and Process

By adding the instrument and processing methods to the method set, you have enabled Empower to make an injection and process the acquired data using the Run and Process mode. The processing executes according to the parameters in the processing method you created in the previous section.

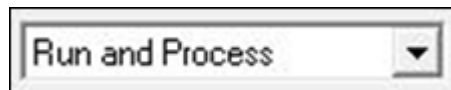
1. In the navigation bar, select **View Acquisition**.
2. Click **Run Samples**.


Figure 4–37: Run Samples



- In the Run Samples window, select **Run and Process** from the Run Mode list (Figure 4-38).

Figure 4–38: Run Mode List



- Click **Inject** , located next to the status bar in the lower left pane of the window.
- In the Specify Single Inject Parameters dialog box, specify the same parameters as in Figure 4-17. Then, click **Inject** to begin data acquisition.

Note: Status information appears in the Status Bar during data acquisition. After the acquisition is complete, Empower software automatically processes the injections and stores the processed data as results.

5 Creating a Sample Set Method

When you are ready to acquire data from more than one sample at a time, use Empower's Sample Set Method feature. A sample set method defines instructions about acquiring data for a number of samples. In the sample set method, you can specify the number of samples and the run sequence, as well as sample-specific parameters, such as vial position, injection volume, and run time.

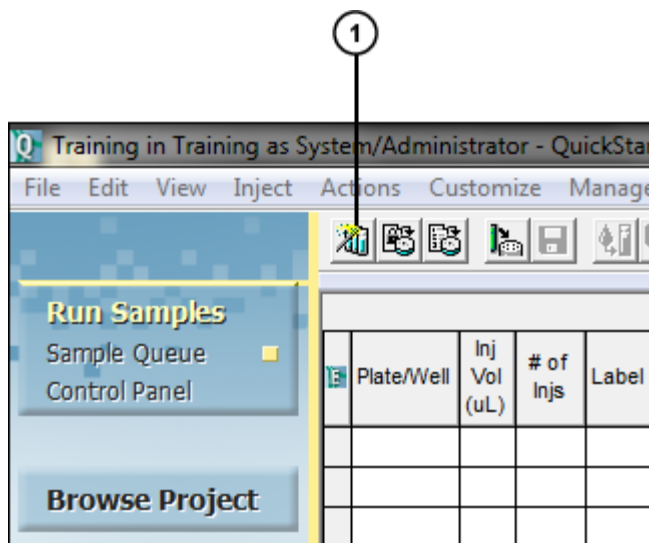
5.1 Using the New Sample Set Method Wizard

The New Sample Set Method Wizard automates the process of defining the injection information for a group of vials.

To create a sample set method using the New Sample Set Method Wizard:

1. In the Run Samples window, click the **Samples** tab.

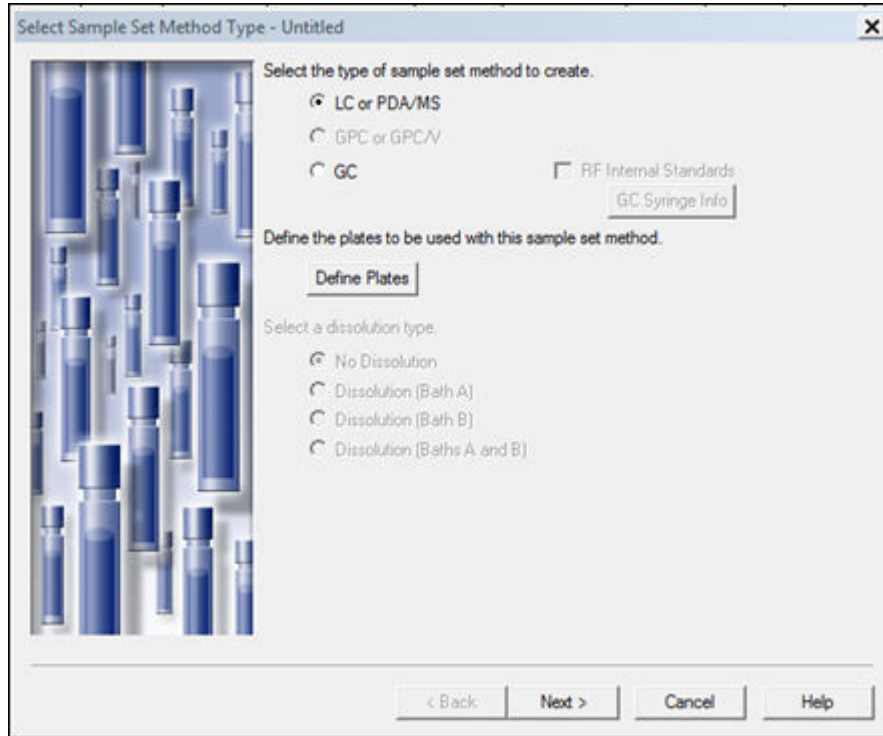
Figure 5–1: Run Samples, Samples Tab



① Sample Set Wizard Tool

2. Click the **Sample Set Wizard** tool.

Figure 5–2: New Sample Set Method Wizard, Select Sample Set Method Type page

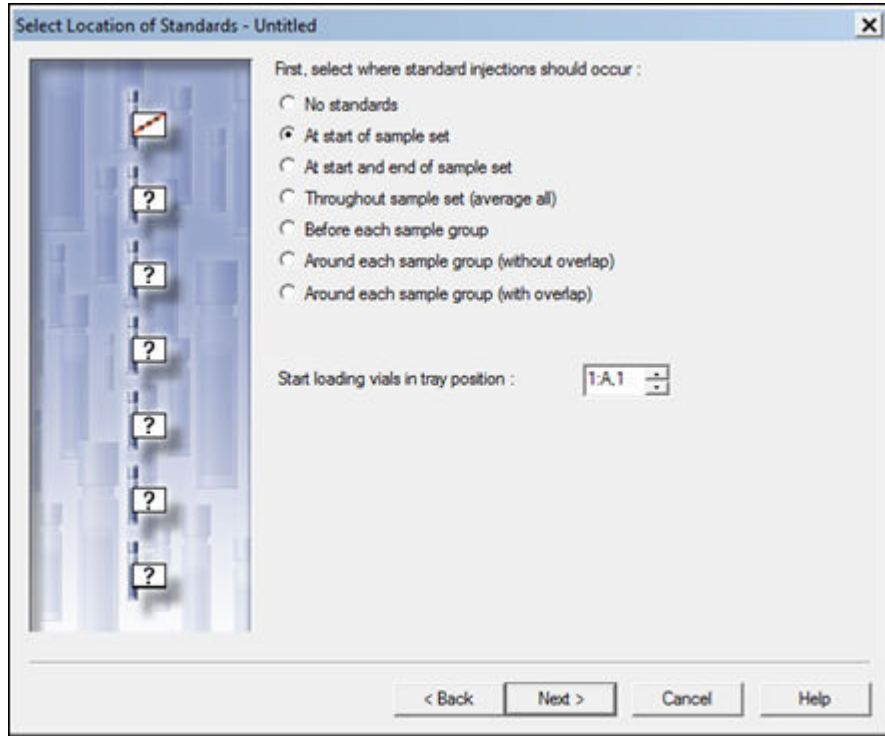


3. If you have not defined the plate configuration previously for the ACQUITY UPLC Autosampler, click **Define Plates** and follow the procedure in [Creating a Method Set](#). Do not change the default settings (**LC or PDA** and **No Dissolution**), and then click **Next**.

Note: See the following guides for step-by-step tutorials about specific software options.

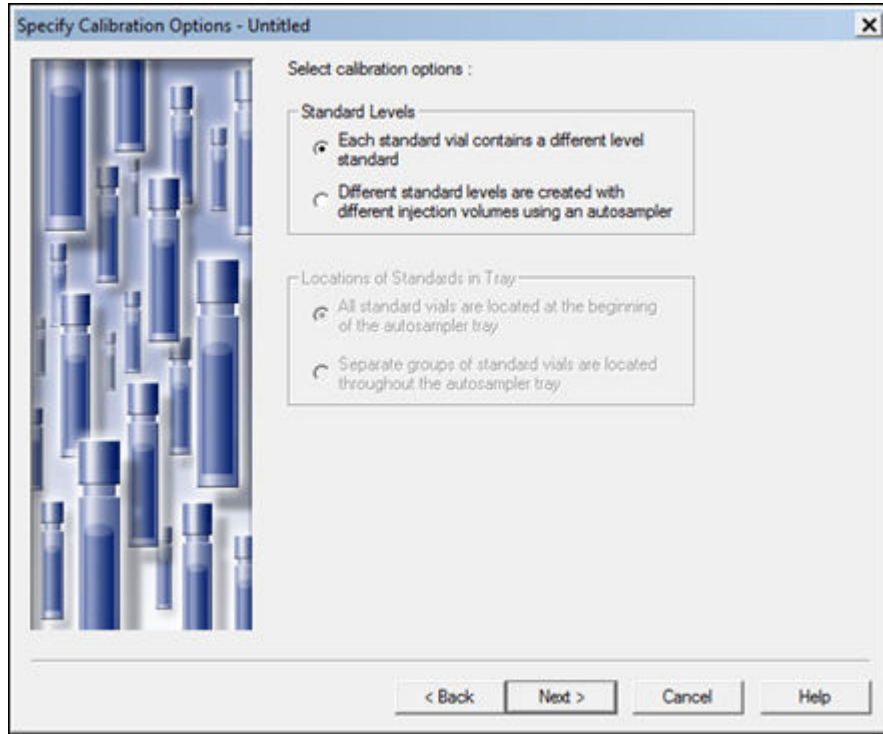
- *Empower Dissolution System Software Quick Start Guide*
- *Empower GPC Software Getting Started Guide*
- *Empower GPCV Software Getting Started Guide*
- *Empower Gas Chromatography Getting Started Guide*

Figure 5–3: New Sample Set Method Wizard, Select Location of Standards page



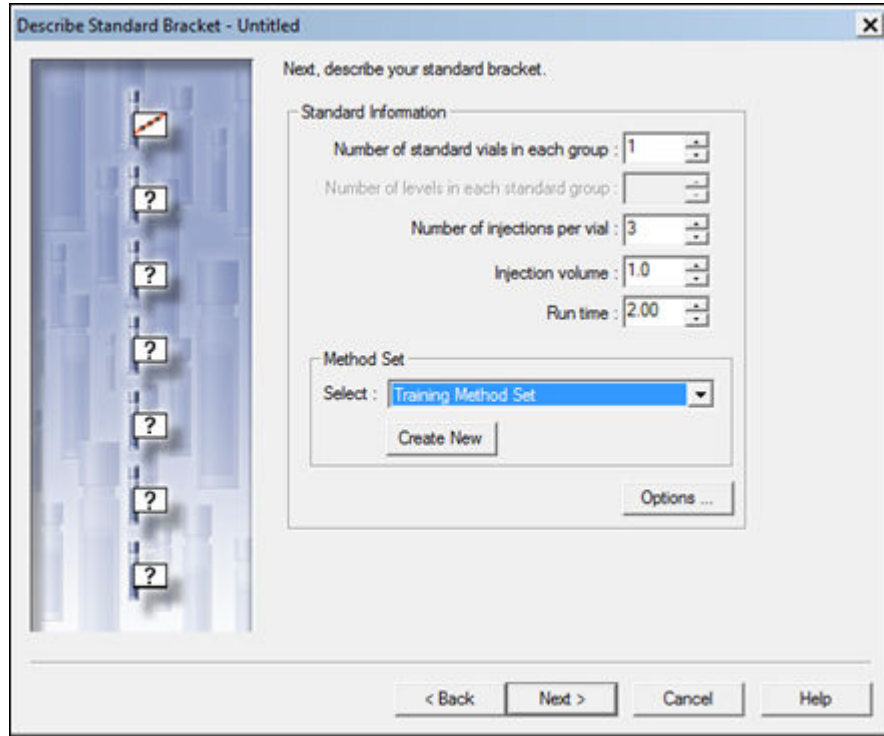
4. In the Select Location of Standards page, click **At start of sample set**, ensure that the correct position is indicated in the **Start loading vials in tray position**, and then click **Next**.

Figure 5–4: New Sample Set Method Wizard, Specify Calibration Options page



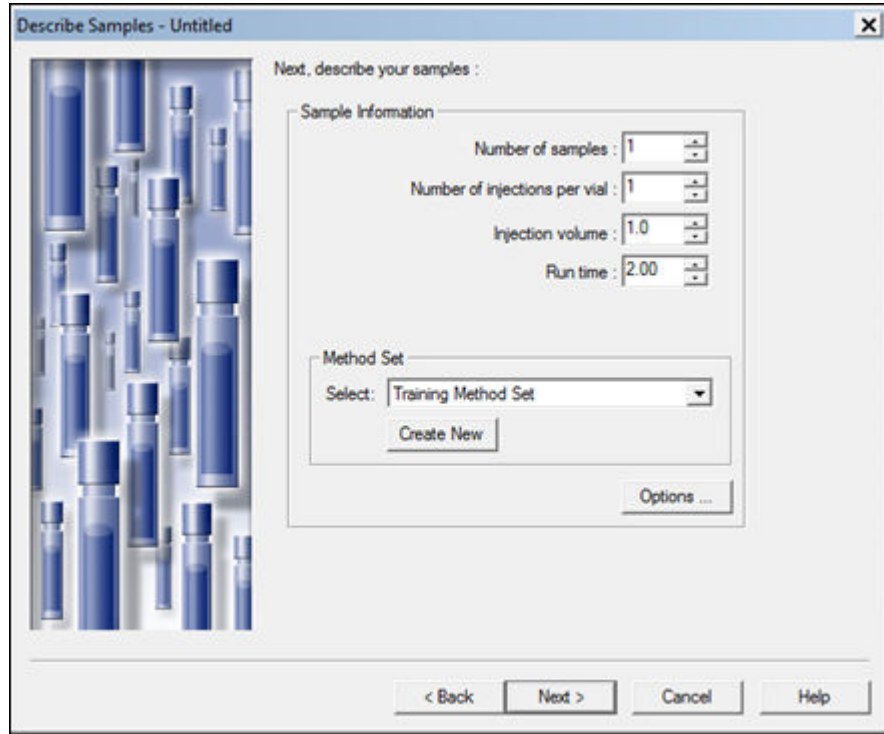
5. In the Specify Calibration Options page, select **Each standard vial contains a different level standard**, and then click **Next**.

Figure 5–5: New Sample Set Method Wizard, Describe Standard Bracket page



6. In the Describe Standard Bracket page, specify the following parameter settings:
 - Number of standard vials in each group: 1
 - Number of injections per vial: 3
 - Injection volume: 1.0
 - Run time: 2:00
 - Method Set: Select **Training Method Set** from the list.
7. Click **Next**

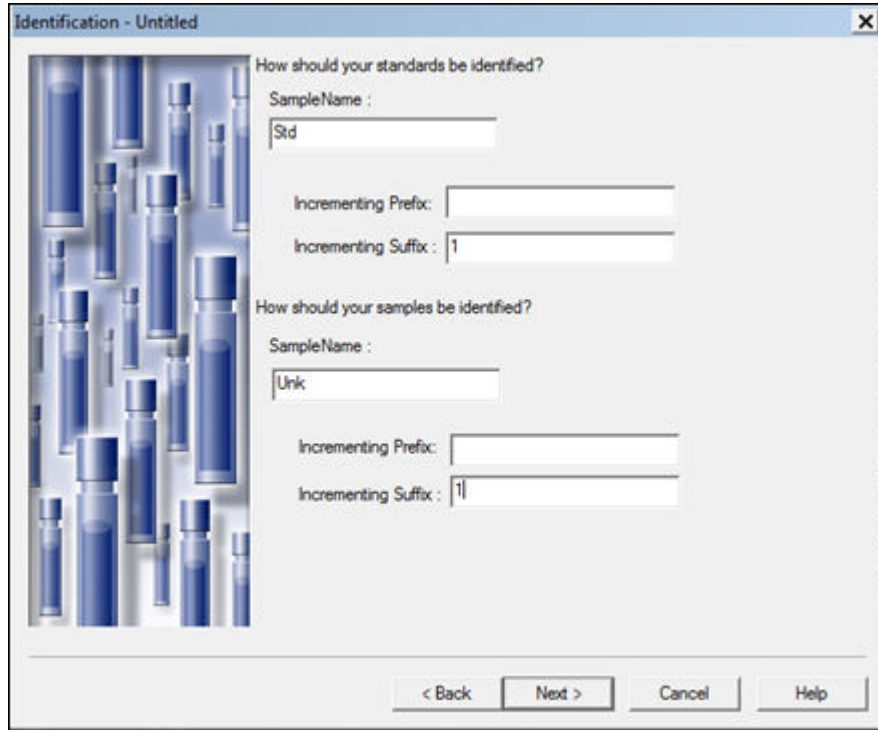
Figure 5–6: New Sample Set Method Wizard, Describe Samples page



8. In the Describe Samples page, enter the following parameters:
 - Number of samples: 1
 - Number of injections per vial: 1
 - Injection volume: 1.0
 - Run time: 2:00
9. Click **Next**.

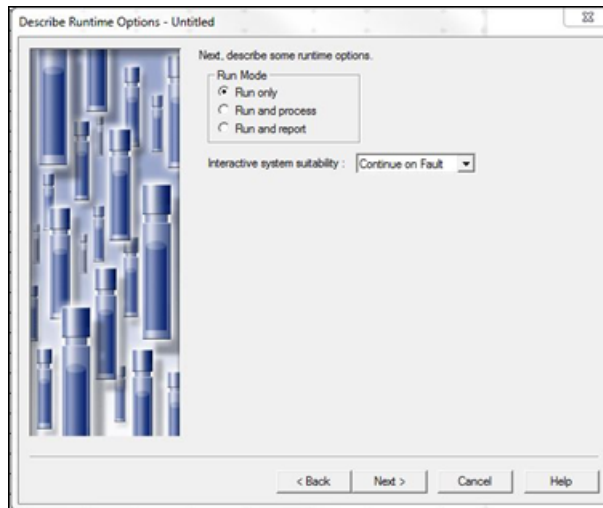
Result: The first of four identification pages appears.
10. If desired, in the New Sample Set Method Wizard, Identification page 1, identify your standards and samples by selecting a column name from the corresponding column name list, and then click **Next**.
11. If desired, in the New Sample Set Method Wizard, Identification page 2, identify your standards and samples by selecting a column serial number from the corresponding column serial number list, and then click **Next**.
12. If desired, in the New Sample Set Method Wizard, Identification page 3, identify your standards and samples by selecting a sample matrix from the corresponding list, and then click **Next**.

Figure 5–7: New Sample Set Method Wizard, Identification page 4



13. Enter a root name for your standards and samples. Root names can be automatically incremented with either a prefix, a suffix, or both. For this exercise, enter `Std` for the **Sample Name** and `1` in the **Incrementing Suffix** field, and then click **Next**.
14. Choose a runtime option.

Figure 5–8: New Sample Set Method Wizard, Describe Runtime Options page

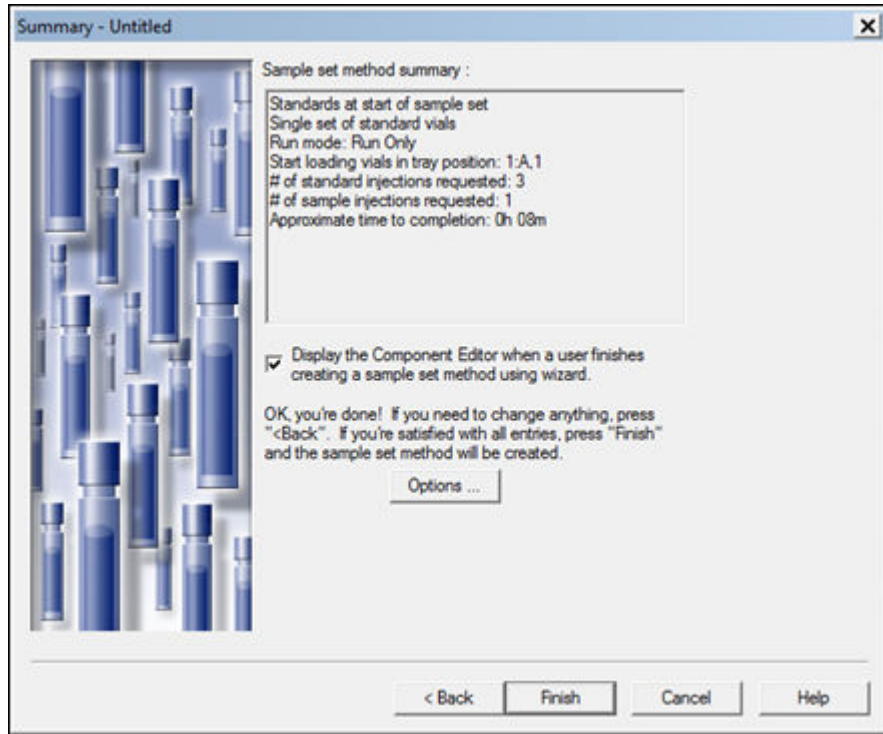


The choices are:

- **Run only** – collect raw data only
- **Run and process** – collect data and then process it
- **Run and report** – collect data, process data, and create report after results are generated

Select **Run Only**, ensure that **Interactive system suitability** is set to **Continue on Fault**, and then click **Next**.

Figure 5–9: New Sample Set Method Wizard, Summary page



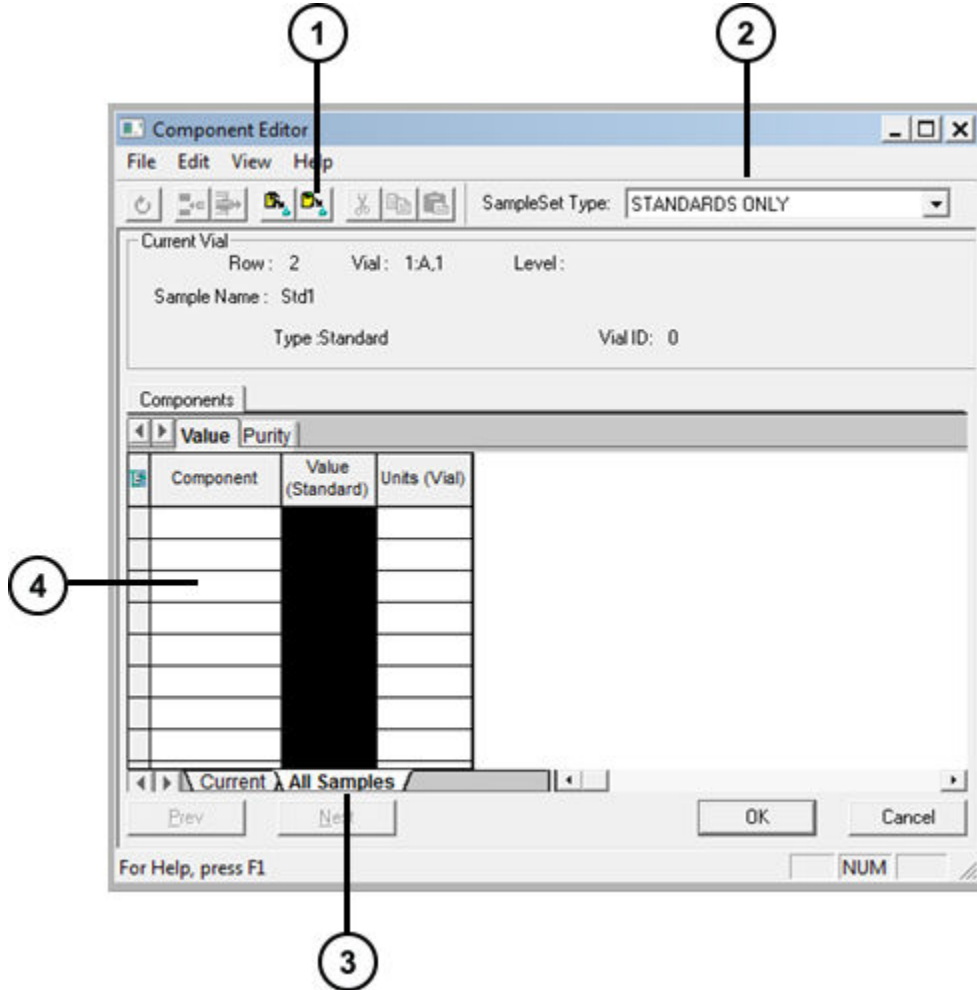
15. On the Summary page, verify that all options chosen in the preceding pages are correct, and note that the check box enabling the Component Editor to automatically open is selected.
16. Click **Finish** to exit the wizard.

Result: This opens the Component Editor (Figure 5-10).

5.2 Entering Component Information

To create a multilevel calibration curve, you must first specify component amounts or concentrations using the Component Editor. Figure 5-10 shows the location of Component Editor fields.

Figure 5–10: Component Editor fields

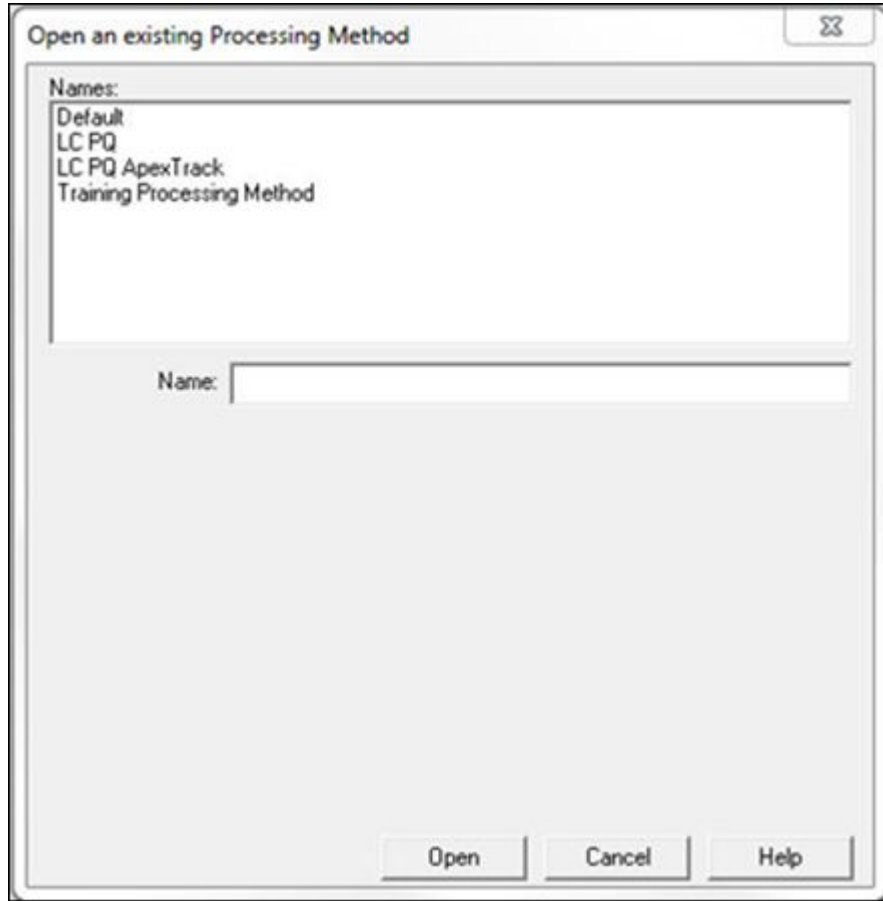


- ① **Copy from Processing Method** tool
- ② Sample Set Type list
- ③ **All Samples** tab
- ④ Component loading table

To enter component information:

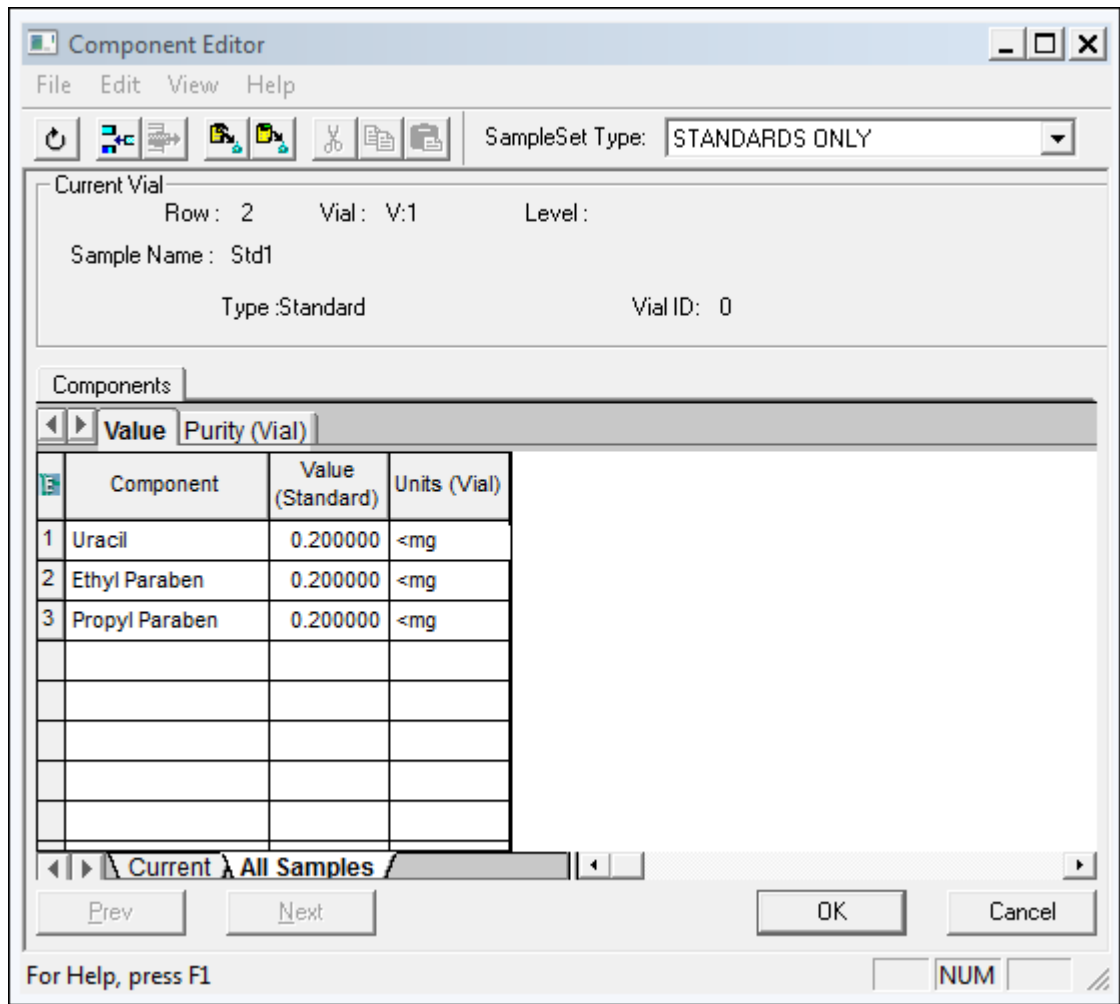
1. Click the **All Samples** tab, and then select **Standards Only** from the Sample Set Type list.
2. Click **Copy from Processing Method** . This allows you to copy data from the Training Processing Method.

Figure 5–11: Open an existing Processing Method dialog box



3. In the Open an existing Processing Method dialog box, select **Training Processing Method**, and then click **Open**.

Figure 5–12: Component Editor with names entered from processing method



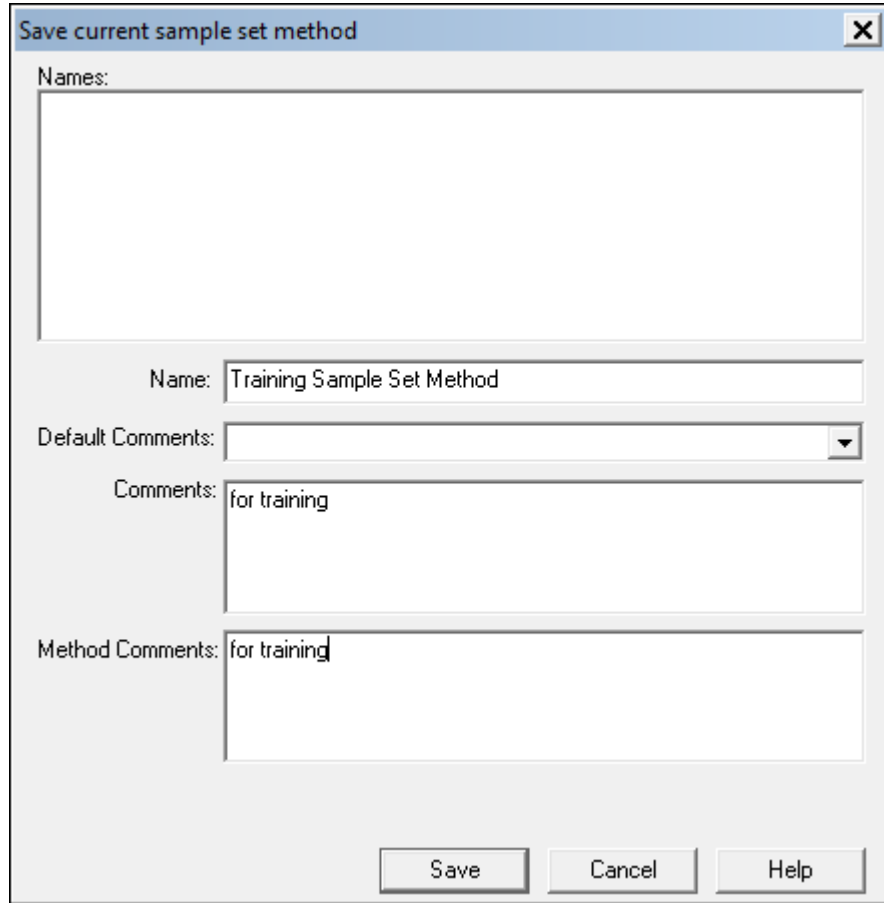
The software loads the names of the standard components from the Training Processing Method into the Component Loading table.

4. Enter the amounts as shown in Figure 5-12 .

Note: Enter the amounts associated with your standards. To specify units (in this case, mg) type the "<" symbol, followed by the unit, in the Units (Vial) column. The < symbol will not appear in the results.

5. Click **OK**.
6. Select **File > Save Sample Set Method As**.

Figure 5–13: Save current sample set method dialog box

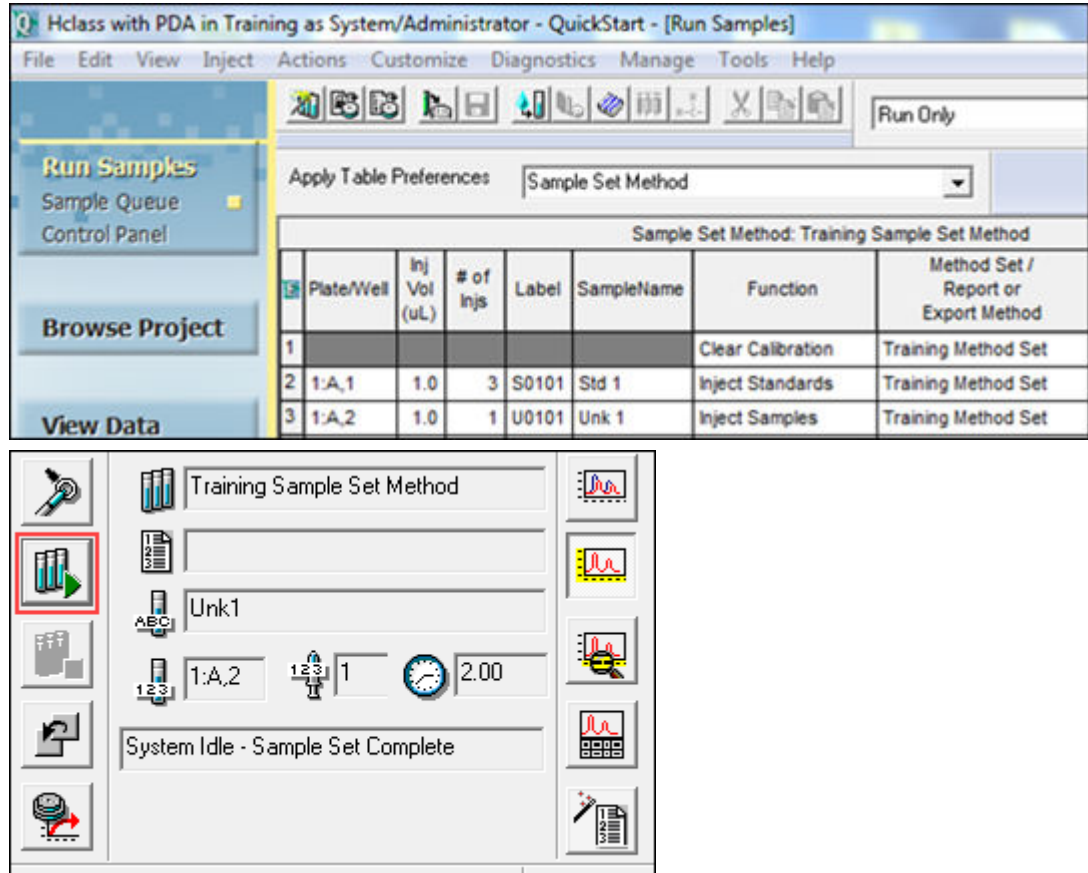


7. In the Save current sample set method dialog box, specify Training Sample Set Method for the name, any pertinent comments, and then click **Save**.

Note: You can configure Empower to display Method Comments, as well as, general Comments. Refer to the Empower Online Help for more information.

8. Click **Run current sample set method**  (Figure 5-14).

Figure 5–14: Run Current Sample Set Method tool



Note: If you selected a row or rows in the Run Samples window, you can specify whether to inject all rows or selected rows. If you did not select rows, this option does not appear in the Run Sample Set dialog box.

Figure 5–15: Run Sample Set dialog box

Run Sample Set

You have selected lines in this sample set method

Do you wish to :

Inject all rows

Inject only selected lines

Name for this sample set : Training Sample Set

Sample set method name : Training Sample Set Method

Settings for this Sample Set

Wait For User

Run Mode : Run Only

Suitability Mode : Continue on Fault

Printer : Select Printer

Shutdown Method :

Do Not Run Shutdown Method During User Abort

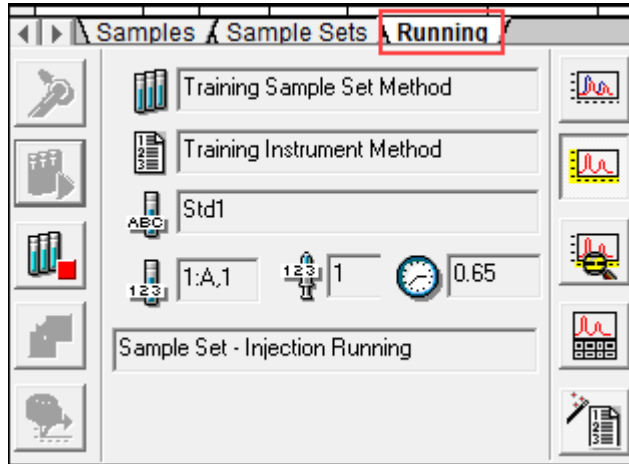
Default Comments:

Comments: for training

Run Cancel Help

9. In the Run Sample Set dialog box, do the following:
 - Specify Training Sample Set as the sample set name.
 - If you have highlighted a row in the Run Samples window, ensure that the **Inject all rows** option is selected.
 - Click **Run** to begin.

Figure 5–16: Run Samples, Running Tab



When acquisition starts, the software switches to the **Running** tab to allow you to view the current status of your acquisition (Figure 5-16).

Important: Make sure to let the sample set complete its run (Figure 5-17).

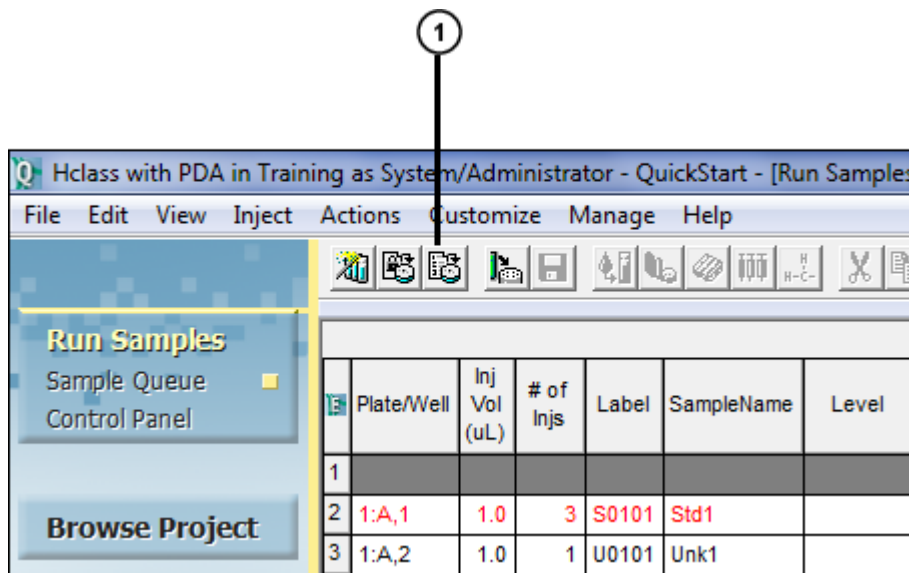
Figure 5–17: Completed run notice



Tip: You can return to the **Samples** tab and create a new sample set method while the current one is running.

10. After you save the sample set method with a name, you can reuse the method.
11. Click the **Open Sample Set Method** tool (Figure 5-18).

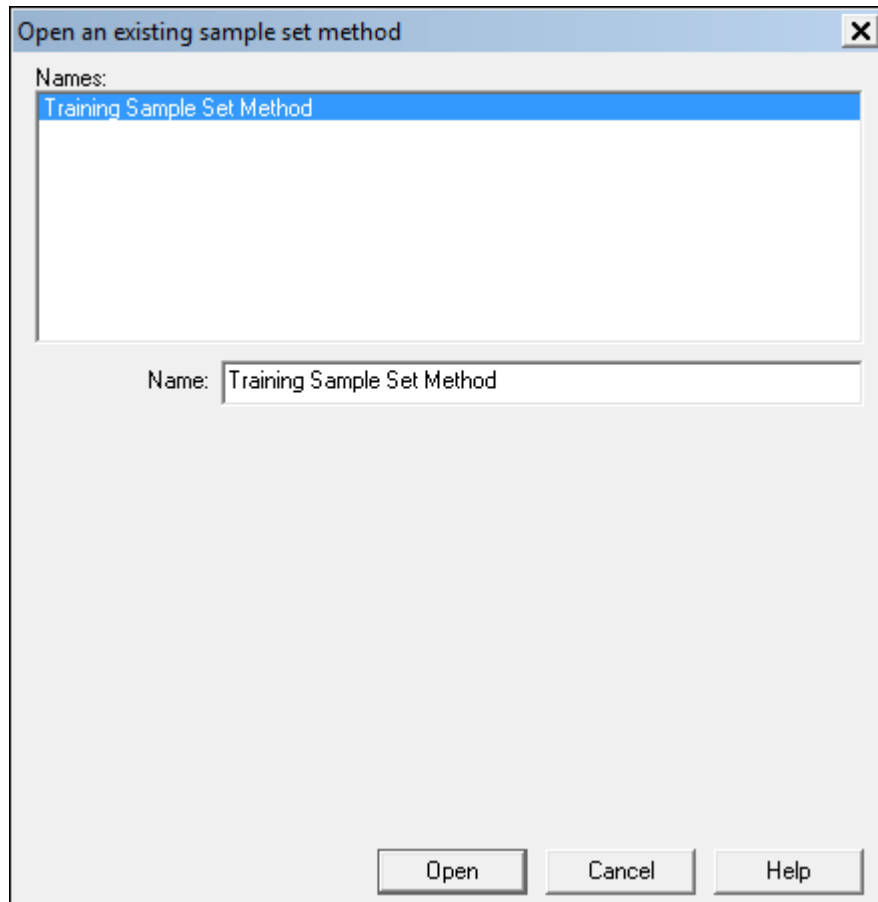
Figure 5–18: Open Sample Set Method tool



① Open Sample Set Method tool

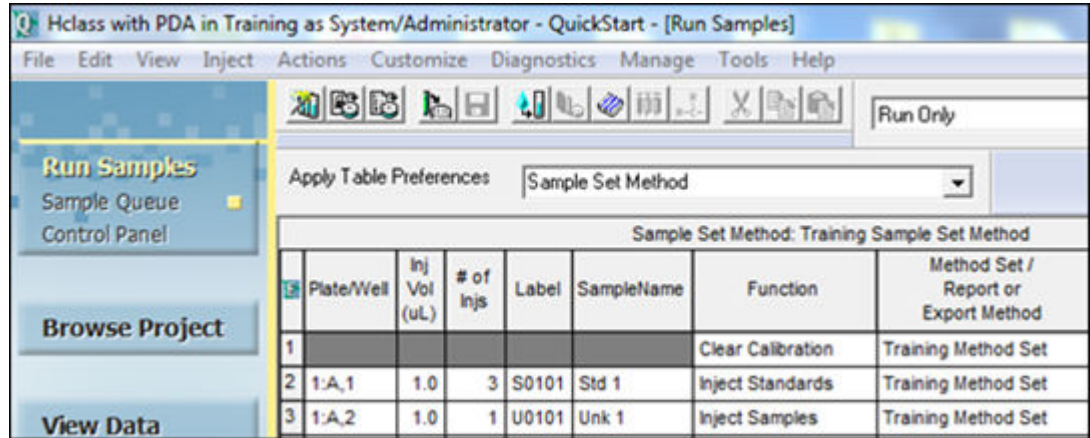
12. In the Open an existing sample set method dialog box, highlight the method of interest and click **Open**.


Figure 5–19: Open an existing sample set method dialog box



Result: The sample set method is loaded into the table and is ready to run (Figure 5-20).

Figure 5–20: Sample Set Method Loaded into the Samples Table



- With the sample set method loaded into the table, you can run the method by clicking **Run** the current sample set method .

6 Creating a Processing Method Interactively

In a previous chapter, you created a processing method using the Processing Method Wizard ([Creating a Processing Method](#)). Now, you will create a processing method interactively without using the wizard.

By interactively creating a processing method, you can access more integration, calibration, and quantitation parameters than is possible using the Processing Method Wizard.

This chapter shows you how to use the Review Data Main window and the Processing Method window to:

- Optimize peak detection and integration parameters using the Apex Track Algorithm
- Assign peak names

Note: This chapter uses the Defaults project instead of the Training project.

To change projects

1. From the **Manage** menu, select **Change Project/System**.
2. Highlight the Defaults project.
3. Select **Open in this window** or **Open in new window**.
4. Click **OK**

6.1 Creating a processing method in Review Data main window

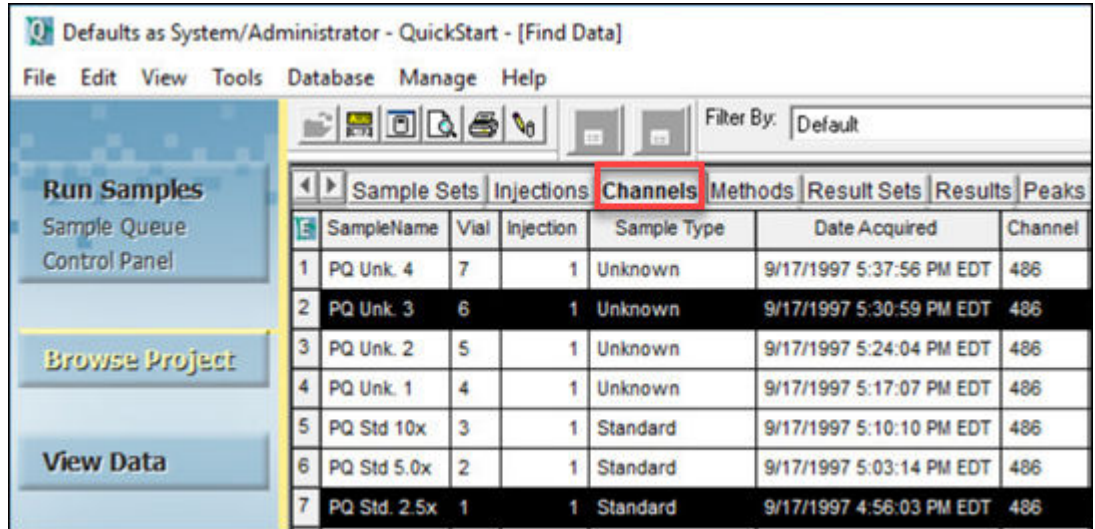
To interactively create a processing method:

1. Click **Browse Project**, and then click **Channels** to access the unprocessed channels of data (Figure 6-1).
2. Select **PQ Std 2.5x**, hold down the **Ctrl** key, and then click one of the unknown (PQ Unk) samples.

Result: The channels you selected are highlighted in the Channels table.

Note: To ensure that Empower detects all your peaks of interest, base your processing method on the lowest concentration standard that produces a good signal-to-noise ratio.

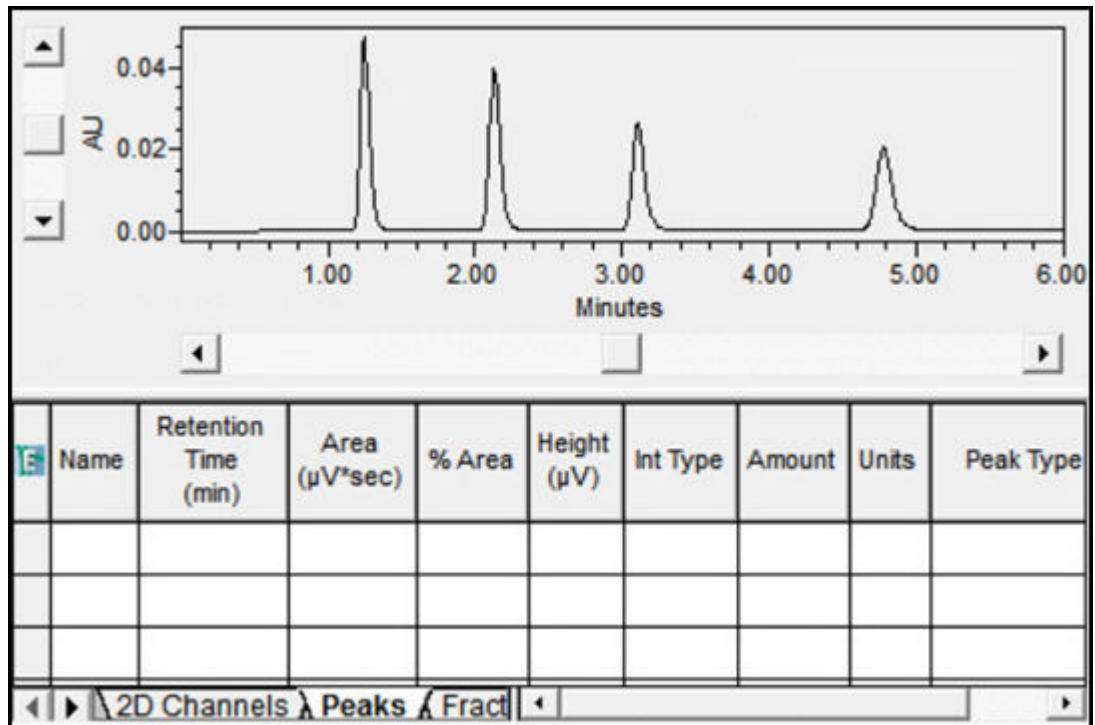
Figure 6-1: Browse Project, Channels tab



3. Click **View Data**.

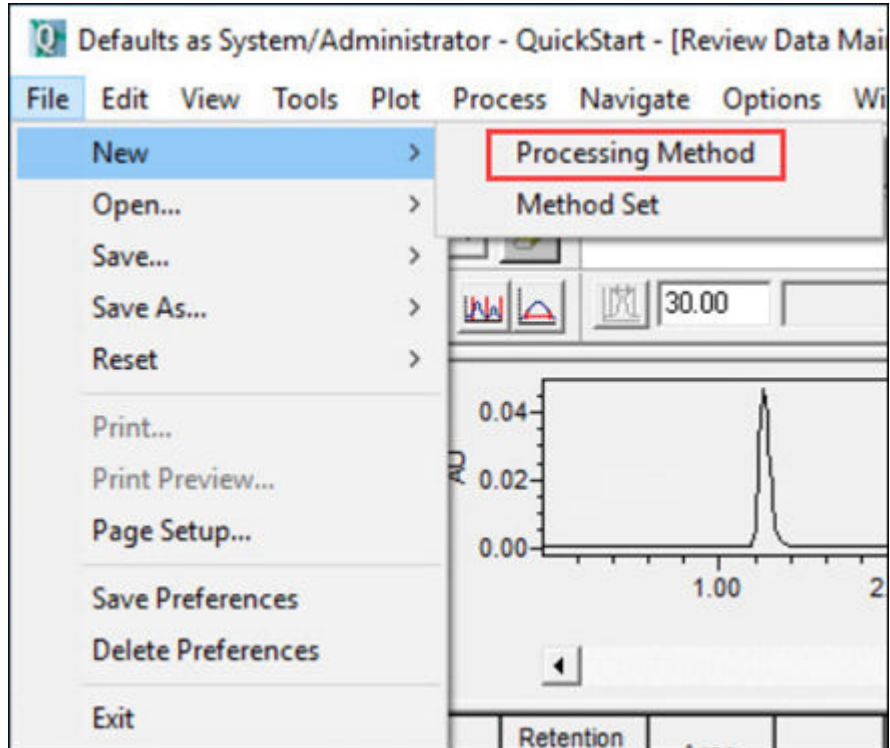
Result: The Review Data main window displays the chromatogram of the first chosen channel (the standard) in the upper plot pane (Figure 6-2).

Figure 6-2: Review Data Main Window with chromatogram of standard (first channel)



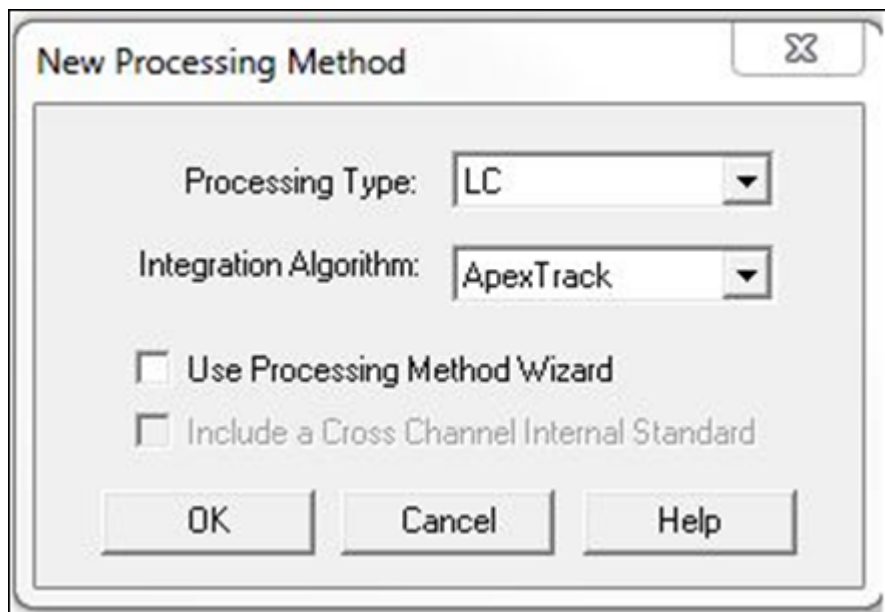
4. Select **File > New > Processing Method** (Figure 6-3).

Figure 6–3: File menu



5. In the New Processing Method dialog box (Figure 6-4), ensure that Processing Type is set to **LC** and Integration Algorithm is set to **Apex Track**, then click **OK**.

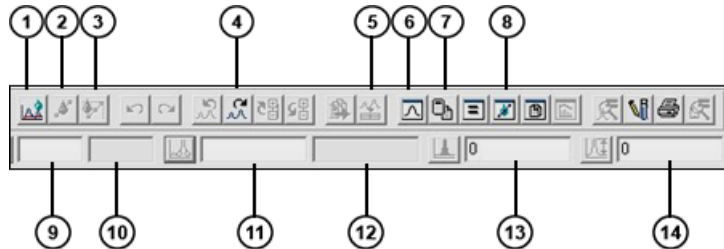
Figure 6–4: New Processing Method dialog box



6. Before proceeding, review the tools for creating and optimizing processing methods (Figure 6-5).

Tip: When you point to an icon in the interface, the name of the icon appears in a Tool Tip window.

Figure 6–5: Tool Bar



- ① Integrate
- ② Calibrate
- ③ Quantitate
- ④ Next 2D Channel
- ⑤ Fill from Result
- ⑥ Review Main Window
- ⑦ Processing Parameters
- ⑧ Calibration Curve
- ⑨ Processing Method Peak Width
- ⑩ Result Peak Width
- ⑪ Processing Method Threshold
- ⑫ Result Threshold
- ⑬ Processing Method Minimum Area
- ⑭ Processing Method Minimum Height

7. Click **Processing Parameters**  (see Figure 6-5).

Figure 6–6: Processing method parameters

Integration Algorithm: ApexTrack

Apex Detection

Start (min): End (min):

Peak Width (sec): Detection Threshold:

Peak Integration

Lutoff %: Touchdown %:

Minimum Area: Minimum Height:

	Time (min)	Type

8. Click **Integration** to set the peak detection and integration parameters. Peak detection parameters consist of the following:
 - **Start (min)** and **End (min)** – Region of the chromatogram for peak detection. For this exercise, enter a start time of 1 and an end time of 5.1 (Figure 6-7).
 - **Peak Width (sec)** – Sets a digital filter for smoothing. Leave this blank so that Empower determines the optimum value.
 - **Detection Threshold** – Based on peak-to-peak noise. Leave this blank so that Empower determines the optimum value.

Figure 6–7: Processing method parameters with start and end times

Apex Detection			
Start (min)	<input type="text" value="1.000"/>	End (min)	<input type="text" value="5.100"/>
Peak Width (sec)	<input type="text"/>	Detection Threshold	<input type="text"/>

Peak Integration			
Liftoff %	<input type="text" value="0.000"/>	Touchdown %	<input type="text" value="0.000"/>
Minimum Area	<input type="text" value="0"/>	Minimum Height	<input type="text" value="0"/>



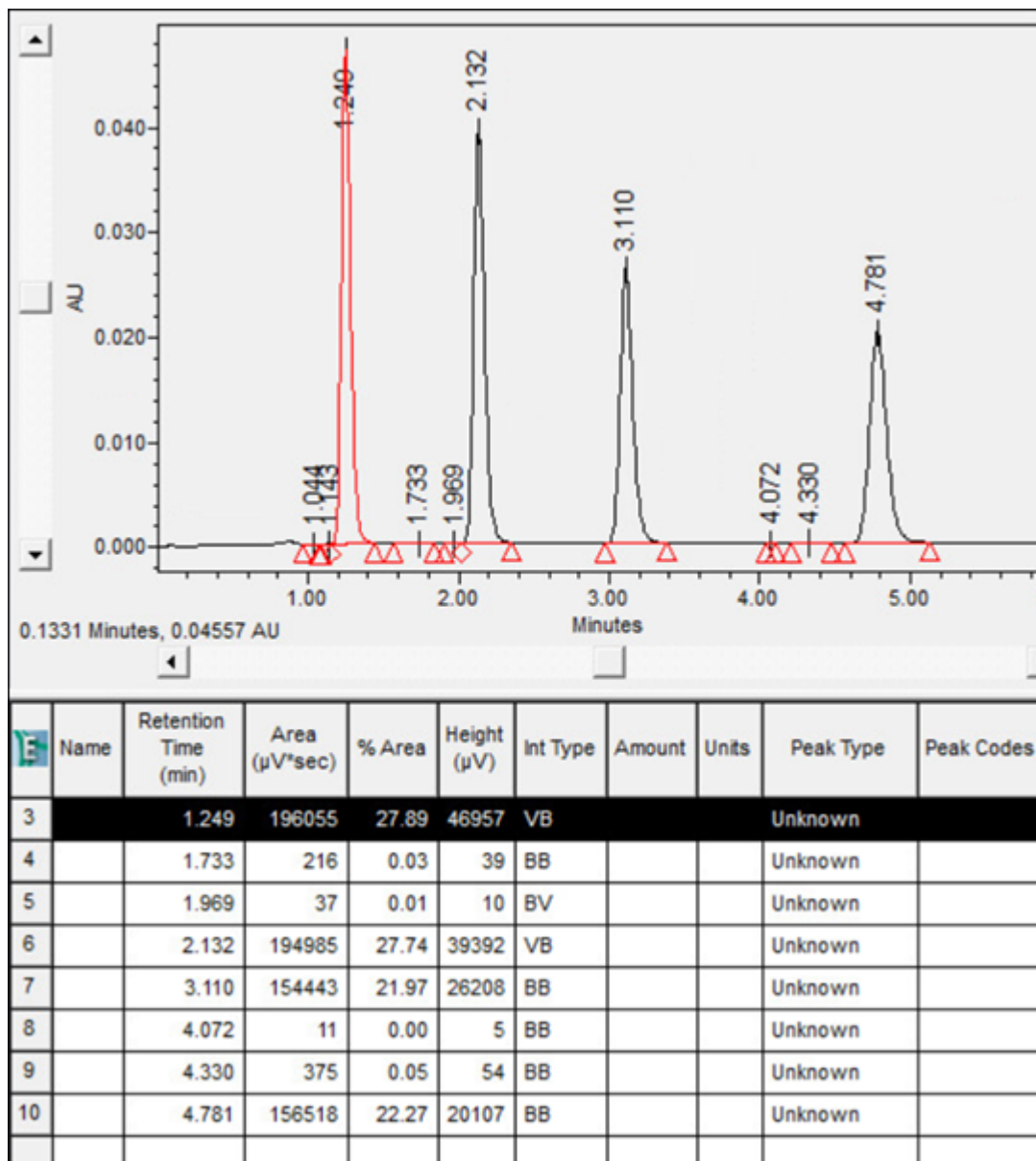
9. Click **Review Main Window**  to return to the chromatogram, then click **Integrate** .

Figure 6–8: Integrated chromatogram with optimized peak width and threshold




Empower determines the auto peak width and auto threshold, and calculates the optimum values for these parameters (Figure 6-8).

- Now you can fine-tune the method for the four large peaks of interest. To prompt Empower to ignore the remaining peaks, use either the Minimum Area or Minimum Height to reject them. Because the peak areas for the small peaks in this example are under 1000, enter 1000 in the processing method minimum area.

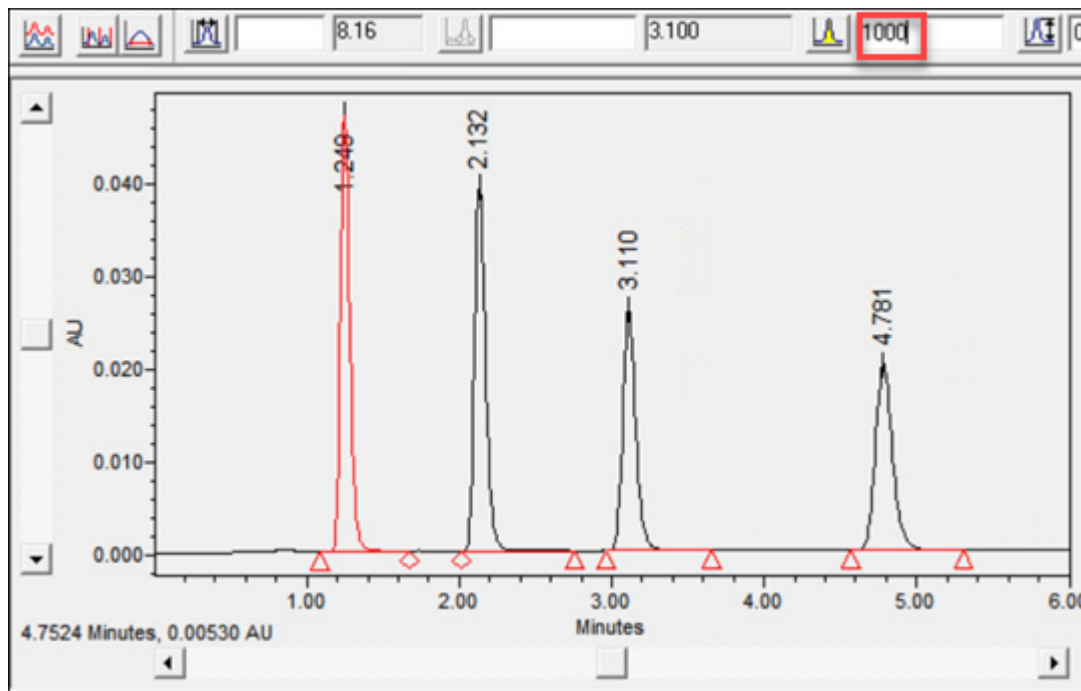
Alternative: Use the shortest peak of the four in this example to set the Minimum Area. Select the peak by clicking the middle of the peak (the peak turns red). Then click **Set Processing Method Minimum Area**.

Result: Empower calculates 95% of the selected peak's area (the value appears in the Minimum Area field).

11. Click **Integrate** . Note that only four peaks appear because peaks with an area of less than 1000 are not integrated (Figure 6-9).

Note: Adjustments to the processing method parameters are subjective, and you may need to follow your lab's standard operating procedure.

Figure 6–9: Integrated chromatogram with minimum area value



12. The peak start (liftoff) markers are close to the peaks; however, the peak end (touchdown) markers are far from the peaks. To adjust them, click **Processing Parameters** and examine the peak integration parameters (Figure 6-10).

Note: Default values for liftoff percentage and touchdown percentage are 0.000.

Figure 6–10: Processing parameters Integration tab

Integration			
Integration Algorithm		ApexTrack	
Apex Detection			
Start (min)	1.000	End (min)	5.100
Peak Width (sec)		Detection Threshold	
Peak Integration			
Liftoff %	0.000	Touchdown %	0.200
Minimum Area	1000	Minimum Height	0

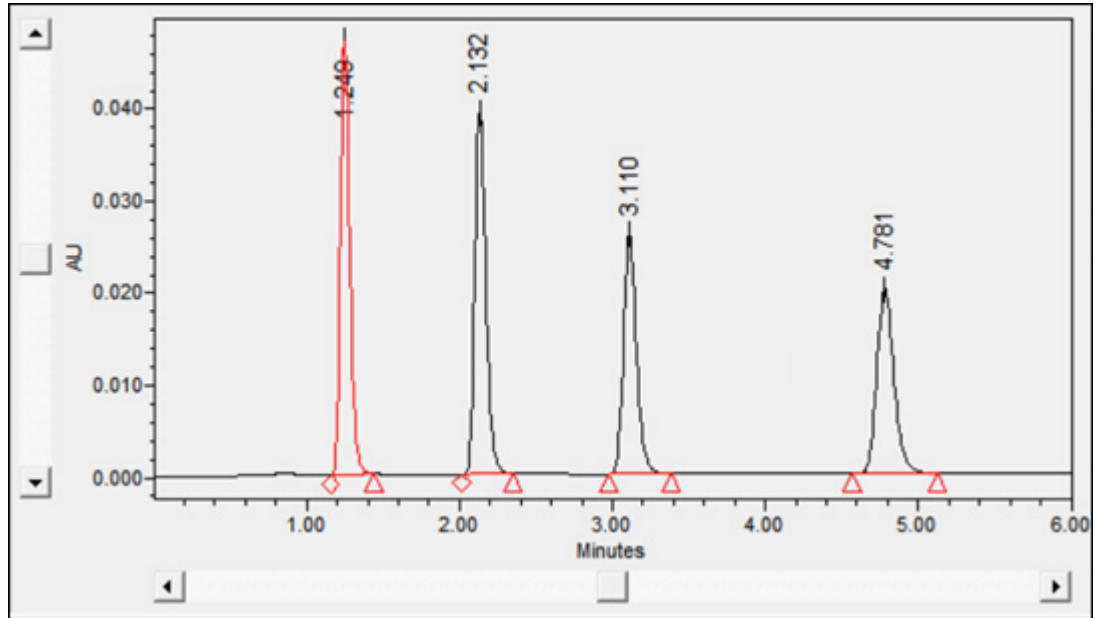
13. Peak integration parameters consist of the following:

- **Liftoff %** – A baseline start liftoff percentage.
- **Touchdown %** – A baseline end touchdown percentage.
- **Minimum Area** – Minimum peak area required for a peak to be reported.
- **Minimum Height** – Minimum peak height required for a peak to be reported.

In this case, change the peak end by modifying the Touchdown %. The range is 0–100. The default value of 0 produces a touchdown tangent to the baseline. 100 produces a touchdown tangent to the inflection point. If you enter a small number, such as 0.2, it might produce a better touchdown closer to the peak end (Figure 6-11).

14. After you enter the changes, click **Integrate** , and then **Review Main Window** .

Figure 6–11: Reintegrated chromatogram with touchdown % of 0.2





- To assign peak names, click **Processing Parameters** , and then select **Components** (Figure 6-12).

Figure 6–12: Processing parameters Components tab

Name	Component Type	Peak Label	Retention Time (min)	RT Window (min)	Peak Match	3D Channel Name

- Click **Fill From Result**  to populate the table. This produces one line of information for each integrated peak in the chromatogram.
- A message appears asking whether you want to add channel names to the new components. Click **No**.

Result: The table is populated with generic peak names (Figure 6-13).

Figure 6–13: Processing method Components tab with generic peak information



	Name	Component Type	Peak Label	Retention Time (min)	RT Window (min)	Peak Match
1	Peak1			1.249	0.062	Closest
2	Peak2			2.132	0.107	Closest
3	Peak3			3.110	0.156	Closest
4	Peak4			4.781	0.239	Closest


18. Specify the following names for the four peaks (Figure 6-14):

- Acetone
- Acetophenone
- Propiophenone
- Butyrophenone

Figure 6–14: Processing method Components tab with correct peak names

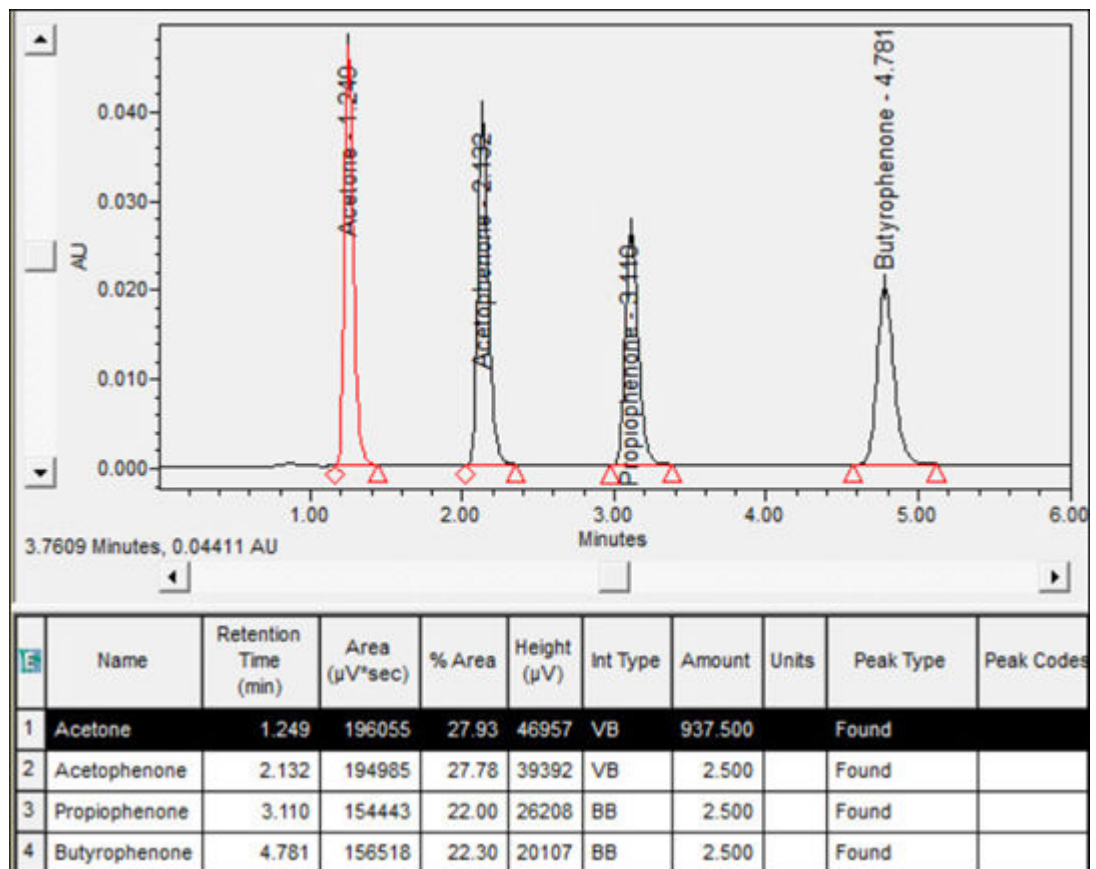
	Name	Component Type	Peak Label	Retention Time (min)	RT Window (min)	Peak Match
1	Acetone			1.249	0.062	Closest
2	Acetophenone			2.132	0.107	Closest
3	Propiophenone			3.110	0.156	Closest
4	Butyrophenone			4.781	0.239	Closest

19. Click **Review Main Window**  to return to the chromatogram, and then, because this channel of data is a standard, click **Calibrate**  to apply the component information.

Note: If Calibrate  is not active, the channel of data is not a standard.

Result: The peak names are applied to the peaks (Figure 6-15).

Figure 6–15: Chromatogram with peak names applied





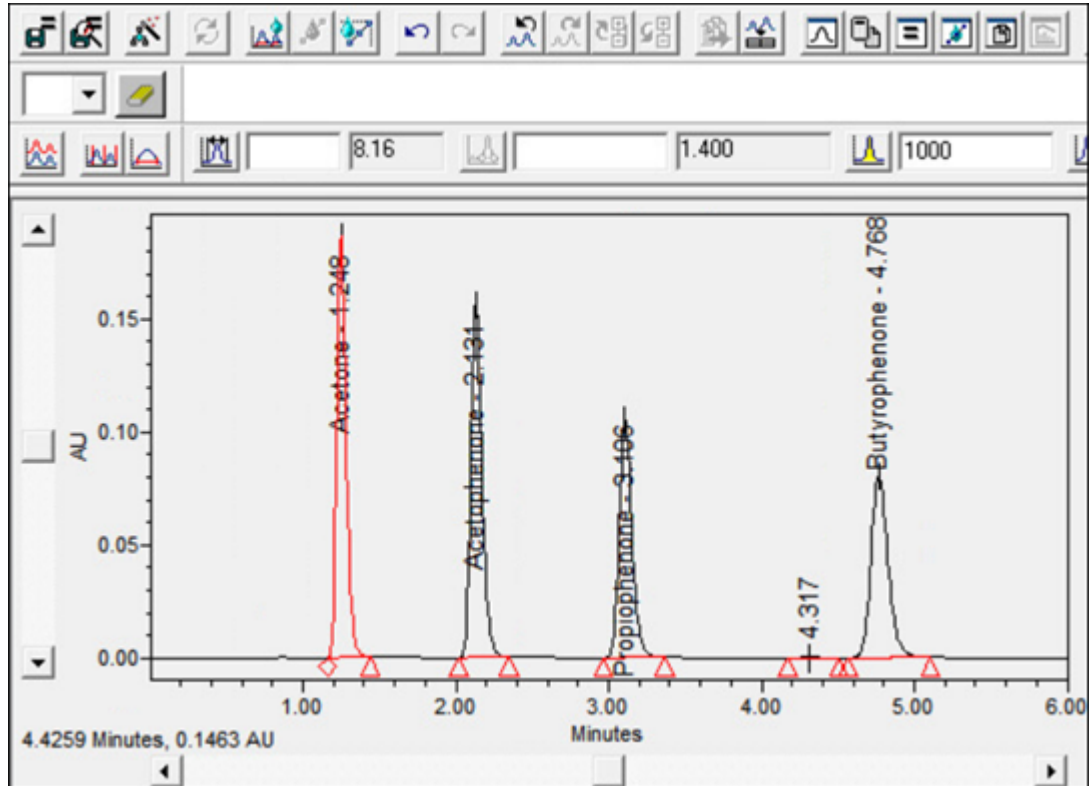

20. Now, examine the channel of data for the sample. Click **Next 2D Channel** , **Integrate**, and then **Quantitate**  to produce an integrated chromatogram with peaks (Figure 6-16).

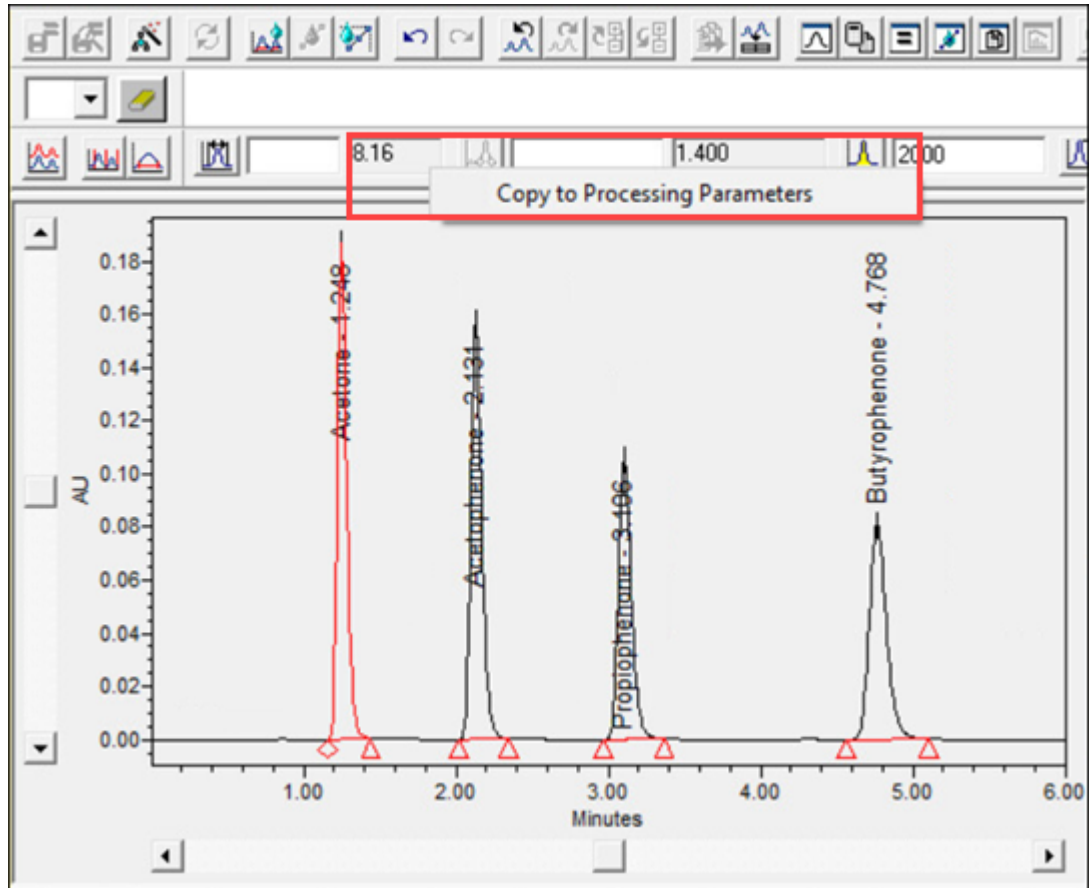
Figure 6–16: Chromatogram for Sample



21. Notice that an extra peak that is not of interest is integrated at 4.317 minutes. To prompt Empower to ignore this peak, increase the value for the processing method minimum area to 2000, and then click **Integrate** . Remember to click **Integrate** any time you change an integration parameter.
22. Decide which values for Peak Width and Threshold to use in this method. The choices are:
 - To prompt Empower to determine the optimum values for each chromatogram, leave the **Processing Method Peak Width** and **Processing Method Threshold** fields empty. If you choose this option, do nothing further to the method.
 - To use the same values for peak width and threshold in every chromatogram, copy the Result Peak Width and Result Threshold values into the method by right-clicking on each field and selecting **Copy to Processing Parameters** (Figure 6-17).

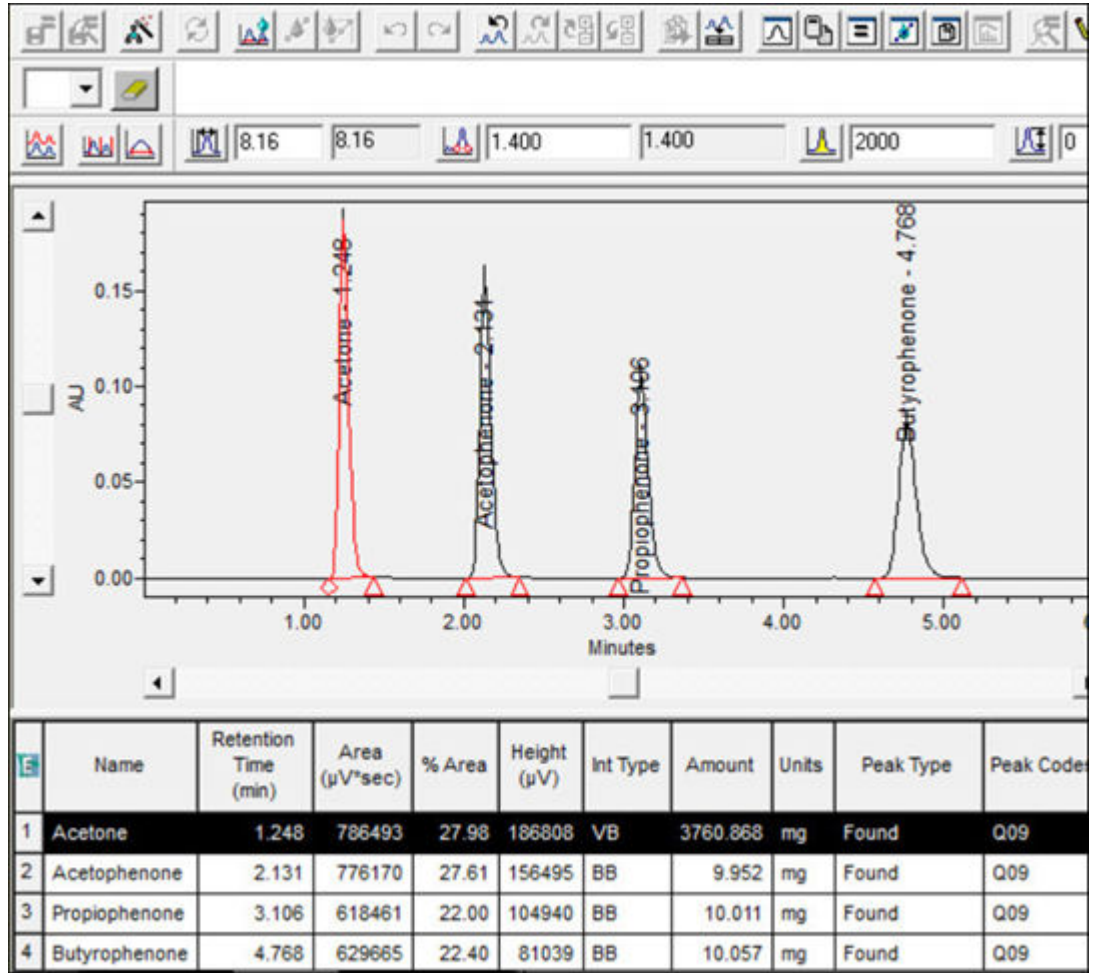
For this exercise, use the second option to copy the same values for both peak width and threshold.

Figure 6–17: Copying Peak Width and Threshold Values to the processing parameters



Result: Empower integrates only the four peaks of interest and applies their correct names (Figure 6-18).

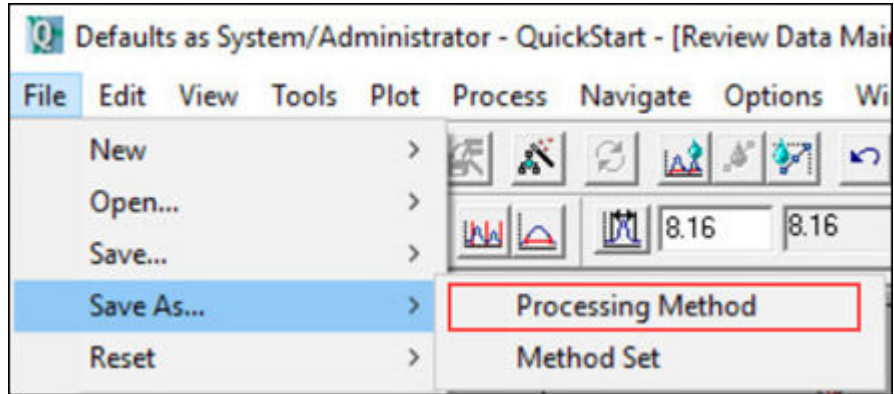
Figure 6–18: Sample Chromatogram with Properly Named Peaks



Note: Refer to the Empower Online Help for column definitions.

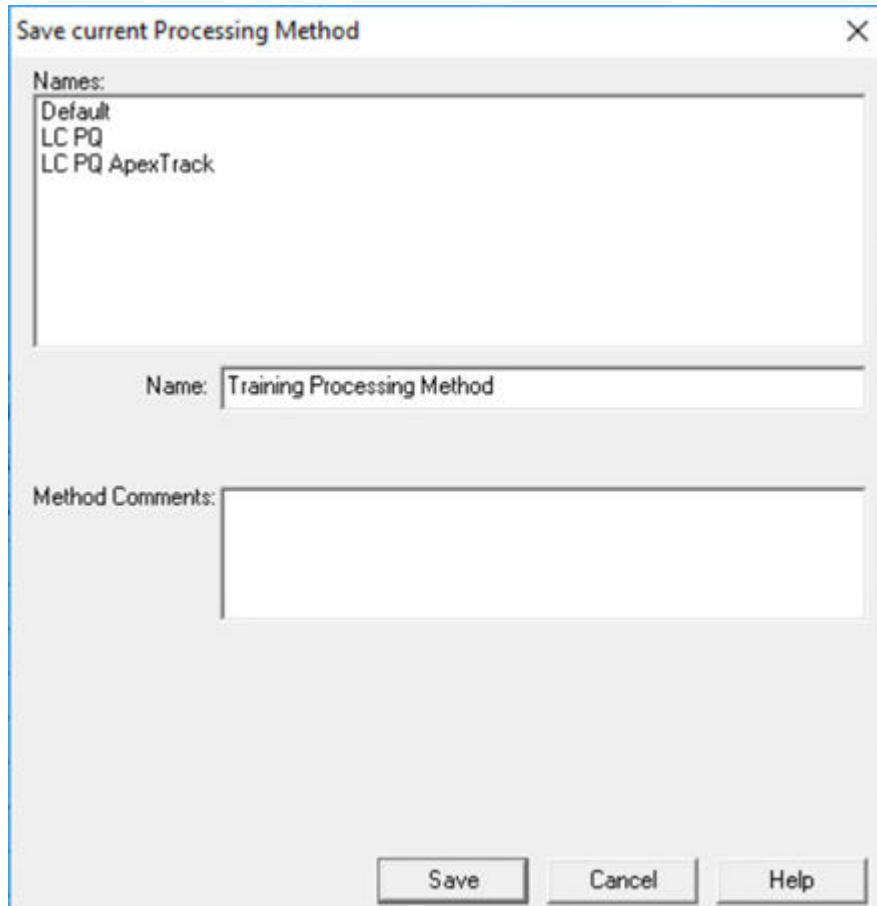
23. Select **File > Save As > Processing Method** (Figure 6-19).

Figure 6–19: Saving the processing method



24. In the Save current Processing Method dialog box, specify `Training Processing Method` as the name for the method and any comments, and then click **Save**.

Figure 6–20: Save current Processing Method dialog box



Note: You can configure Empower to display Method Comments, as well as general Comments. Refer to the Empower Online Help for more information.

7 Generating and Reviewing Results

After acquiring a sample set, you may want to refine certain characteristics of the samples. The Alter Samples feature helps you accomplish this process efficiently. This chapter shows you how to do the following:

- Alter Samples - Use the Alter Sample feature to ensure that the standards and samples include the proper information prior to processing.
- Process the sample set - After you have altered the sample set information, you can use the background processing and reporting feature to process the sample set.
- Review the result set - After you have processed the sample set, review the result set and calibration curves in the Review Data main window.
- Generate Reports - You can print a report from the Results tab of the View Data window.

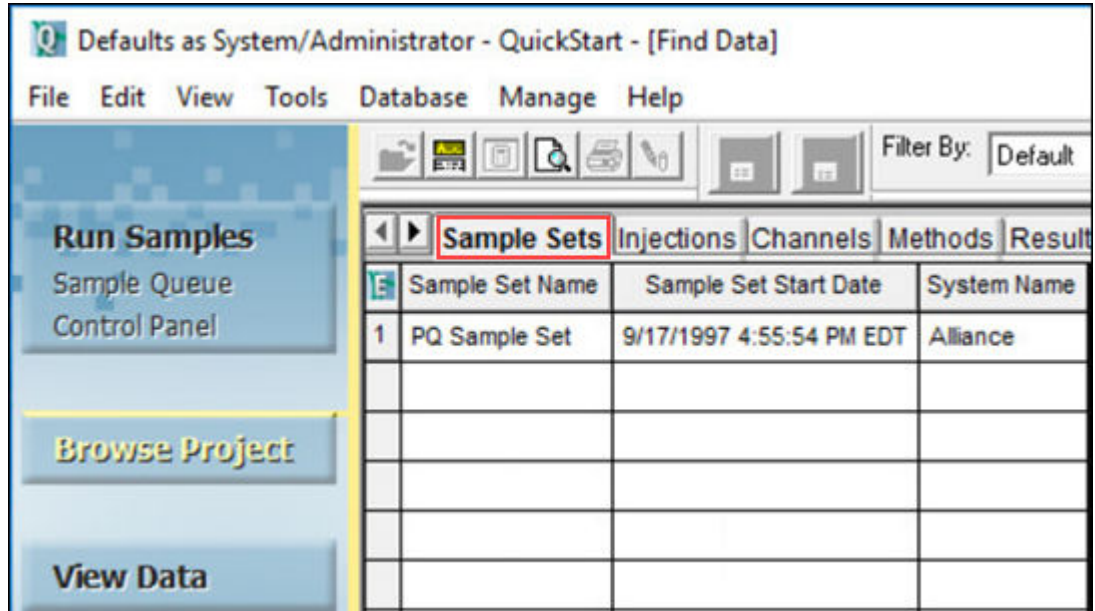
7.1 Altering Samples

After you acquire the data and create the processing method, you can generate results. Before generating the results, use the Alter Sample Set window to verify that your samples include all of the necessary information, and correct or add sample information.

Note: Ensure that **View Acquisition** is not selected in the Navigation bar.

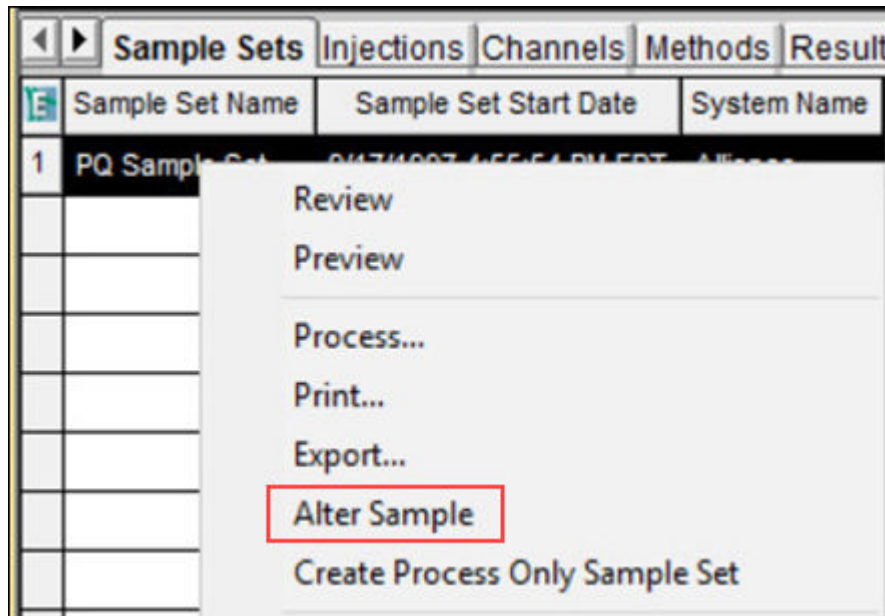
1. In Browse Project, select the **Sample Sets** tab (Figure 7-1).

Figure 7-1: Browse Project Sample Sets tab



2. Right-click the sample set of interest and select **Alter Sample** (Figure 7-2).

Figure 7-2: Right-click Alter Sample



Note: In the Alter Sample Set window, you can modify user-assigned data, such as Sample Name, Sample Weight, and Dilution values, but you cannot modify the sample set information used to physically collect the data during a chromatography run, such as vial number or injection volume.


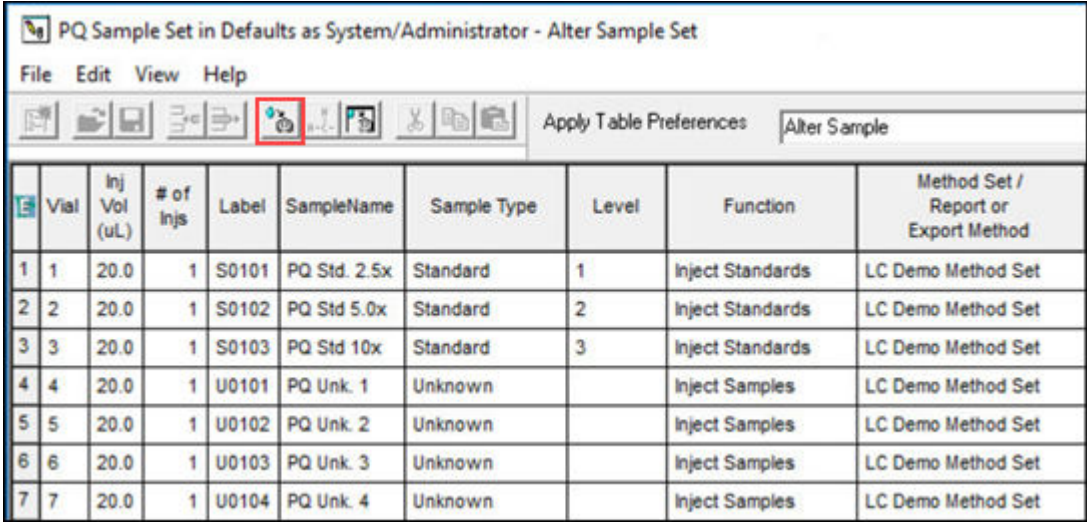
- To generate a calibration curve or curves, use the Component Editor to specify the contents and amount in each standard vial. Click **Amount**  (Figure 7-3) to open the Component Editor window (Figure 7-4).

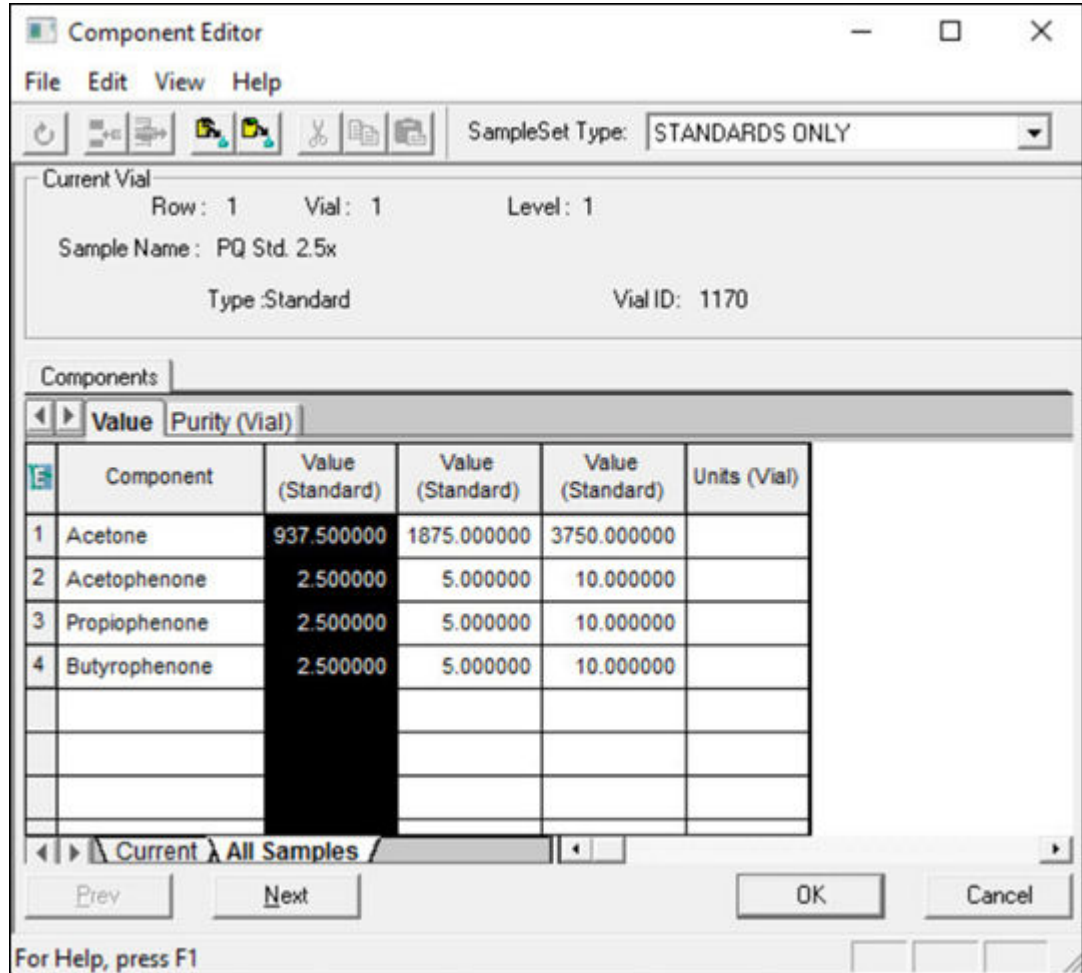
Figure 7-3: Amount tool



	Vial	Inj Vol (uL)	# of Injs	Label	SampleName	Sample Type	Level	Function	Method Set / Report or Export Method
1	1	20.0	1	S0101	PQ Std. 2.5x	Standard	1	Inject Standards	LC Demo Method Set
2	2	20.0	1	S0102	PQ Std 5.0x	Standard	2	Inject Standards	LC Demo Method Set
3	3	20.0	1	S0103	PQ Std 10x	Standard	3	Inject Standards	LC Demo Method Set
4	4	20.0	1	U0101	PQ Unk. 1	Unknown		Inject Samples	LC Demo Method Set
5	5	20.0	1	U0102	PQ Unk. 2	Unknown		Inject Samples	LC Demo Method Set
6	6	20.0	1	U0103	PQ Unk. 3	Unknown		Inject Samples	LC Demo Method Set
7	7	20.0	1	U0104	PQ Unk. 4	Unknown		Inject Samples	LC Demo Method Set

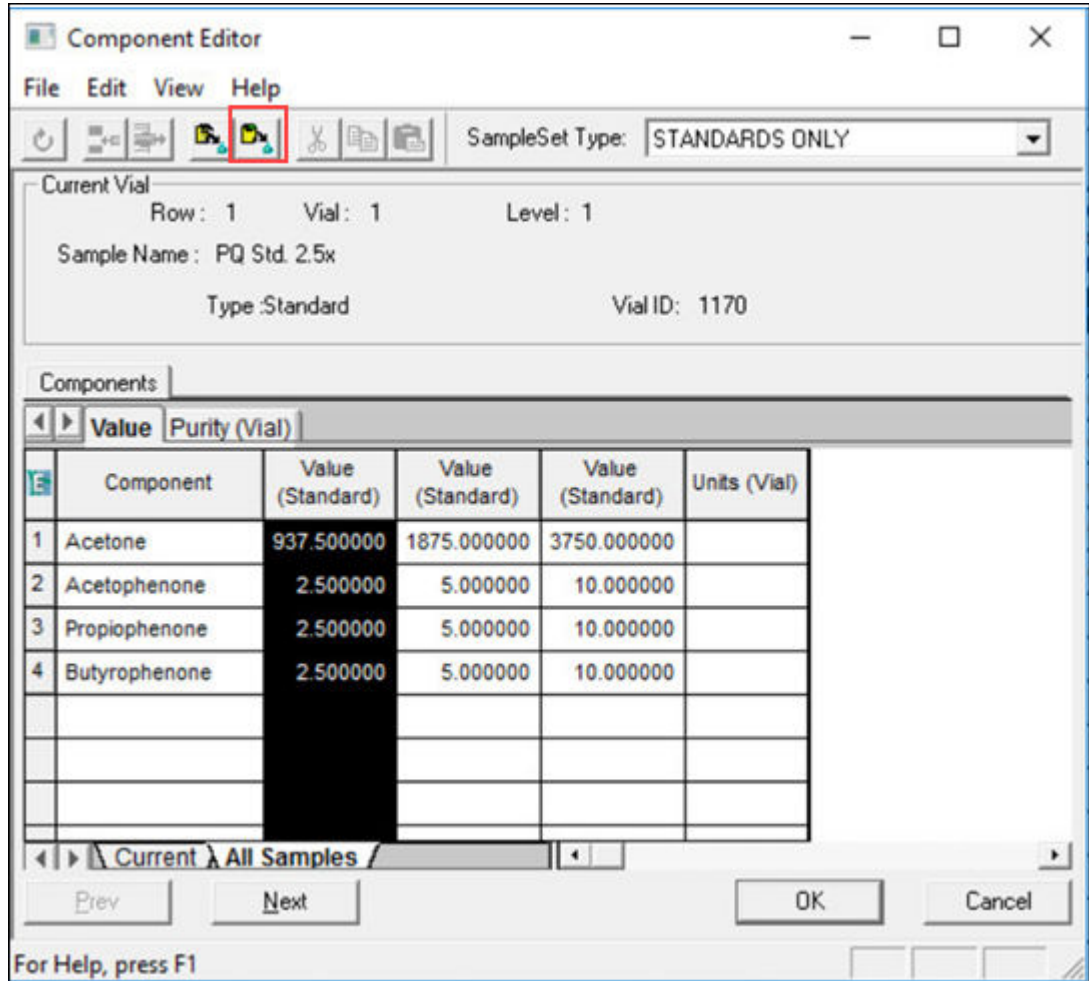
- In this example, we ran three standards at three different levels. To create a multi-level calibration curve or curves follow these steps. For each standard vial, the Component Editor displays the component name and the standard value. You can specify component information before you run the sample set method, as you did in [Chapter 5](#), or after the run, using the Alter Sample Set window.

Figure 7-4: Component Editor displaying component names and values



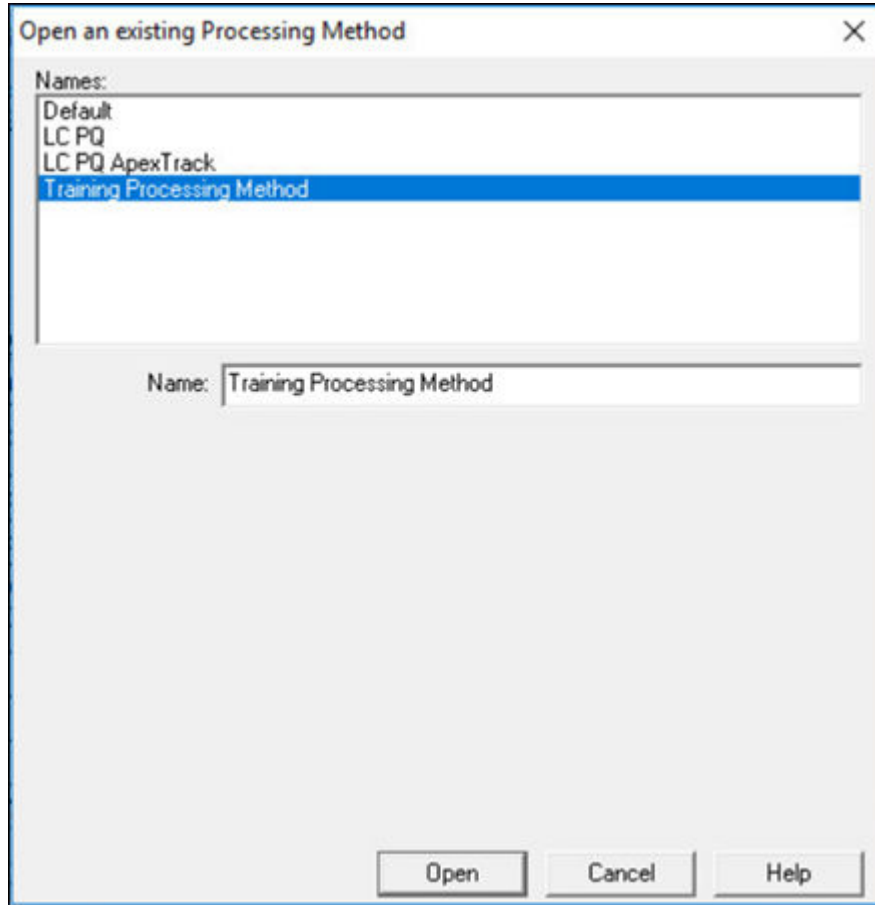
- To ensure that the component names match the component names in the processing method, copy the names from the processing method by clicking **Copy from Process Method** (Figure 7-5).

Figure 7-5: Copy from Process Method tool



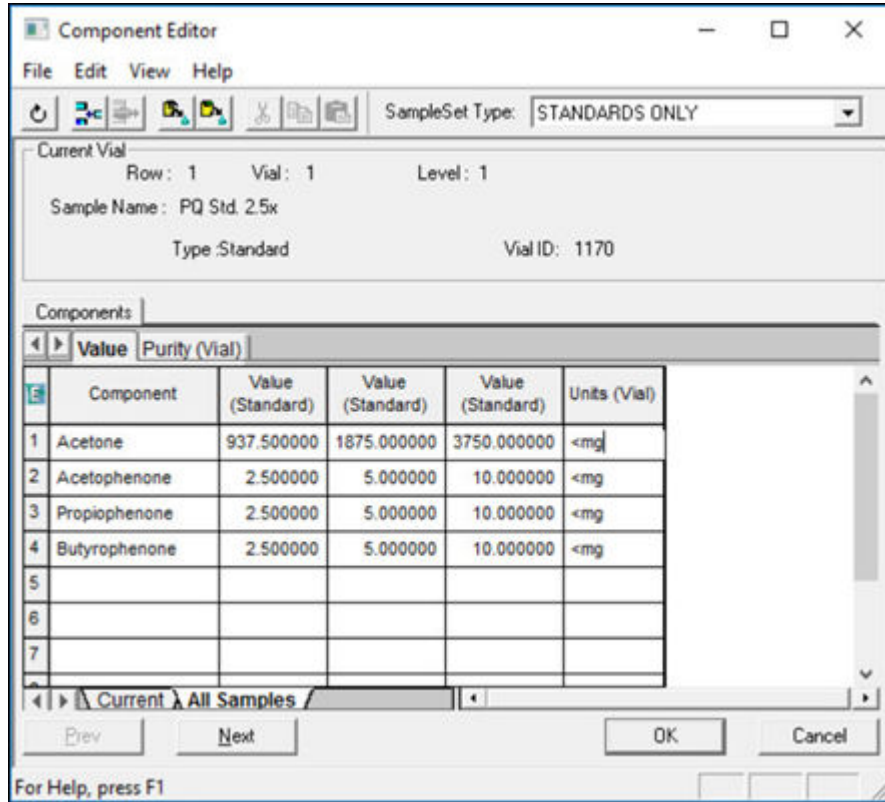
6. In the Open an existing Processing Method dialog box (Figure 7-6), select the processing method of interest, and then click **Open**.

Figure 7-6: Open an existing Processing Method dialog box



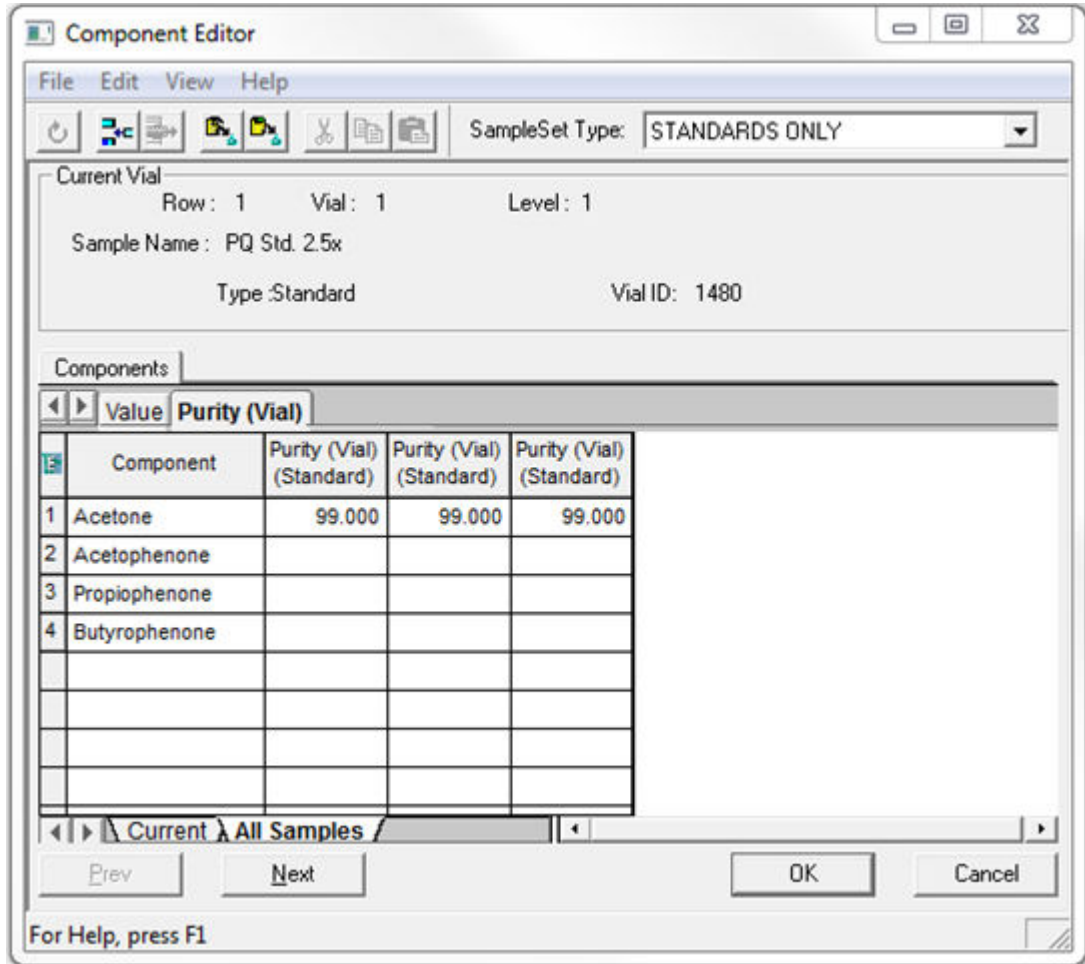
7. Click **Yes** in the Components warning message.
8. If they are not already present, specify units (in this case, mg) by typing the < symbol, followed by the unit, in the Units (Vial) Column (Figure 7-7). The < symbol will not appear in the results.

Figure 7-7: Component Editor with component names, values, and units



9. Click the Purity(Vial) tab to enter purity values for the standards. This corrects the standard amounts by the value entered.

Figure 7–8: Purity (Vial) tab



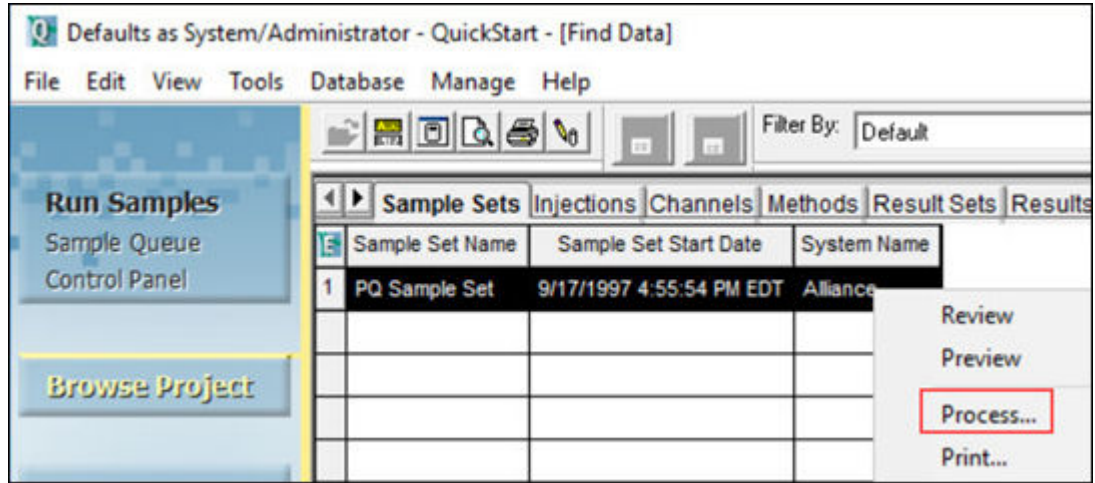
10. Click **OK**.
11. Save all changes and close the Alter Sample Set window. You are now ready to process the sample set.

7.2 Processing the sample set

After you have altered the sample set information, you can use the background processing and reporting feature to process the sample set.

1. In the Browse Project window, right-click the sample set and select **Process** (Figure 7-9).

Figure 7–9: Right-click process



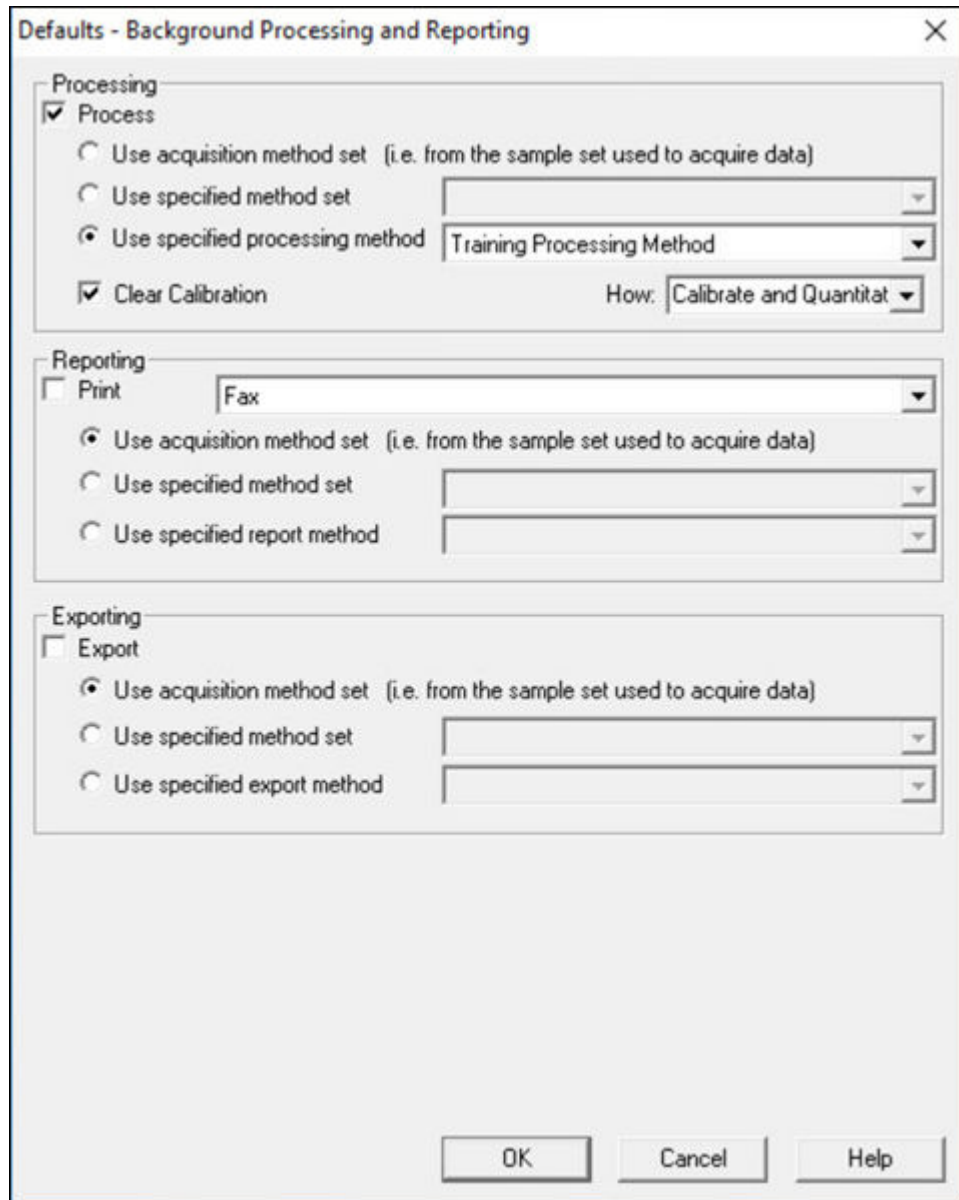
2. In the Background Processing and Reporting dialog box, select the appropriate processing options.

In the Use specified processing method field, select the new processing method you created in [Chapter 6](#) and click **Clear Calibration**. See Figure 7-10.

If you are processing single-channel 2D data and are not using any bracketing routines, then any of these choices will work. If you are processing multiple channels of data per injection, working with 3D data, or deriving channels, then you must process the data with a method set.

- **Use acquisition method set** – This is the method set used to acquire the data. Ensure that you add the processing method to this method set before making this selection. This is not used in this example.
- **Use specified method set** – Ensure that you pick a method set that contains the proper processing method. This is not used in this example.
- **Use specified processing method** – This allows you to select from a list of previously defined processing methods. Use this selection in this example.
- **Clear Calibration** – Clears any calibration curves associated with your processing method so that you can create a new calibration curve.
- **How** – Calibrate and Quantitate.

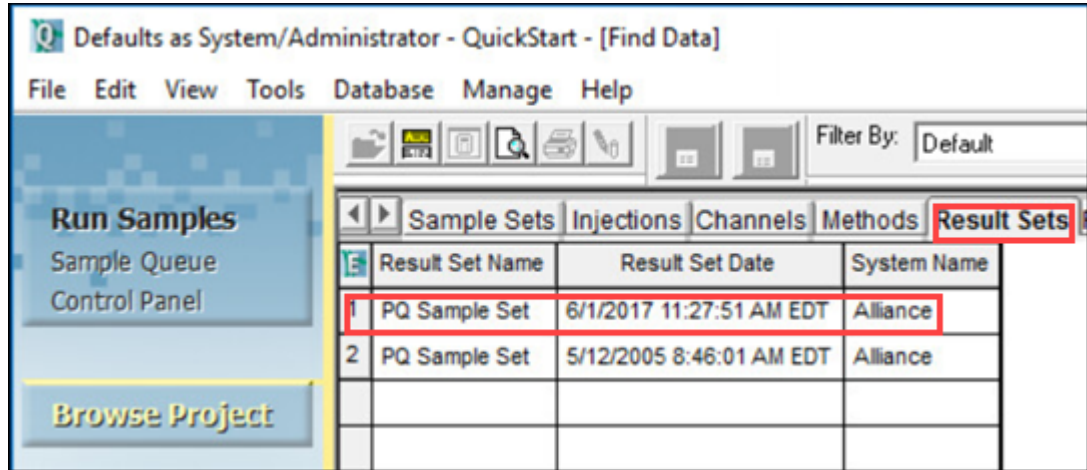
Figure 7–10: Background Processing and Reporting dialog box with processing method selected



3. Click **OK**.
4. When you process a sample set (bound collection of raw data), Empower generates a result set (bound collection of results). To review the result set, click **Result Sets** in the Browse Project window (Figure 7-11).

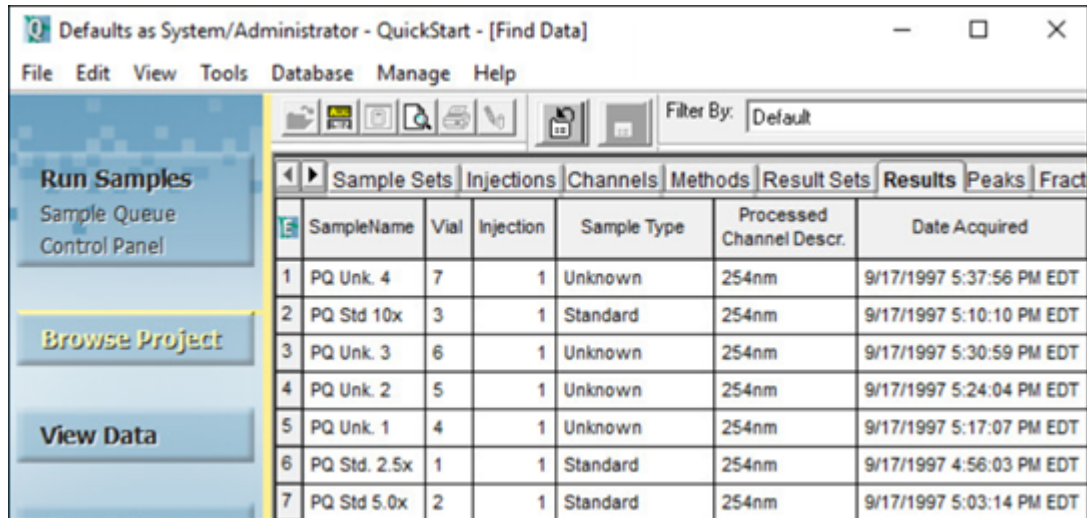
Result: A new result set, with the current date and time stamp, appears at the top of the list. You might have to click **Update** in the toolbar to see the new information.

Figure 7–11: Result Set tab



- Right-click the **Result Set Name**, and then click **View As > Results**. The new results, with the current date and time stamp, appear at the top of the list.

Figure 7–12: Results tab



- Right-click in the Results table, and then click **View As > Calibration Curves**. Four new calibration curves, with the current date and time stamp, appear at the top of the list.

Figure 7–13: Calibration Curves table

Date Calibrated	Processing Method	Name	Channel	R	R ²	Calibration
1 6/1/2017 11:27:52 AM EDT	Training Processing Method	Acetone	486	0.999979	0.999959	LC
2 6/1/2017 11:27:52 AM EDT	Training Processing Method	Acetophenone	486	0.999966	0.999932	LC
3 6/1/2017 11:27:52 AM EDT	Training Processing Method	Propiophenone	486	0.999975	0.999950	LC
4 6/1/2017 11:27:52 AM EDT	Training Processing Method	Butyrophenone	486	0.999984	0.999968	LC

7.3 Reviewing the result set

After you process the sample set, review the data in the Review Data main window.

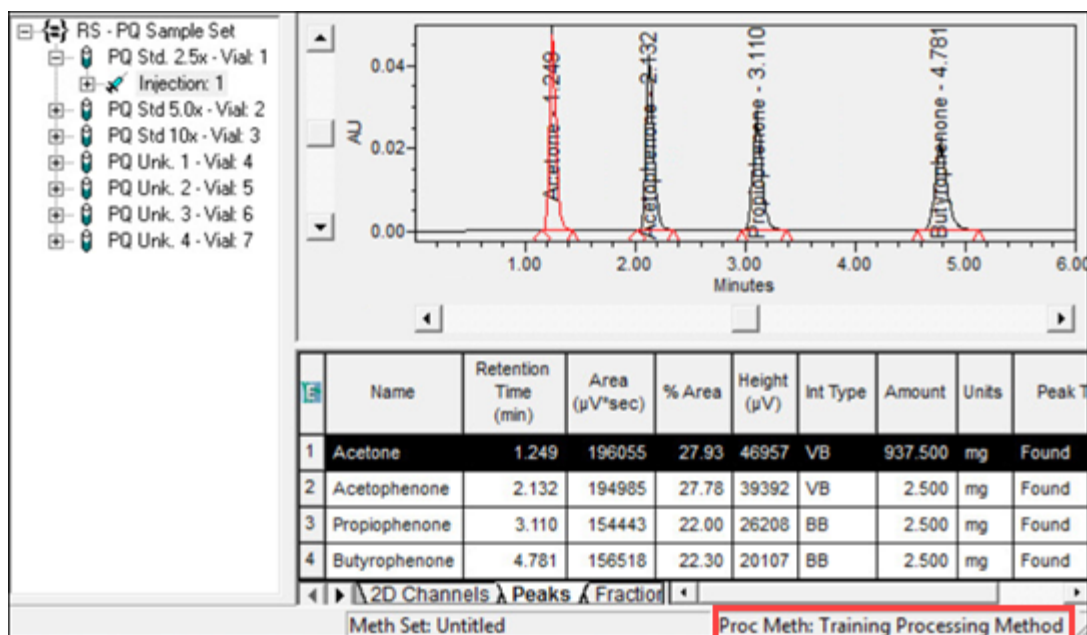
1. Return to **Results Sets**, right-click the new Result Set, and then select **Review** (Figure 7-14).

Figure 7-14: Right-click Result Set, Review

	Result Set Name	Result Set Date	System Name	
1	PQ Sample Set	6/1/2017 11:27:51 AM EDT	Alliance	Review
2	PQ Sample Set	5/12/2005 8:46:01 AM EDT	Alliance	Preview

2. In the dialog box that appears, click **Yes**.
3. The Review Data Main Window appears and shows the Result Set (Figure 7-15). Ensure that the **Peaks** tab is open. The window highlights the first standard and shows the chromatogram and corresponding peak table. The amount field is populated with the numbers you specified earlier in the component editor. In the Result Set tree on the left, you can browse through the entire Result Set. Because these are results, the peaks are integrated and named. Note that the name of the processing method that Empower used to generate the results appears in the lower-right corner of the window.

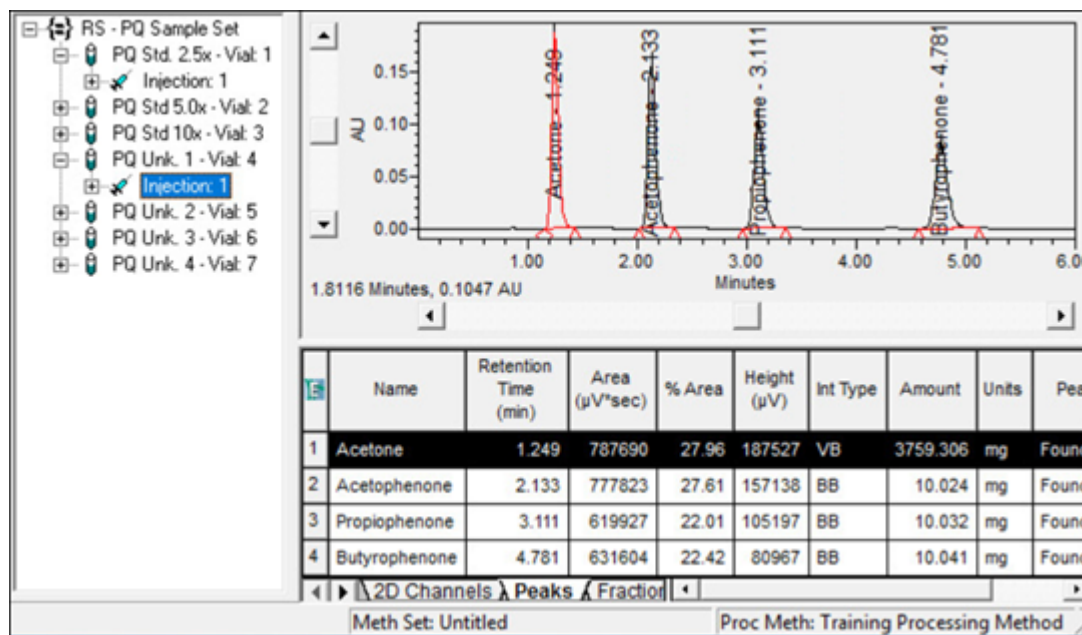
Figure 7-15: Review Data Main Window showing the result set



4. Select one of the samples in the tree (Figure 7-16).

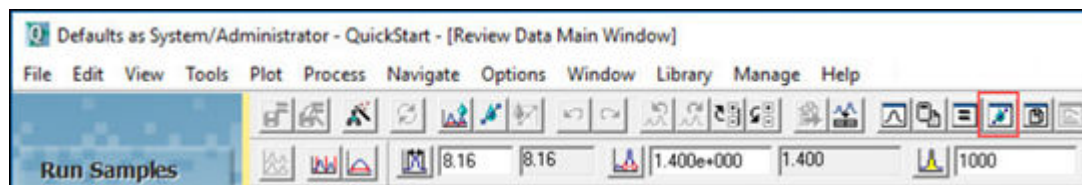
Result: Empower populates the amount field with values that were calculated from the comparison of peak response to the calibration curve. Because this is an external standard calculation, Empower compares the area under the peak to the calibration curve, and then determines the amount. Empower divides the amount by the sample weight and multiplies the result by the dilution (both values are 1, by default), and then reports the final amount.

Figure 7–16: Review Data main window sample information



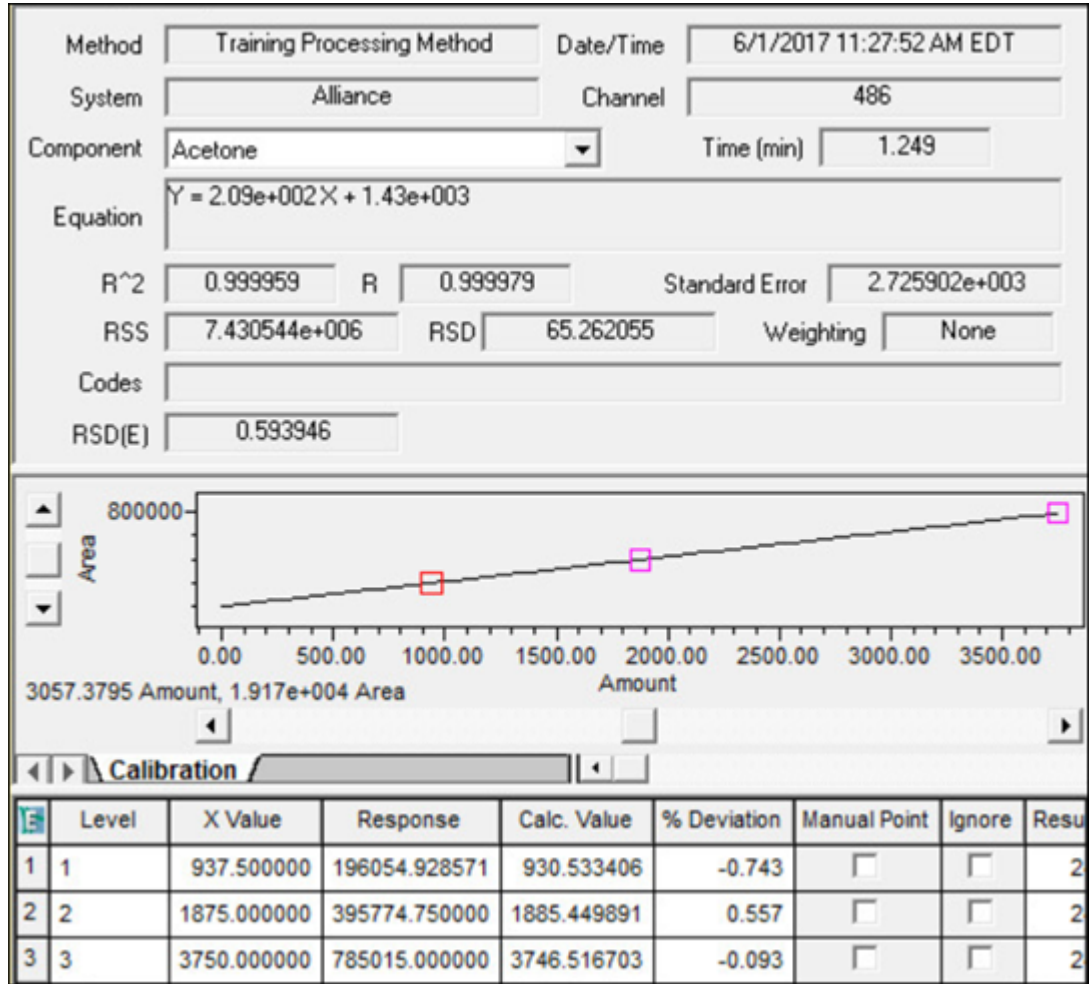
5. Click **Calibration Curve**  (Figure 7-17).

Figure 7–17: Calibration Curve tool



6. In the upper portion of the Review Data Calibration Curve Window, review the equation for the line and the R². In the middle portion of the window, review the calibration curve plotting Amount (x-axis) versus Area (y-axis) . The point table is in the lower portion of the window. For more information, see the Empower Online Help.

Figure 7-18: Calibration Curve window

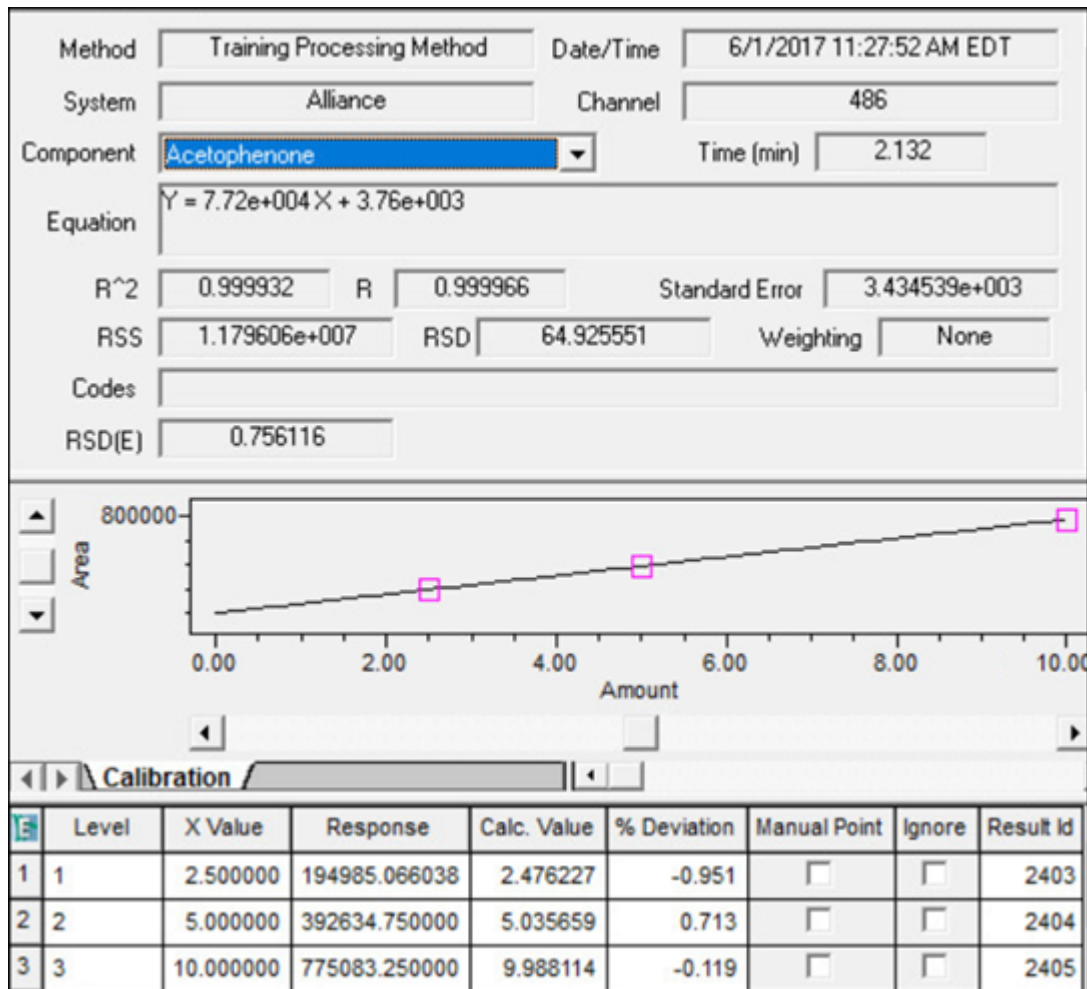


- To view the calibration curve for another component, select the curve from the **Component** list (Figure 7-19).

Figure 7-19: Component list

Method	Training Processing Method	Date/Time	12/6/2016 2:54:20 PM EST
System	Alliance	Channel	486
Component	Acetophenone	Time (min)	2.132
Equation	Acetone Acetophenone Propiophenone Butyrophenone		
R ²	0.999932	Standard Error	3.434539e+003
RSS	1.179606e+007	RSD	64.925551
		Weighting	None
Codes			
RSD(E)	0.756116		
Norm Intercept/Slope	0.007792		

Figure 7-20: Acetophenone Calibration Curve window

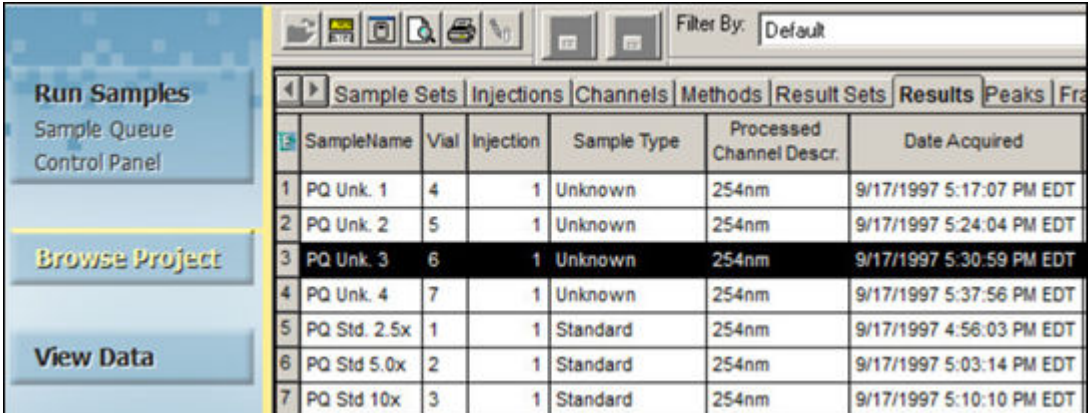


7.4 Reporting

To generate a report after the data has been acquired and processed:

1. From the navigation bar, click **Browse Project**.

Figure 7–21: Browse Project, Results view tab

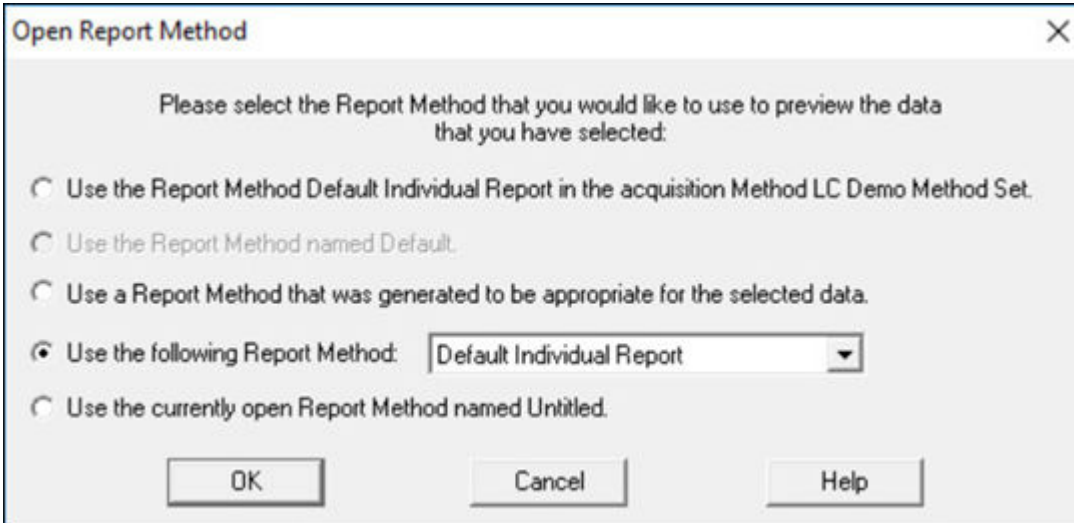


The screenshot shows a software interface with a navigation bar on the left containing 'Run Samples', 'Sample Queue Control Panel', 'Browse Project', and 'View Data'. The main area displays a table with columns: SampleName, Vial, Injection, Sample Type, Processed Channel Descr., and Date Acquired. The 'Results' tab is selected. The table contains 7 rows of data.

	SampleName	Vial	Injection	Sample Type	Processed Channel Descr.	Date Acquired
1	PQ Unk. 1	4	1	Unknown	254nm	9/17/1997 5:17:07 PM EDT
2	PQ Unk. 2	5	1	Unknown	254nm	9/17/1997 5:24:04 PM EDT
3	PQ Unk. 3	6	1	Unknown	254nm	9/17/1997 5:30:59 PM EDT
4	PQ Unk. 4	7	1	Unknown	254nm	9/17/1997 5:37:56 PM EDT
5	PQ Std. 2.5x	1	1	Standard	254nm	9/17/1997 4:56:03 PM EDT
6	PQ Std 5.0x	2	1	Standard	254nm	9/17/1997 5:03:14 PM EDT
7	PQ Std 10x	3	1	Standard	254nm	9/17/1997 5:10:10 PM EDT

2. Click the **Results** tab.
3. Select the result to print.
4. Click **View Data**.

Figure 7–22: Open Report Method dialog box



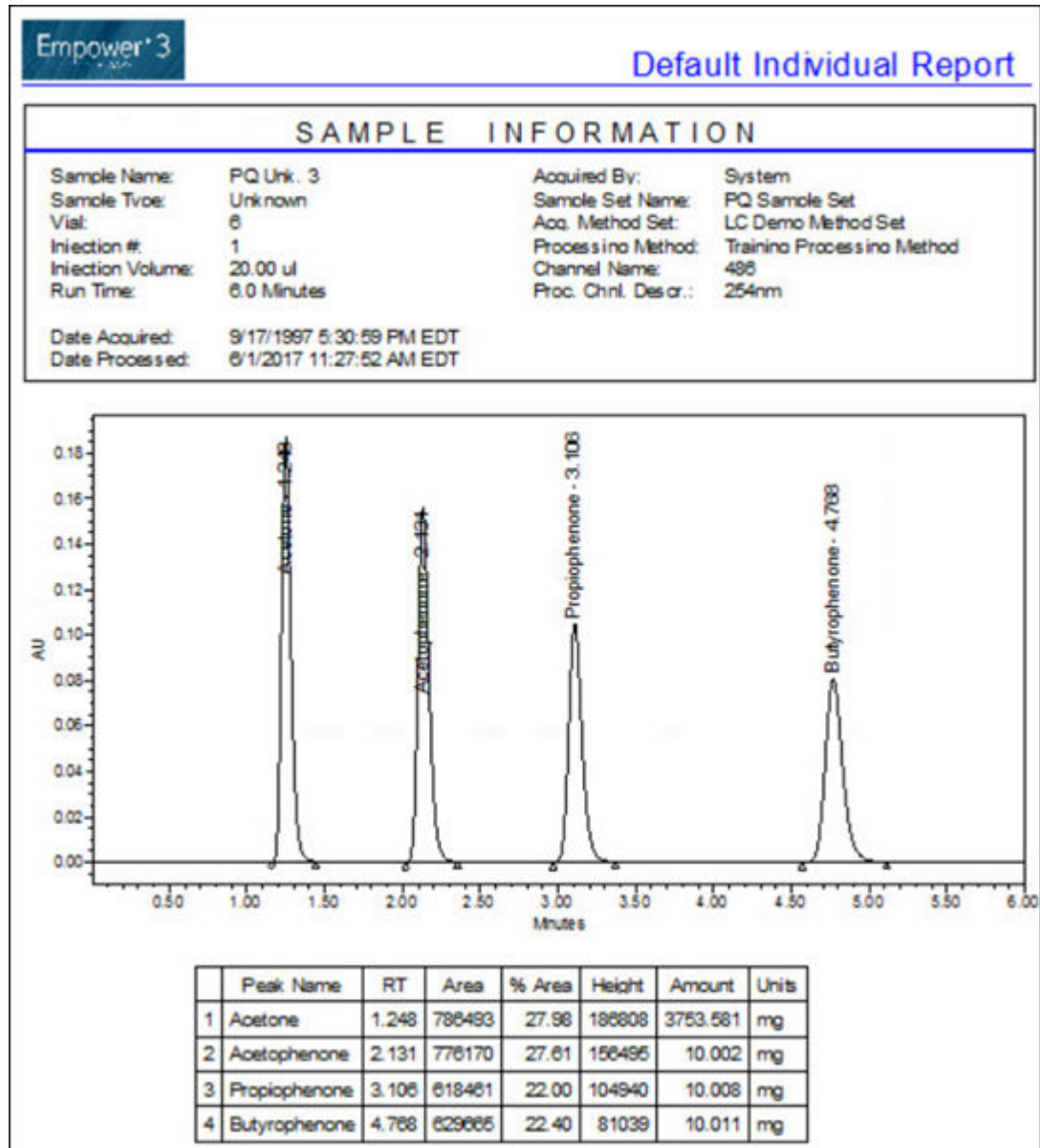
The dialog box is titled 'Open Report Method' and contains the following text: 'Please select the Report Method that you would like to use to preview the data that you have selected:'. There are five radio button options:

- Use the Report Method Default Individual Report in the acquisition Method LC Demo Method Set.
- Use the Report Method named Default.
- Use a Report Method that was generated to be appropriate for the selected data.
- Use the following Report Method:
- Use the currently open Report Method named Untitled.

At the bottom, there are three buttons: 'OK', 'Cancel', and 'Help'.

5. In the Open Report Method dialog box, select **Use the following Report Method**, and then **Default Individual Report**. Click **OK**.
6. The report opens for you to preview.

Figure 7-23: Default Individual Report



7. Click **Print** .

8 Backing Up and Restoring Projects

This chapter describes how to back up and restore projects using the Backup Project Wizard and Restore Project Wizard in Empower software.

The contents of each project (including methods, acquired data, and results) are automatically saved to the Empower database on your computer's hard drive (either the workstation's hard drive, if using an Empower Personal workstation, or the server's hard drive or other external drive, if using an Empower Workgroup or Enterprise system). As you accumulate multiple projects in the database, you need to back up these projects to:

- Keep a copy of current project information in a safe place in case of system failure, which would result in data loss.
- Archive information from an inactive project you want to store for future use. You increase free hard disk space by archiving inactive data outside the computer, then deleting the data from the hard drive.

Note: Waters strongly recommends that you backup your projects to a destination that is external to the hard drive in your Empower system.

8.1 Backing up projects

When you back up a project, you export all project tablespace information and raw data to a subdirectory that has either a software preset or a path you customize.

You can back up to the following locations:

- Back up to the software's default path (Empower/Projects). This requires a second step of backing up the information in this directory to an external device.
- Back up to an external device.
- If you are on a network, back up to a network drive.

Before you begin

Before you back up a project:

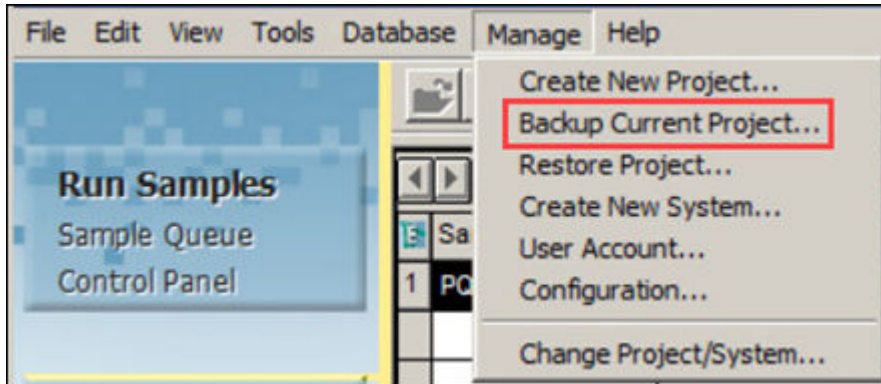
- If you back up your project to a network drive, remember to log in to the network before starting the backup.
- Ensure that your backup device and program are properly installed, powered on, and configured.

8.1.1 Performing a backup

Note: To back up a project, you must log in to Empower software using an account with the Backup Projects privilege.

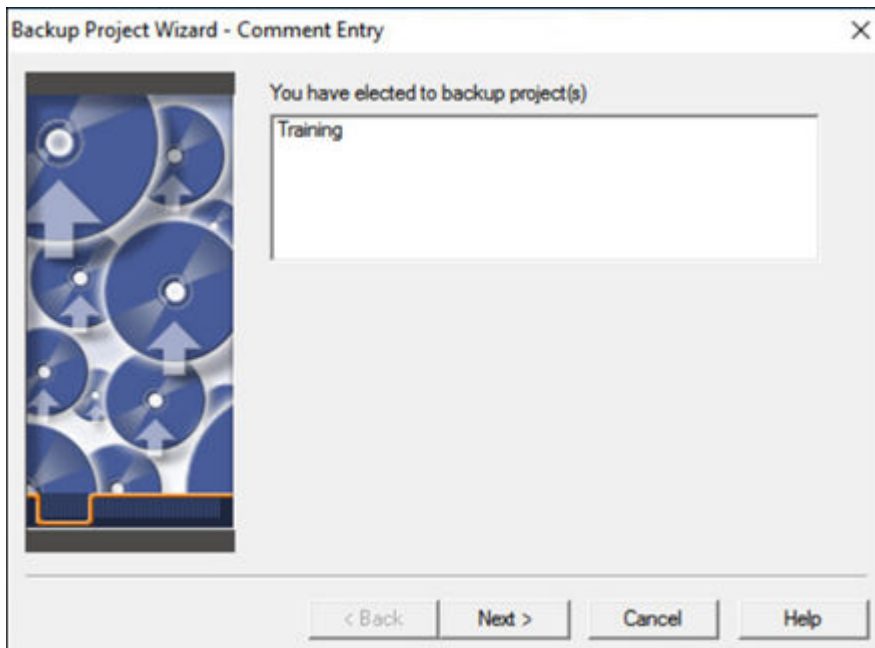
1. Select **Manage** > **Backup Current Project** (Figure 8-1).

Figure 8–1: Manage menu



2. In the Backup Project Wizard - Comment Entry page (Figure 8-2), the name of the project appears in the field. Click **Next**.

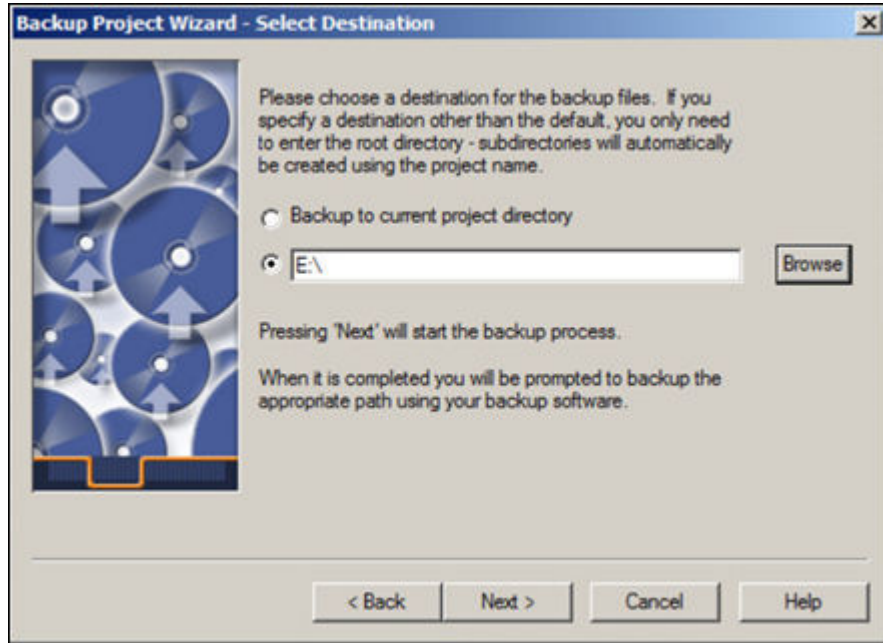
Figure 8–2: Backup Project Wizard - Comment Entry page



3. In the Select Destination page, you can choose to back up to the current project directory or you can browse to an alternate location. Click **Browse**, choose the destination, and then click **Next**.

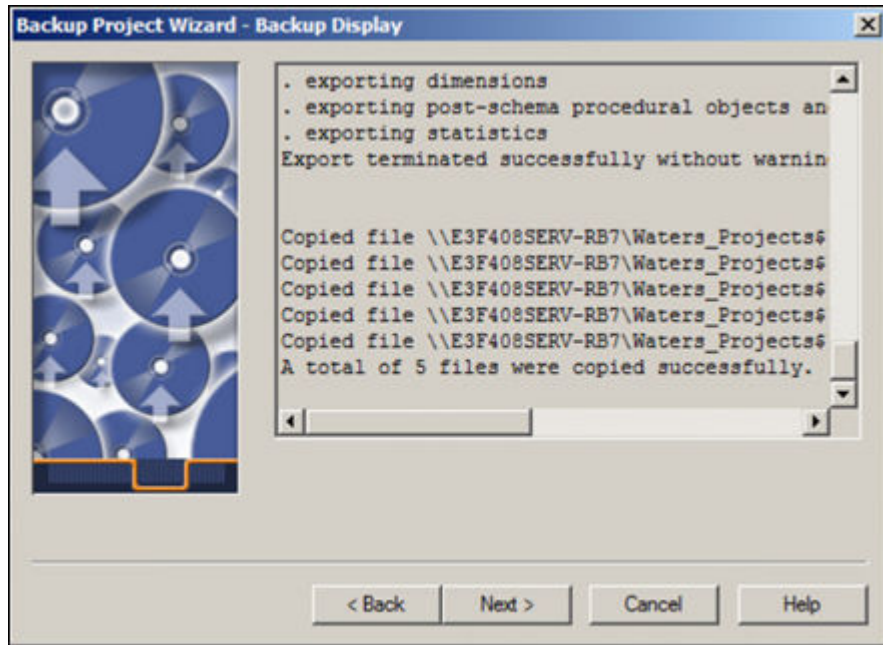
Note: The drive shown in Figure 8-3 must be mapped to a location on your network.

Figure 8–3: Backup Project Wizard - Select Destination page



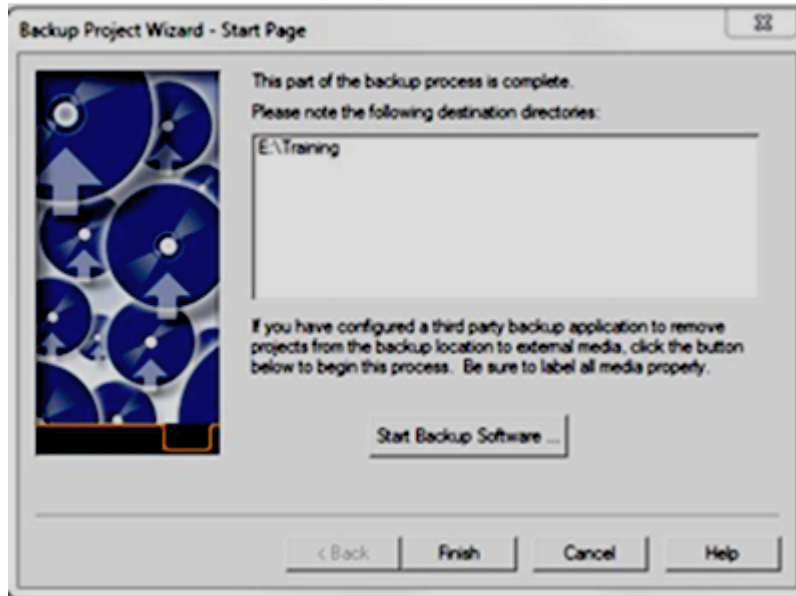
4. This page displays tablespace information as it is exported and raw data files as they are copied. When the process finishes, click **Next**. (This button is available only after the export is complete.)

Figure 8–4: Backup Project Wizard - Backup Display page



5. Your data is now at the location specified on this page (Figure 8-5). If this is the final destination for your backup, your backup is complete.

Figure 8–5: Backup Project Wizard - Start Page



6. To move your backed up projects to external media using a third-party application, click **Start Backup Software**.
7. Click **Finish**.

8.2 Restoring Projects

Before you restore a project:

- Ensure that your backup device and program are properly installed, powered up, and configured.
- If you are restoring your project from a network drive, log in to the network before starting the restore process.

8.2.1 Restoring a project

Note: To restore a project, you must log in to Empower software using an account with the Restore Projects privilege.

To restore a project:

1. Select **Manage > Restore Project** (Figure 8-6). If you used backup software, proceed to the next step; otherwise, proceed to step 3.

Figure 8–6: Manage list

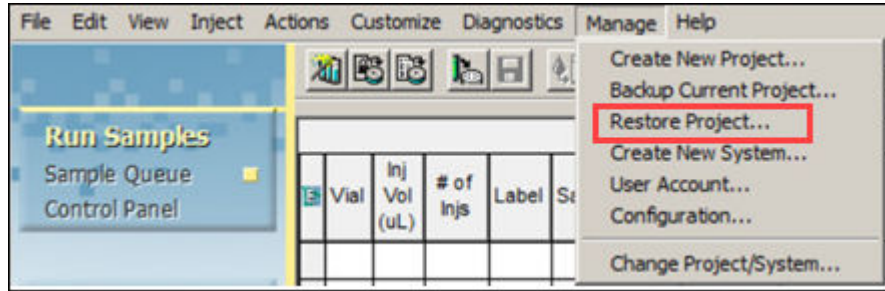
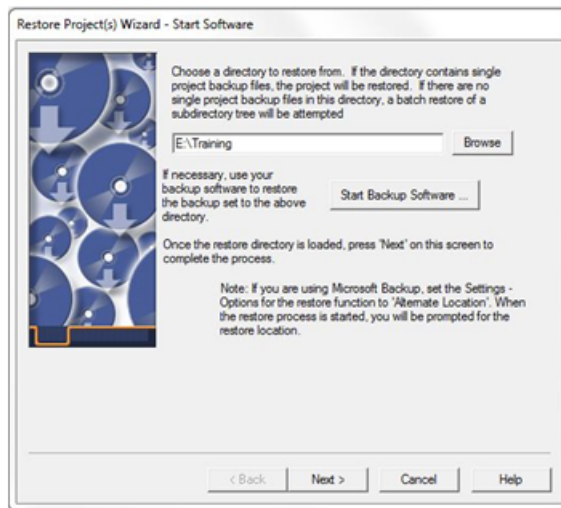
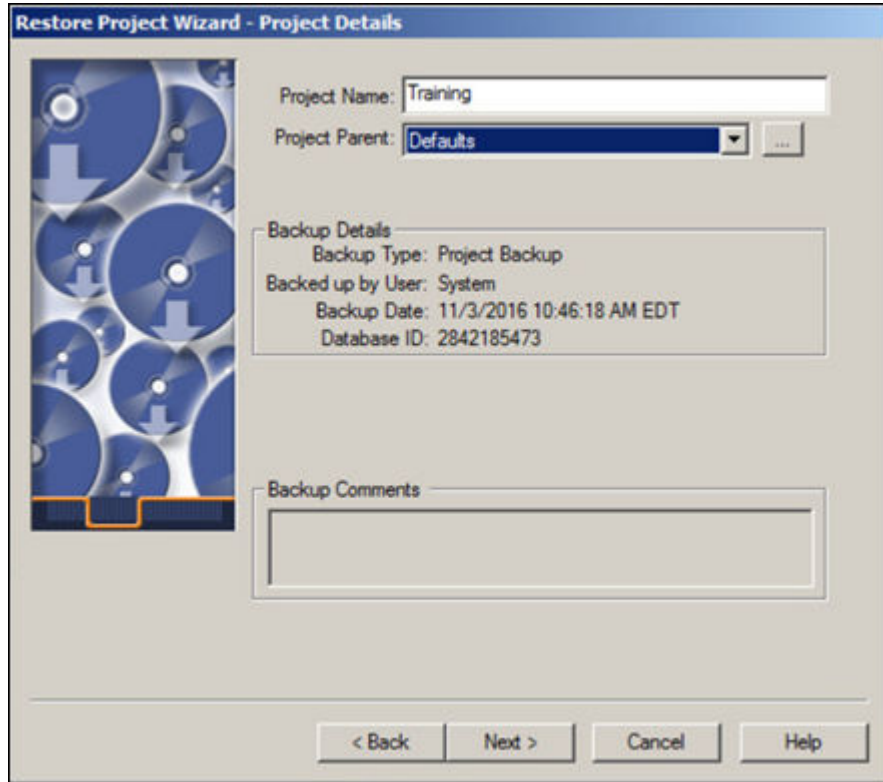


Figure 8–7: Restore Project Wizard - Start Software page



2. In the Restore Project Wizard - Start Software page, start your chosen backup program to restore the backed up project file to the default directory by clicking **Start Backup Software**.
3. Click the **Browse** button and use the Browse for Folder dialog box to locate the appropriate directory structure.
4. Click **Next**.

Figure 8–8: Restore Project Wizard - Project Details page



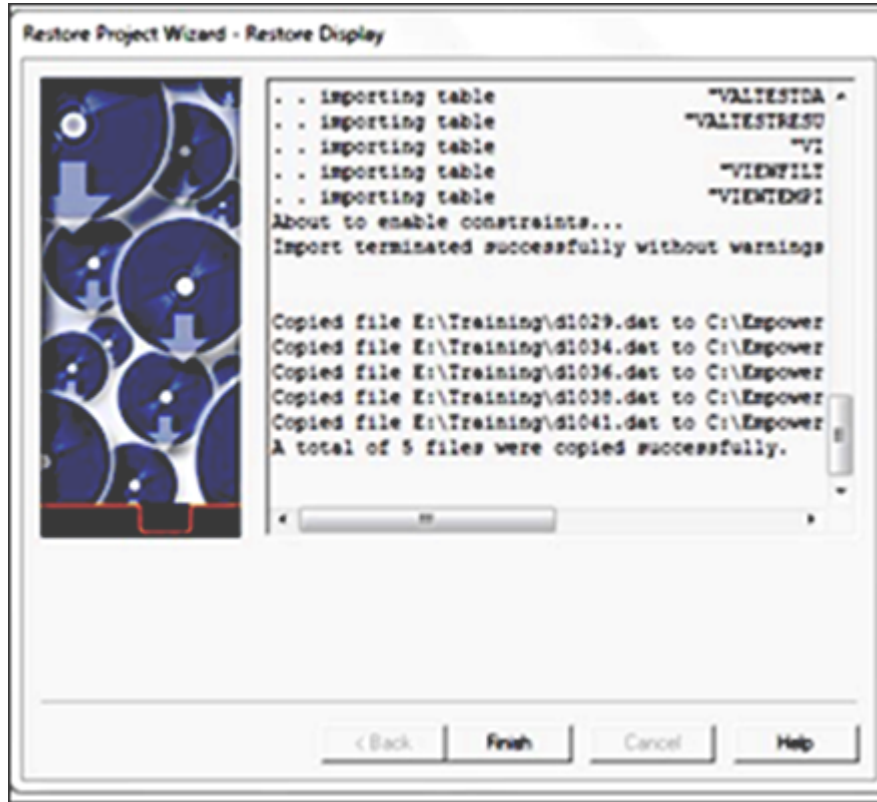
Note: You must specify the exact location of your backed-up data. The last directory in this path is usually `Project Name`. This directory must contain files named `Project Name.exp` and `Project Name.inf`.

Note: If you are using a network drive, it must be mapped on the computer you are using in order to restore projects from it.

5. You can change the project name and the project parent. Make any appropriate changes, and then click **Next**.

Note: You cannot have duplicate project names under the same parent project.

Figure 8–9: Restore Project Wizard - Restore Display page



- The Restore Display page displays tablespace information as it is imported and the raw data files as they are copied. When the process finishes, click **Finish**. Figure 8-10 shows the restored project in the Configuration Manager. Notice that the project name has been incremented by 1 because there cannot be two projects with the same name.

Figure 8–10: Restored and renamed project Training

76	Training	System	5/17/2017 2:01:16 PM EDT	<input checked="" type="checkbox"/>	No Lock
77	Training 1	System	6/2/2017 8:44:23 AM EDT	<input type="checkbox"/>	No Lock

A Creating Projects

A project is a user-defined collection of methods, results, custom fields, view filters, and raw data that resides in the Empower database and appears in Browse Project. Everything except for the raw data is stored in a reserved area of tablespace within the Empower database. Project raw data is stored in a separate directory.

Note: The raw data path for the project can be user-specified using Configuration Manager.

As part of your installation service, the Field Service Engineer will configure the first project for your organization. This appendix describes how to create subsequent projects.

Within Empower, you can:

- Create any number of projects
- Import and export data to and from projects
- Copy selected information from one project to another project

When you create a project, you can define the following parameters:

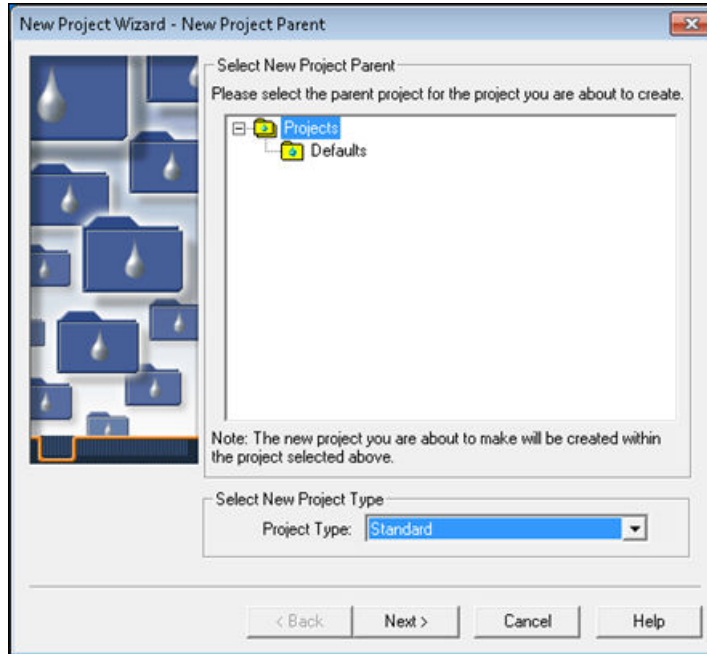
- Tablespace size - size of the logical storage unit within the database specified for the project. 50 MB is the default value.
- Enabled options - the subset of options that you have chosen for the project
- Access privileges - the users and groups that have access to the project

A.1 How to create a project

To create a project:

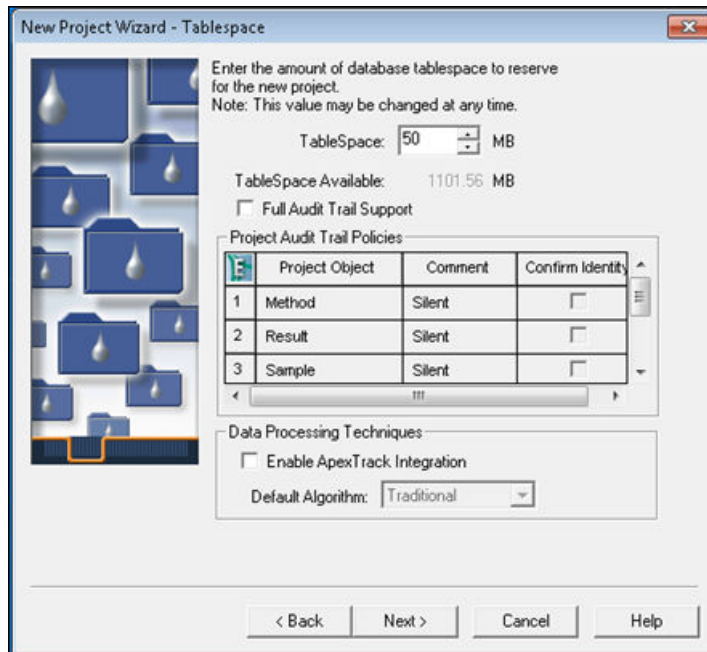
1. Select **Manage > Create New Project**.

Figure A–1: New Project Wizard-New Project Parent page



2. In the New Project Wizard-New Project Parent page, highlight **Projects** at the root directory. If you want the new project to reside under a different parent project, highlight the parent project from the list. Click **Next**.

Figure A–2: New Project Wizard - Tablespace page



3. In the Tablespace page, note the following:

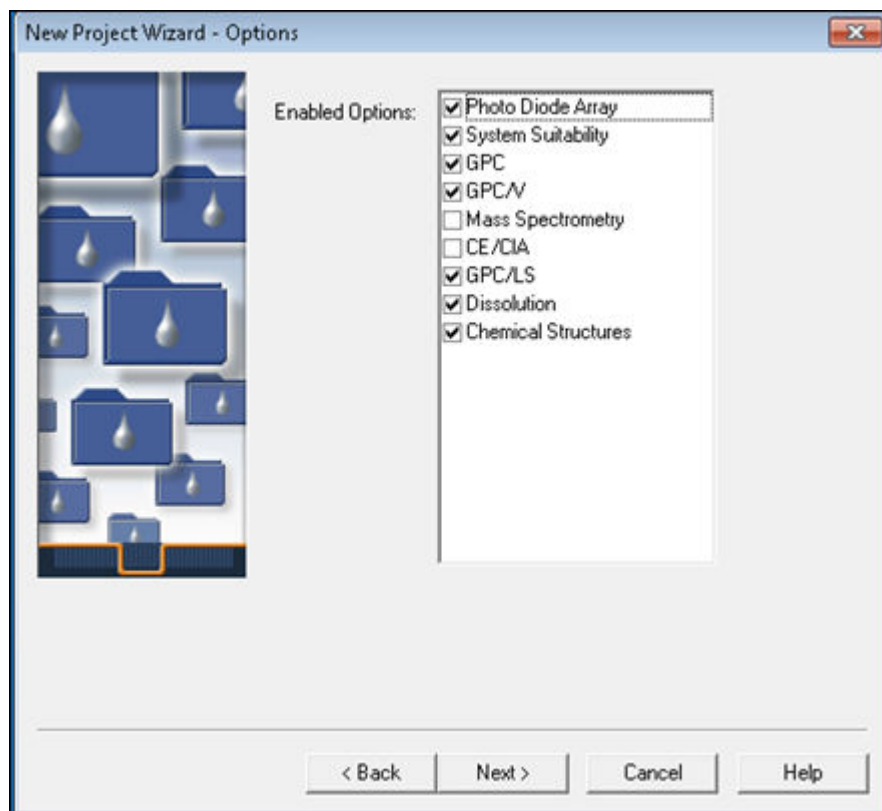
- Notice that the default Tablespace is 50 MB. This is a reasonable starting point; however, if you plan to generate a large volume of results, consider increasing this value.
- Optionally, select the **Full Audit Trail Support** check box to create a record of all changes made to elements of the project, such as methods and samples.
- Specify whether to require comments on **Methods, Results, Sample**, and deletion information changes.
- **Full Audit Trail Support** specifies whether you are prompted for a change description (in the Enter Revision Description dialog box) whenever you save modified methods, results, or samples.

Note: Changes are traceable, whether you have chosen to require comments or not. If you do not require comments, the software will track any changes, but will not issue comments. Empower software retains the state of the Full Audit Trail feature when you back up or restore a project.

Note: You can also set Full Audit Trail Support by using a system policy. For more information on system policies, consult the Empower online help.

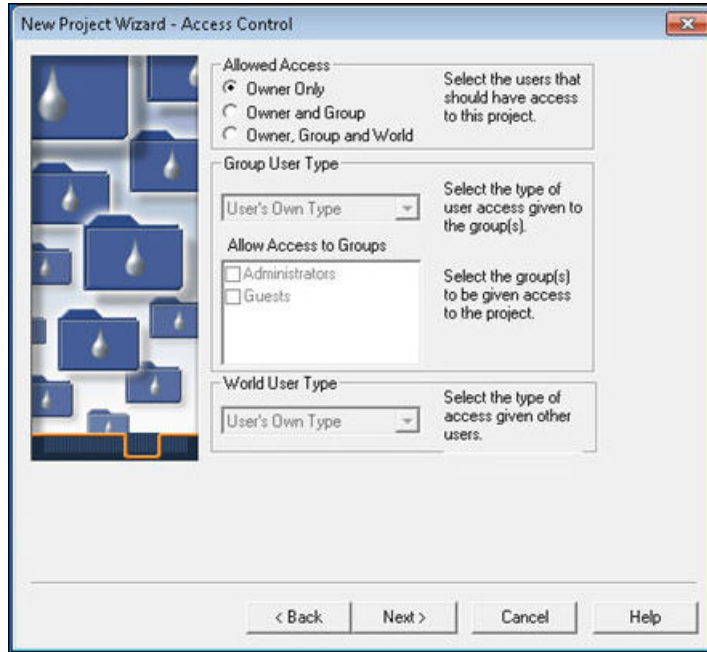
4. Click **Next**.

Figure A–3: New Project Wizard - Options page



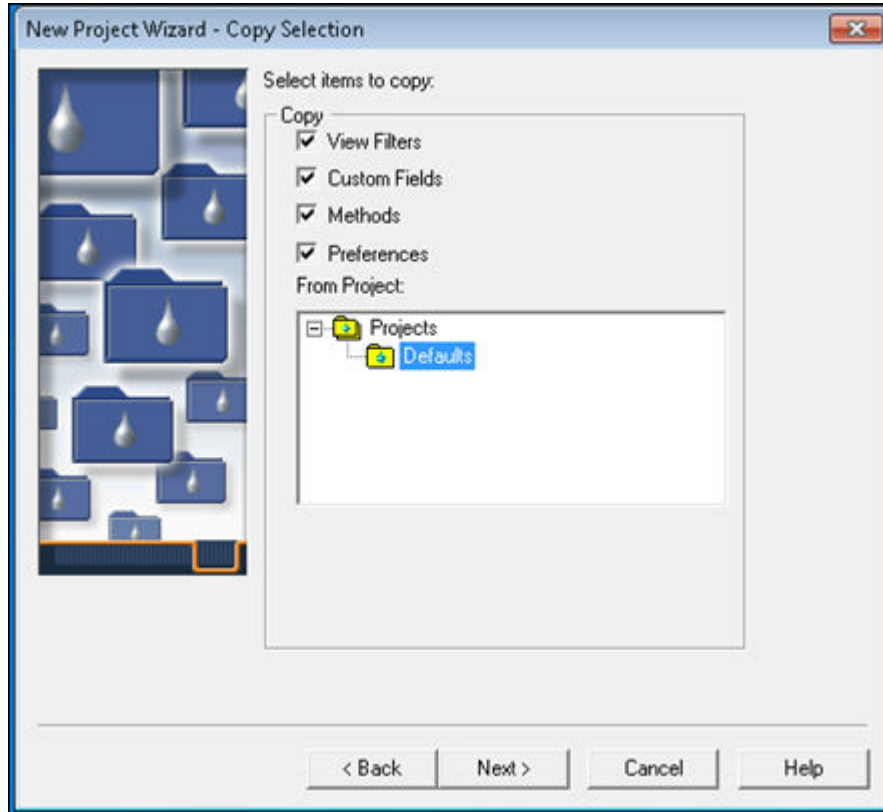
5. On the Options page, select the options that apply to the project, and then click **Next**.

Figure A-4: New Project Wizard - Access Control page



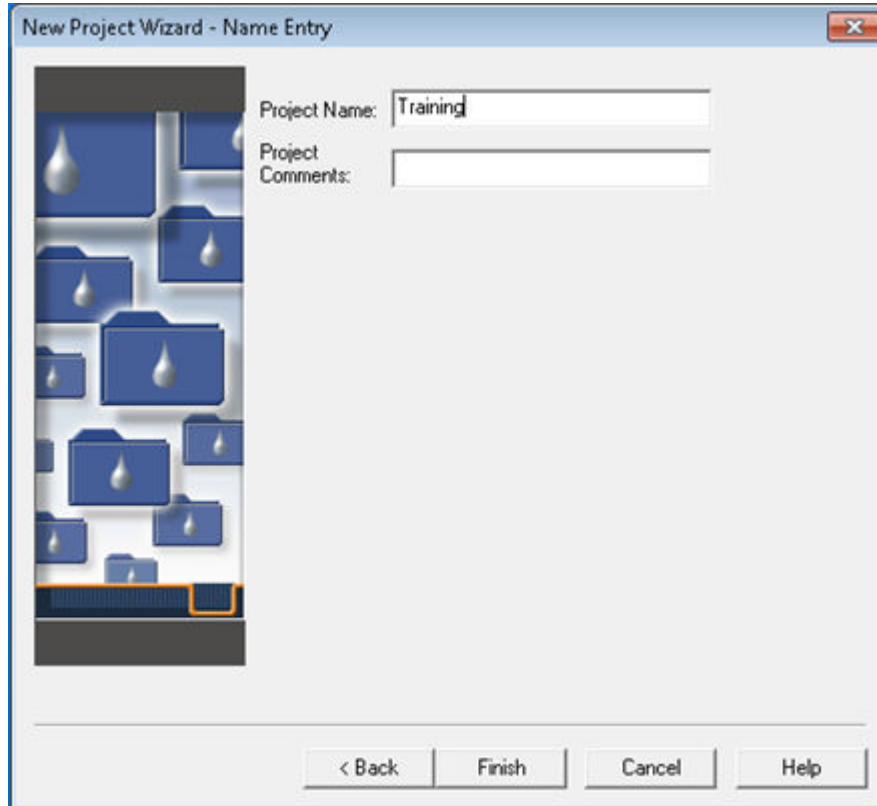
6. The Access Control page establishes the level of access users and user groups have to the project you create. Determine the appropriate access for the project, and then click **Next**. Refer to the Empower Online Help for more information.

Figure A-5: New Project Wizard - Copy Selection page



7. The Copy Selection page allows you to copy certain pieces of information, such as methods, from an existing project into the new project. Select the appropriate items by selecting the check boxes, and then selecting the existing project's name in the **From Project** list.
8. Click **Next**.

Figure A–6: New Project Wizard - Name Entry page



9. On the Name Entry page, type the desired name in the **Project Name** field and, if you selected the Full Audit Trail Support option, type a comment in the text box.
10. Click **Finish**.
11. In the QuickStart window, select **Manage > Change Project/System**.
12. Select the new project, and then click **OK** to open the project.

B Creating Systems

A chromatographic system contains the specific instrumentation configuration you use to acquire data with the Empower software.

As part of your installation service, the Field Service Engineer will configure the first system for your organization. This appendix describes the creation process for subsequent systems.

Before you create a system, ensure that instruments are powered on and any calibration and diagnostic routines are complete.

B.1 Creating a chromatographic system

To create a chromatographic system:

1. Select **Manage > Create New System**.

Figure B–1: Create New System selection

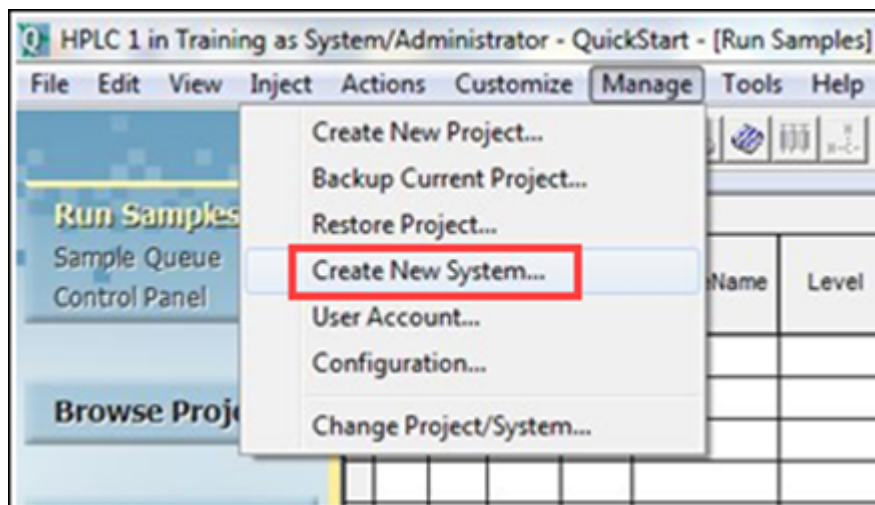
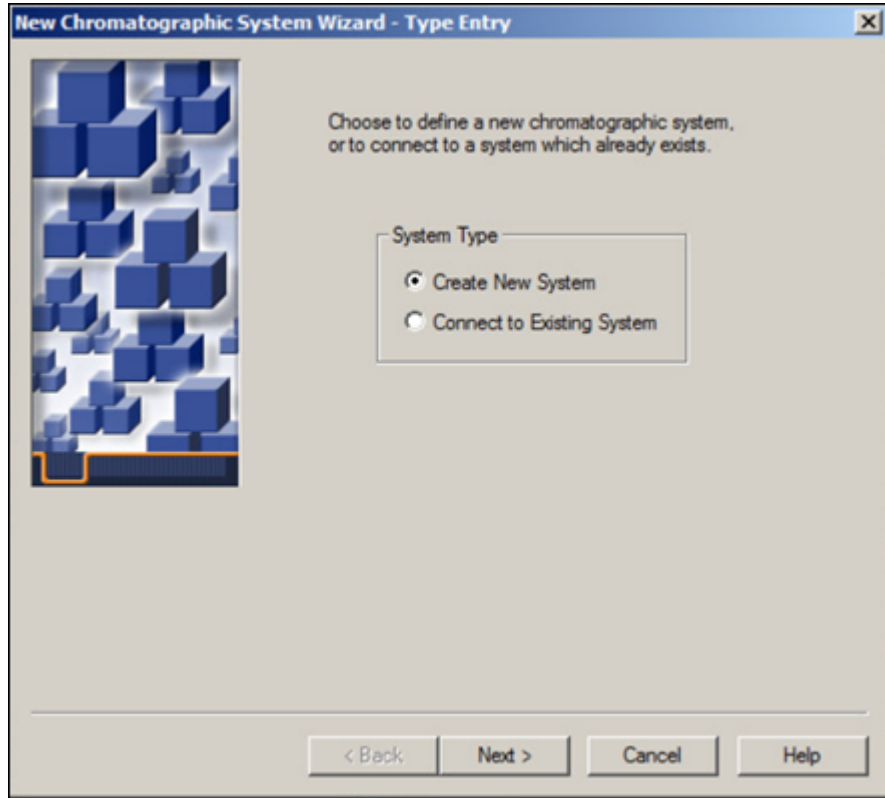
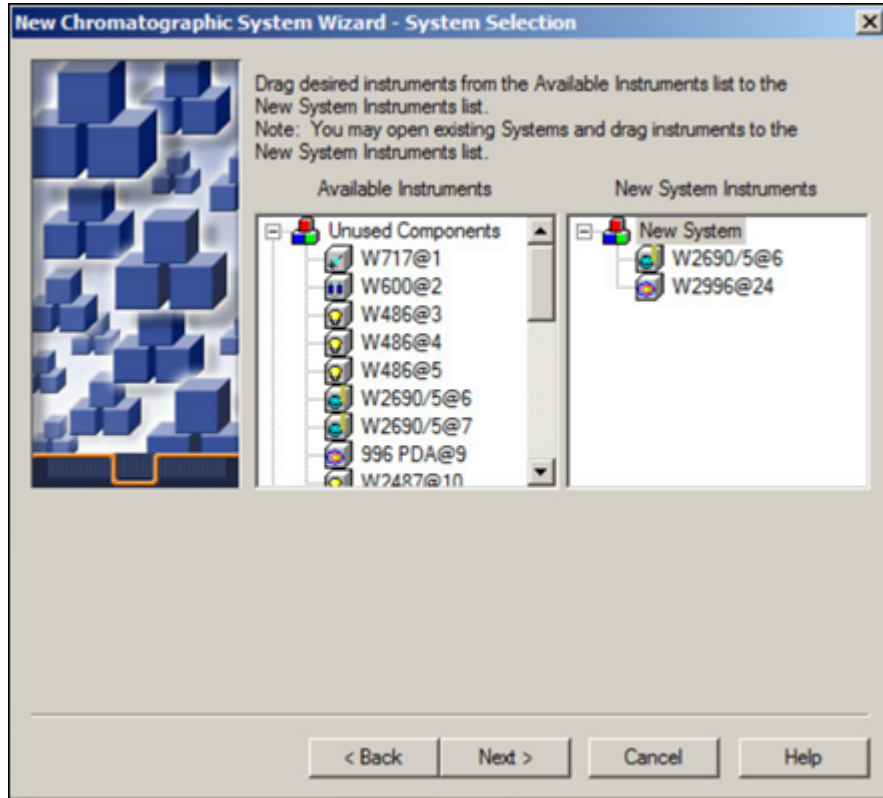


Figure B–2: New Chromatographic System Wizard - Type Entry page



2. Select **Create New System**, and then click **Next**.

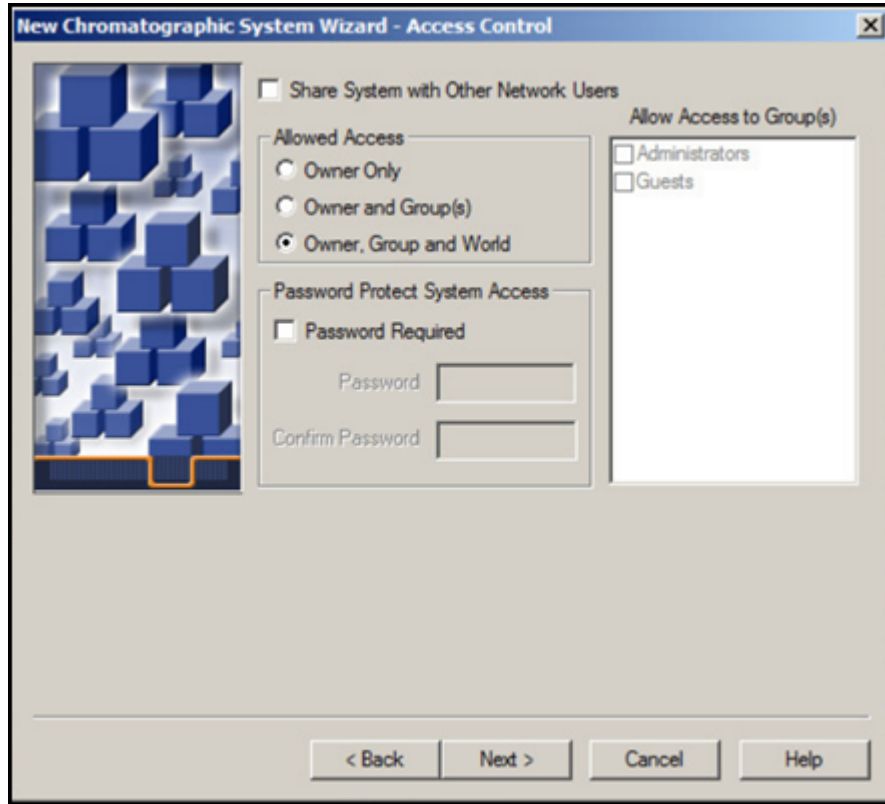
Figure B-3: New Chromatographic System Wizard - System Selection page



3. Build your system by moving system instruments from the **Available Instruments** tree pane to the **New System Instruments** tree pane through one of these two methods:
 - Drag and drop the instruments from the **Available Instruments** tree pane to the **New System Instruments** tree pane.
 - Double-click the instruments' icons in the **Available Instruments** tree pane.

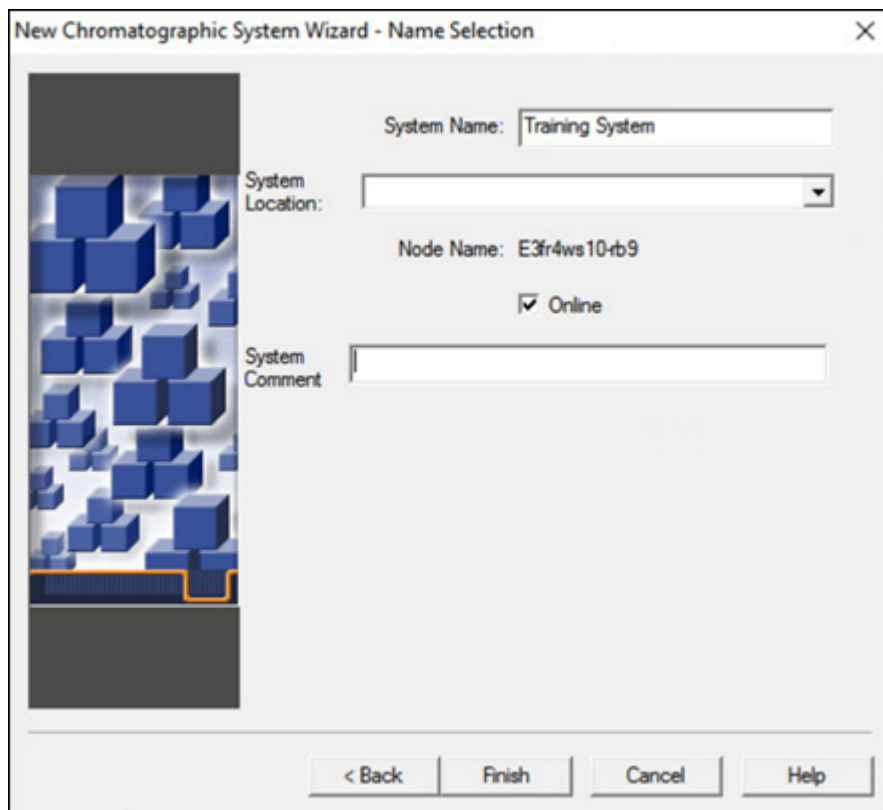
Result: The instruments appear in the **New System Instruments** tree pane.
4. Click **Next**.

Figure B-4: New Chromatographic System Wizard - Access Control page



5. This page establishes the level of access users, user groups, and all users will have to the system you create. Determine the appropriate access for the system. Refer to the Empower Online Help for more information. Click **Next**.

Figure B–5: New Chromatographic System Wizard - Name Selection page



6. Enter a descriptive name, select a **System Location** from the list (if any have been created), and any comments about the system, and do not change the default setting of **Online**.

7. Click **Finish**.

Result: The system is created.

Note: After the system is created, it is brought online, where it is active, available to be controlled, and can acquire data through Empower software.

8. When the message indicating that the system was successfully brought online appears, click **OK**. Figure B-6 shows the new system listed in the Configuration Manager.

Figure B–6: New system listed in the Configuration Manager

	System Name	System Location	Node Name	Node Location	OnLine	System Comments
1	HPLC 1	Beverly Lab	Landern-6f01m32	Milford Lab	Yes	Alliance with 2487
2	Training System	Milford Lab	Landern-6f01m32	Milford Lab	Yes	New
3	UPLC 1	Milford Lab	Landern-6f01m32	Milford Lab	Yes	UPLC with PDA