Reports

Charts

Tables

Drilldown Grids

User Lookup Tables

Data Transfer

Data Corrections

Limit Checking

Process Monitor

Quality Control

SPC

Trend Analysis

Species Conversion

Customized Export

Paper Saver Printing

Print Limits
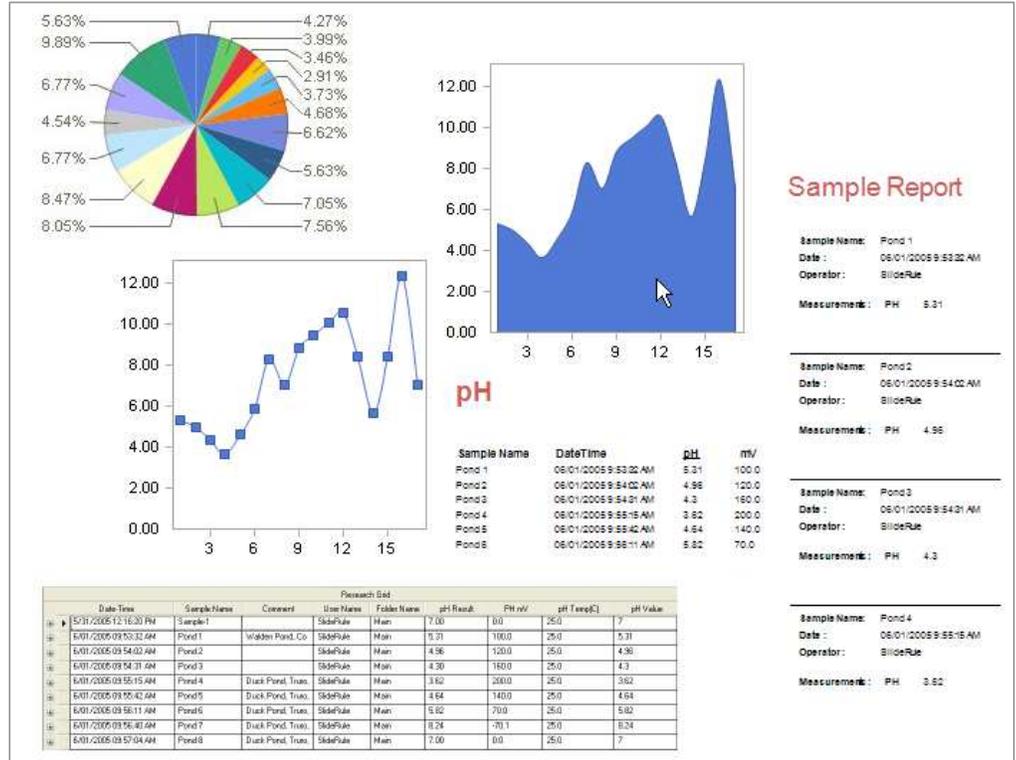
Getting Started Guide

LabSpeed

Topos Technologies

Table of Contents

1 Before You Begin

1.1 What is LabSpeed?

LabSpeed provides instant access to the data stored by various types of analytical instruments in the laboratory. LabSpeed integrates the data into one common research and reporting environment and can be used at the instrument or in the office to simplify the everyday data analysis and data transfer needs of a typical laboratory.

1.2 Key Features

Key LabSpeed Features include:

- Chart Designer
- Statistical Chart Designer (SPC)
- Report Designer
- Export Table Builder
- Reference Lookup Table Builder

Use LabSpeed To:

- Generate custom reports
- Analyze data trends
- Create new tabular data formats for Export to LIMS and other third party applications
- Perform calculations on the data and Include calculated output in reports
- Perform limit and quality checking on any data field
- Perform Statistical Process Control
- Auto-print and auto-export in "Monitor Mode"

1.3 Minimum System Requirements

- Microsoft® XP, Vista® or Windows 7
- 1024 x 768 minimum screen resolution; A higher screen resolution is recommended
- RAM – Minimum 1 Mb internal RAM

1.4 Using this Guide

This Guide is intended as a quick startup guide to describe the basics of LabSpeed concepts and operation for new users. It is not intended to be a comprehensive, detailed user manual. For complete information and examples of all the LabSpeed features, please refer to the online **Help Contents** as described later in section 2.4.

1.5 Technical Support

This Getting Started Guide and the application's help file should address the majority of user's questions. If not, you can contact support at:

Topos Technologies, Inc.
241 Boston Post Road West
Marlborough, MA 01752
508-460-1134
support@topostech.com

2 Getting Started

2.1 Starting LabSpeed

To run LabSpeed, double-click on the LabSpeed icon on the Desktop.

LabSpeed can also be run by choosing

Start Menu | All Programs | Topos Technologies| LabSpeed.

LabSpeed initially runs in 30-day Trial mode.   After 30 days, it must be licensed in order to continue. Licenses may be purchased online, or obtained from the instrument manufacturer.

2.2 Main Window

The diagram below shows the Main Window of LabSpeed as it would appear with an open Session that has six Views. The second View in the list, which is highlighted, is a Chart view.
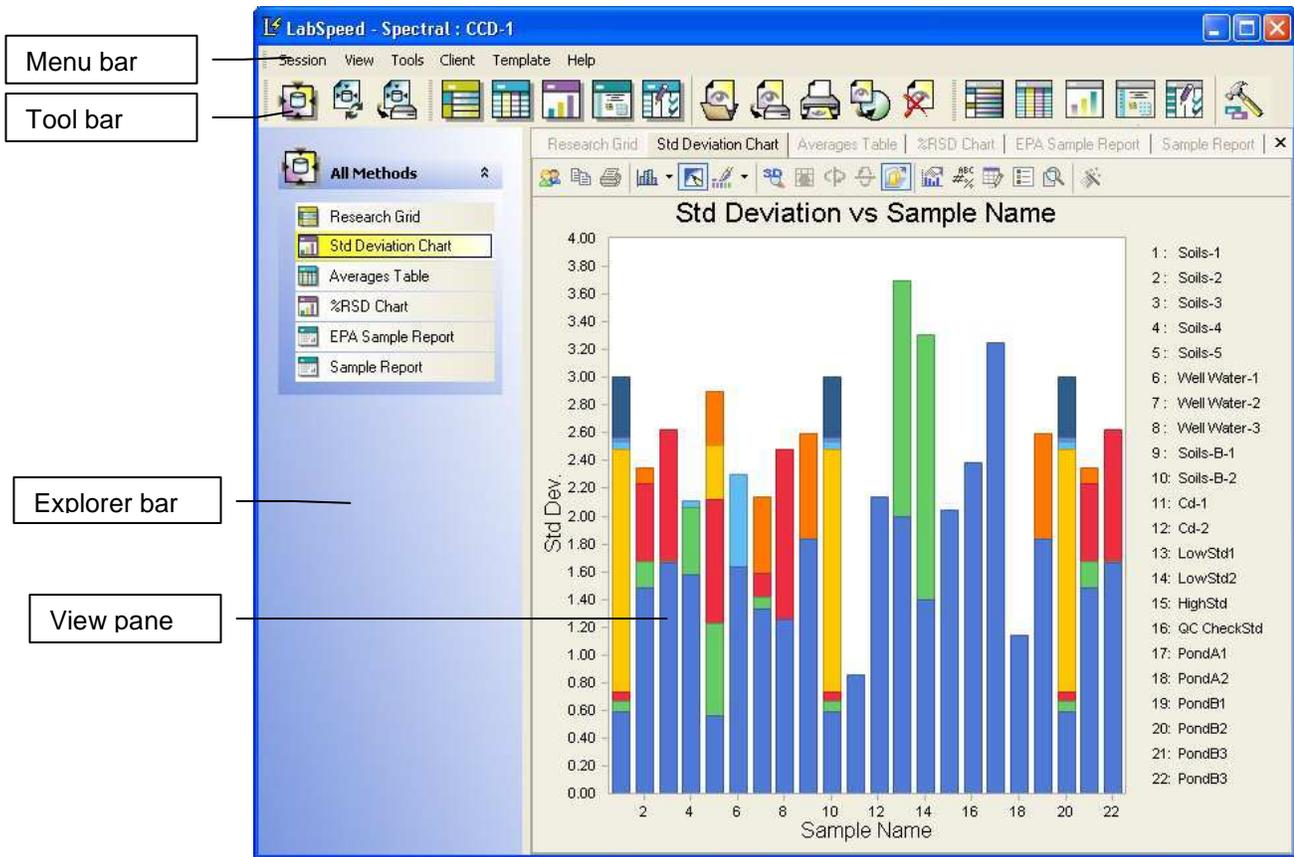
Figure 2: LabSpeed Main Window (Example)

2.3 Online Help

Very detailed documentation is provided in an indexed and searchable Help document accessible via the LabSpeed Help menu. All features of LabSpeed are demonstrated with several examples. In addition, a step-by-step Tutorial is provided. To view the Help document, choose **Help | Contents**.
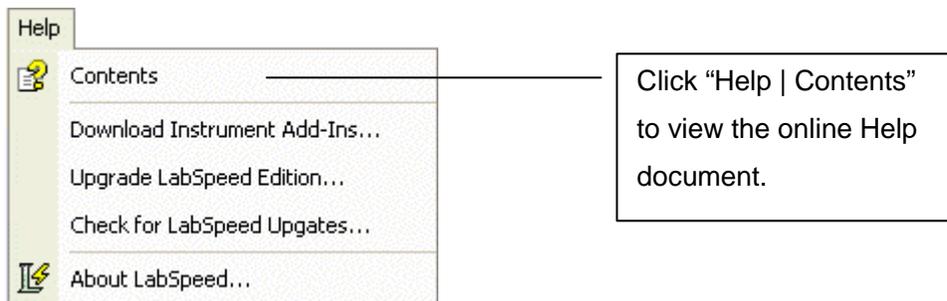
Figure 3: Choosing Help

3 Using LabSpeed

Data generated by various analytical instrument manufactures varies widely in scope and format. LabSpeed can be used by anyone interested in viewing and manipulating this data for the purpose of analyzing trends, reporting results or transferring it in a different format to a third party program, such as a company LIMS system.

3.1 Key Concepts

Understanding Templates and Sessions

The **Template** is the basic structure the user will interact with when using LabSpeed. The Template contains no data. It contains saved parameters that will be reused, such as data selection rules and a list of **View templates**. When data is applied to a Template, it becomes a **Session**, which is displayed in LabSpeed in the Main Window.

Several example Templates are installed with each instrument Add-In. Each example Template may be used as-is or modified by you and saved under a different name with different data selection parameters and/or View configurations.

For example, a Template might be called "SPC" that contains various SPC charts and Tables, each setup to perform statistical process control on specific elements with specific applied limits. Another Template might be used for Limit Checking or Trend analysis. It's up to the user what a Template will ultimately be used for, how it will be configured and what Views it will contain. Templates should be developed to perform the data analysis functions needed in the laboratory.

Understanding Views

A **View** is a display object such as a **Chart**, a **Table** or a **Report**. Views that are part of a Session are stored with the Session when it is saved. A View may also be saved as a separate View file. A View file contains no data and may be shared with other Sessions. For example a report may be saved to disk as a View file and opened by a different Session that contains different data.

Understanding the Active Connection

Each Template may be configured with its own connection parameters. For example, a Template may be setup to always connect to the same database, or open the same named file. Or it may be setup such that the file is dynamic and selectable by the user.

A Template may refer instead to the **Active Connection**, which is the default. The Active Connection is particularly useful when the data connection parameters will be the same for all Templates. For example when the instrument data is stored in a database, such as SQL Server or Access, the database name, password and other connection parameters will typically be the same for all Templates.

There can be multiple, named Connections, but only one can be active at a time. When the user changes the Active Connection, it becomes the new connection for all Templates that refer to the Active Connection. For example, one connection may refer to a primary database and another may refer to a backup database. The use can easily switch between the two by setting one or the other as "active".

To change the Active Connection, or modify or create new connections for a Client, go to **Tools | Client Connections…**

3.2 Creating a New Session

Ultimately, you will want to browse the instrument data, pick out some samples and view the results. You want to do this with minimal effort and without knowledge of how or where the data is stored. In LabSpeed you do this by **creating a new Session**.

A Session is created in two distinct steps.

1. Choose a Session Template

2. Select sample data by browsing the database or file

To create a new Session, click on the *New Session* toolbar button, which is the left-most button on the toolbar:

Choose a Session Template

First, select an instrument Client (list on left side) and then select a Template from the provided list of the available Templates. Each client instrument will have its own unique list.
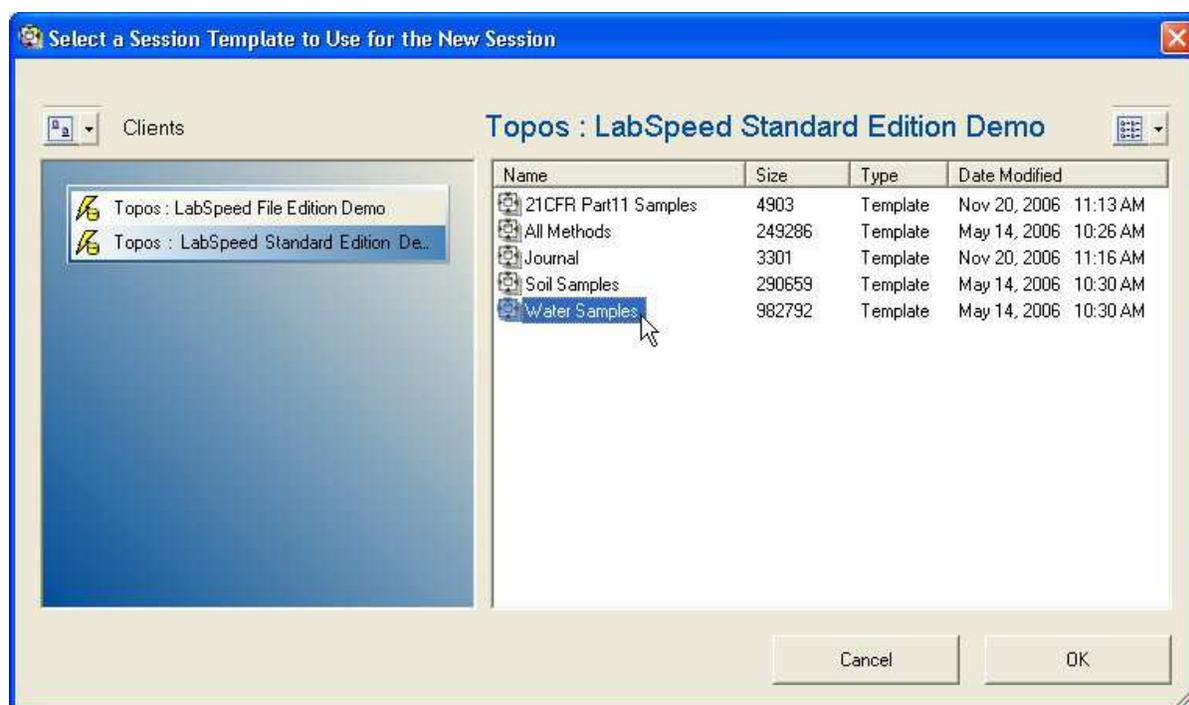
Figure 4: Choosing a Session Template

Select Samples

Next, browse the database for the samples of interest. This is done in the LabSpeed Database Browser shown below. The Browser provides several date range and advanced sample filtering options for choosing the exact samples you are looking for.
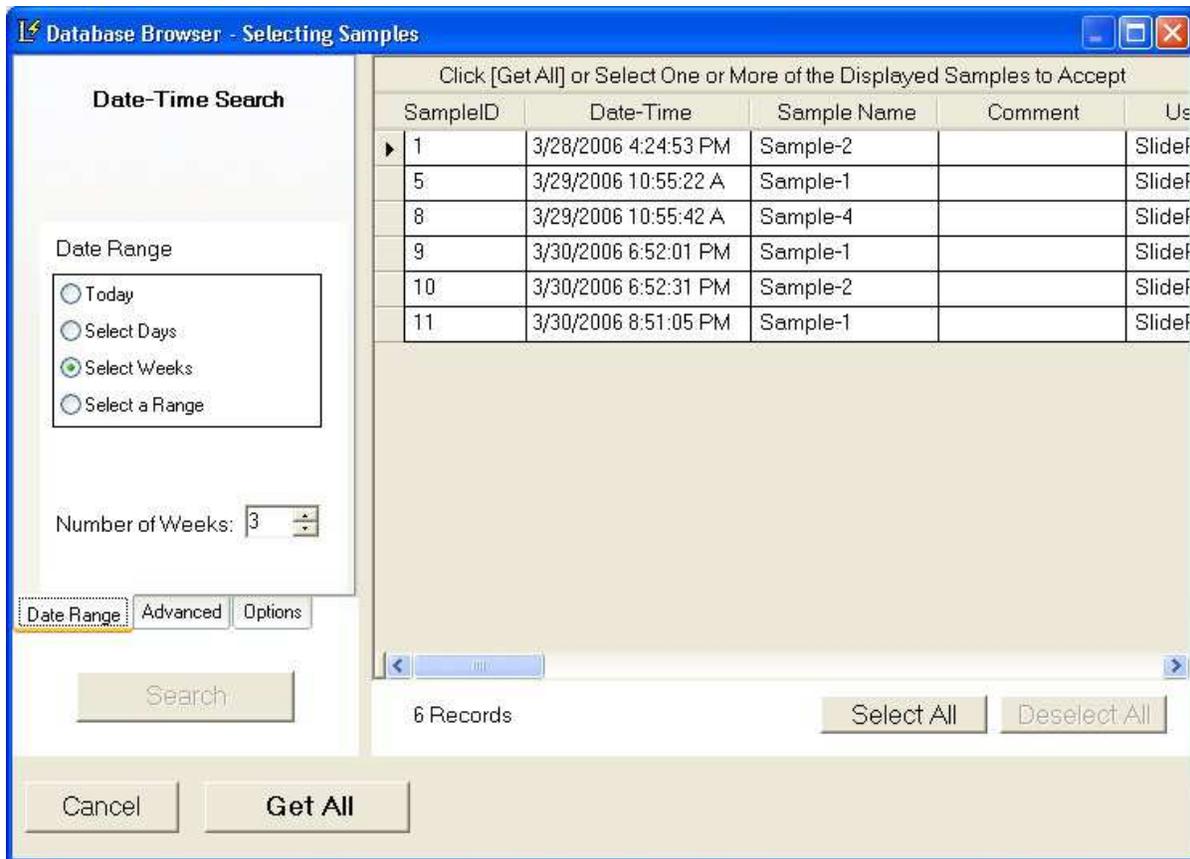
Figure 5: Searching and Selecting Samples

Click **Search** to re-query for a new list of samples if you change any of the search criteria. A list
of matching samples will be displayed. Click **Get All** to retrieve all the displayed samples, or you
can highlight specific samples in the list if you don't want all the them.

View the Results

The selected samples are read from the database or file and the **Session** is added to the
LabSpeed workspace.
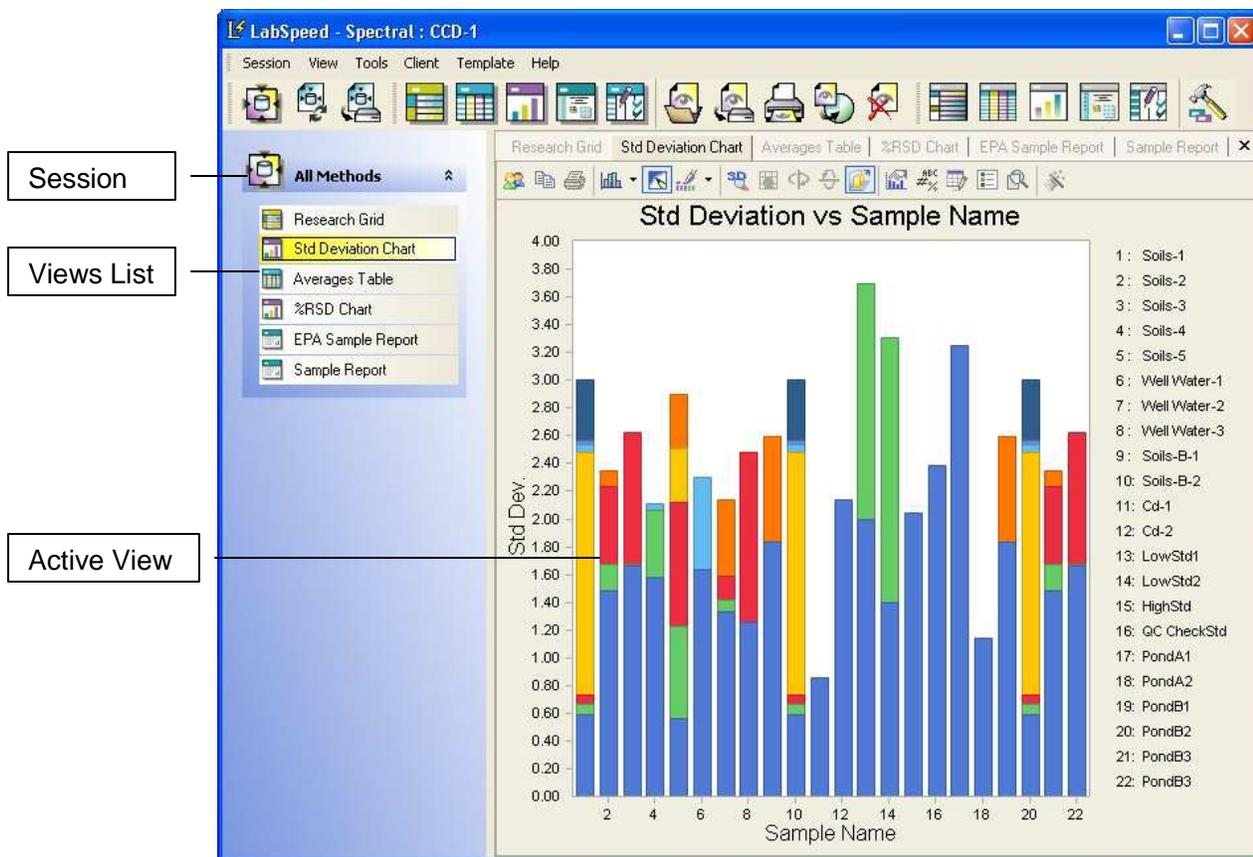
Figure 6: A Session displayed in LabSpeed

3.3 Working with Views

View Types

LabSpeed provides six View types for viewing the data – Charts, Statistical Charts, Reports, Research Grids, Tables and User Tables. Each type contains its own **Designer** for creating and modifying the View contents and layout.

Chart

The Chart View is a view that plots any kind of data on 2- or 3-D axes. Properties can be adjusted to display a chart in various styles, colors and scales. Charts are created or modified using the Chart Designer.
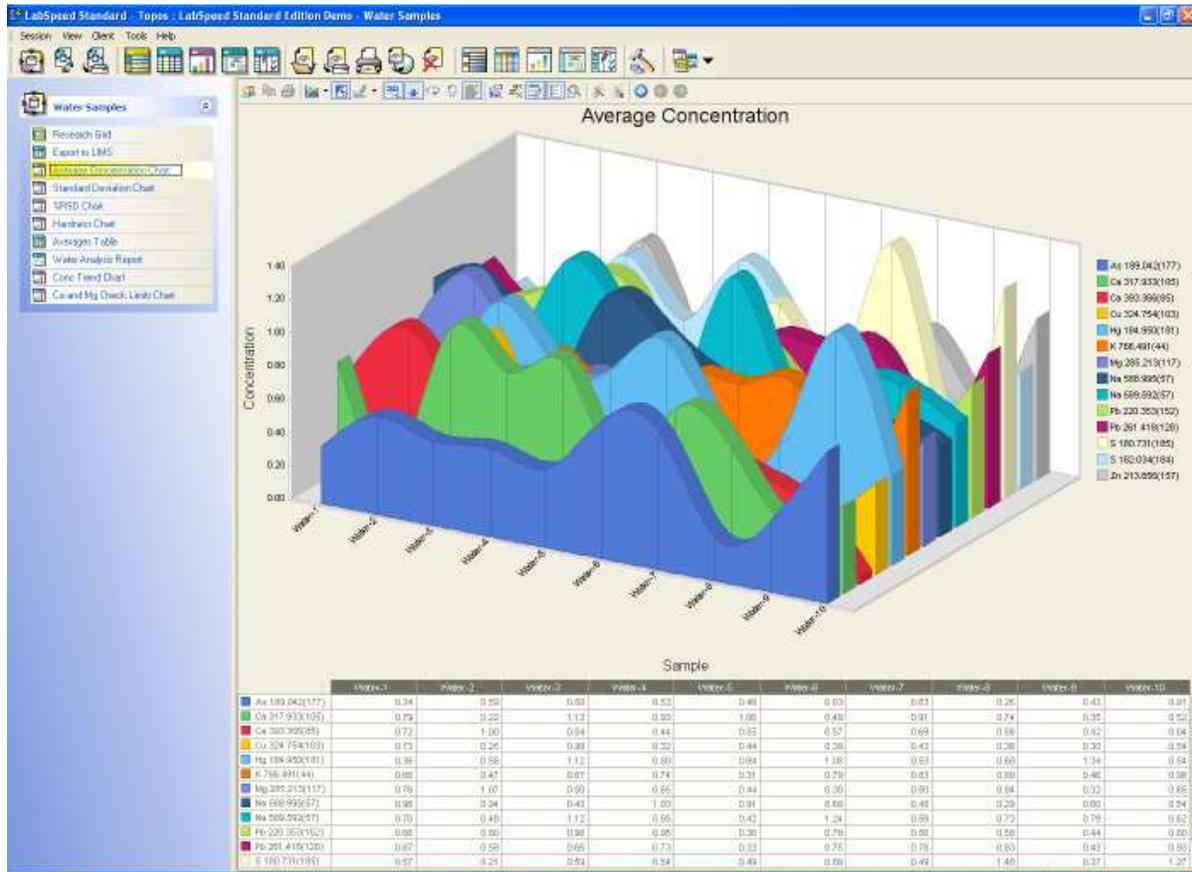
Figure 7: Chart View

Statistical Chart

The Statistical Chart View supports six pre-defined statistical studies, including SPC (Statistical Process Control), Central Tendency and X/Y Correlation. Additional statistical chart gallery types include Histograms, Frequency Polygons, Box Plot, X-Chart and R-Chart.
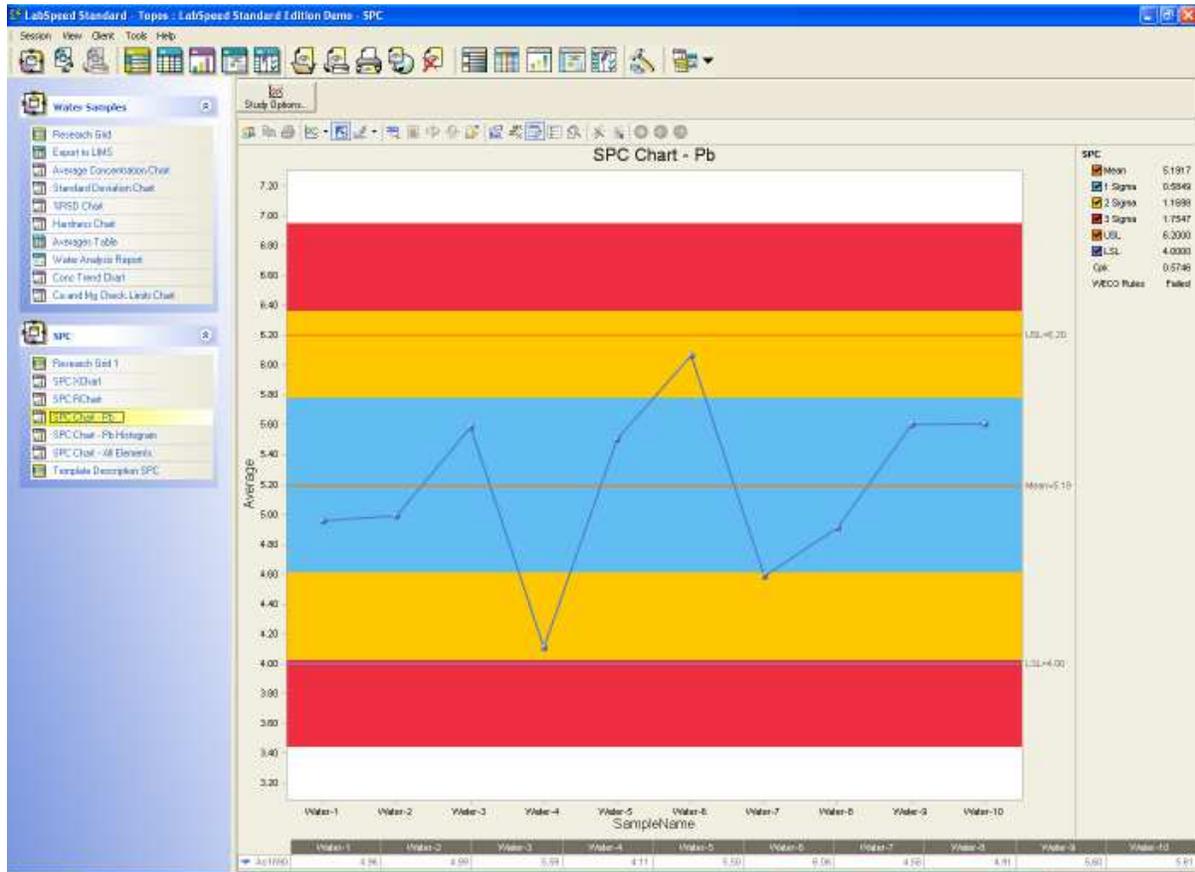
Figure 8: SPC Chart View

Report

The Report View is a view that displays results in a printable, page-layout format. Using the Report View toolbar, you can zoom and step through all pages. Reports are created or modified using the Report Designer.
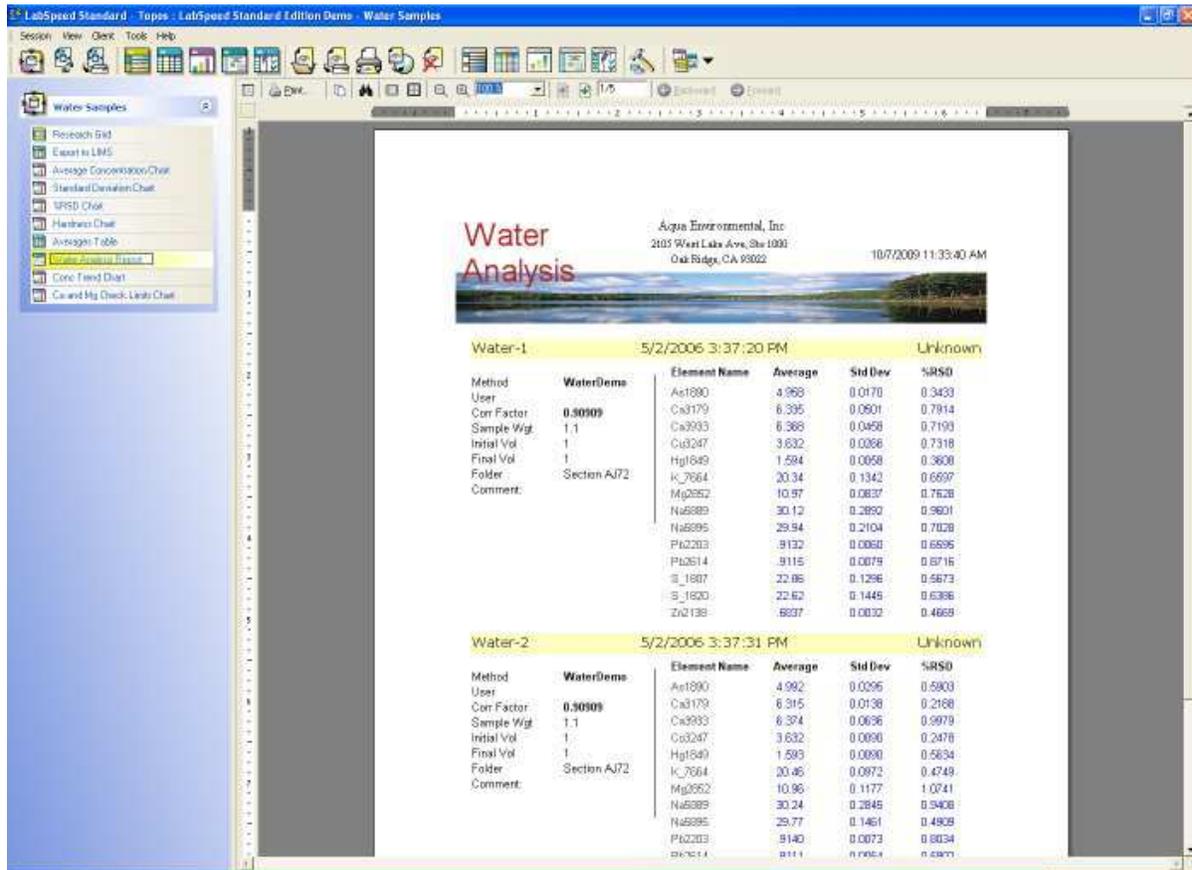
Figure 9: Report View

Research Grid

The Research Grid View is a drilldown view that displays results in a hierarchy of related tables. Typically the "parent" table contains Sample information like sample name and acquisition date. You can drill down on each sample to see its element information and replicates.
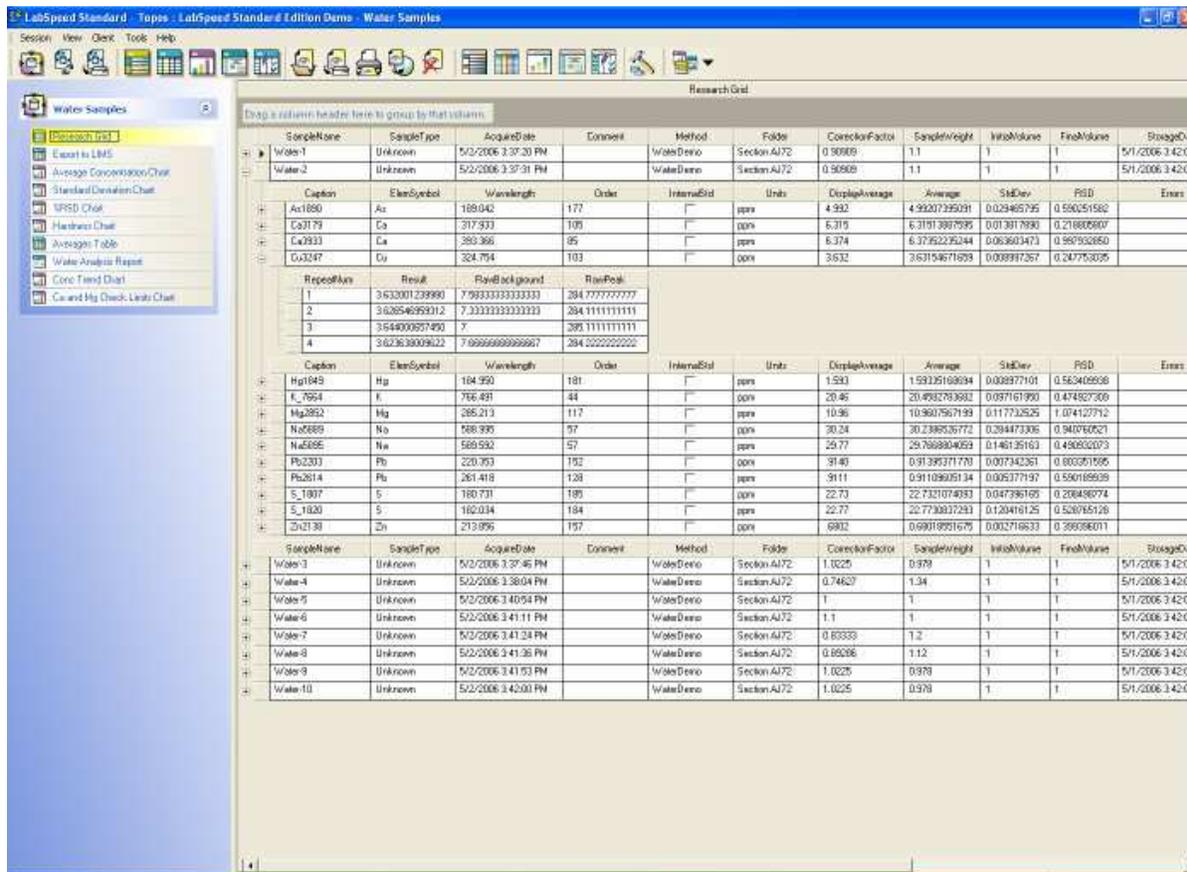
Figure 10: Research Grid View

Table

The Table View is a grid view that displays a subset of results from the Session data in a flat table of rows and columns. The Table View is ideal for displaying color-coded limit results and exporting data in user-defined formats. Table Views are created or modified using the Table Designer

Figure 11: Table View

User Table

The User Table View is a look-up table defined by the user that contains user-entered values. Pre-defined types include Limit Check, Quality Check and Print Limit. Custom User Tables may be created for almost any purpose, such as entering correction factors that can be applied to the instrument data. User Tables are created or modified using the User Table Designer.

Figure 12: User Table View

Adding Views to a Session

A View may be added to a Session by opening a View file, or by creating one from scratch using **Design Mode**.

Opening a View File

Open a View file by selecting the appropriate toolbar button on the Views Toolbar.

Open Research Grid

Open Table

Open Chart

Open Report

Open User Table

Open any type of View
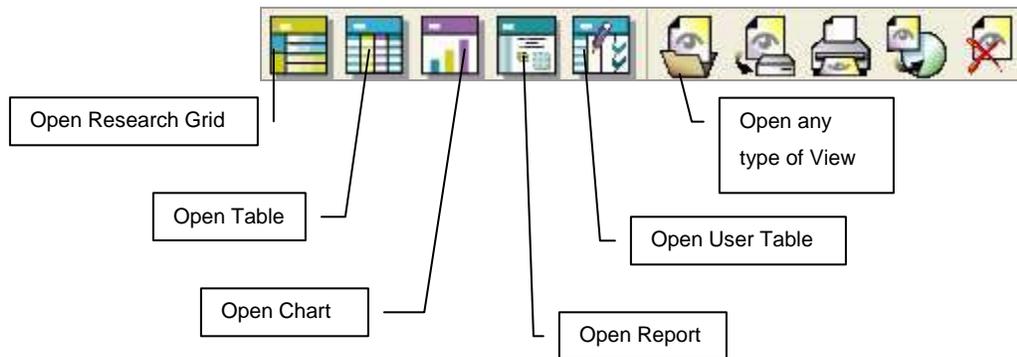
A list of Views of that type will be displayed for selection.

Create a new View from Scratch

Create a new Research Grid

Create a new Table

Create a new Chart

Create a new Report

Create a new User Table
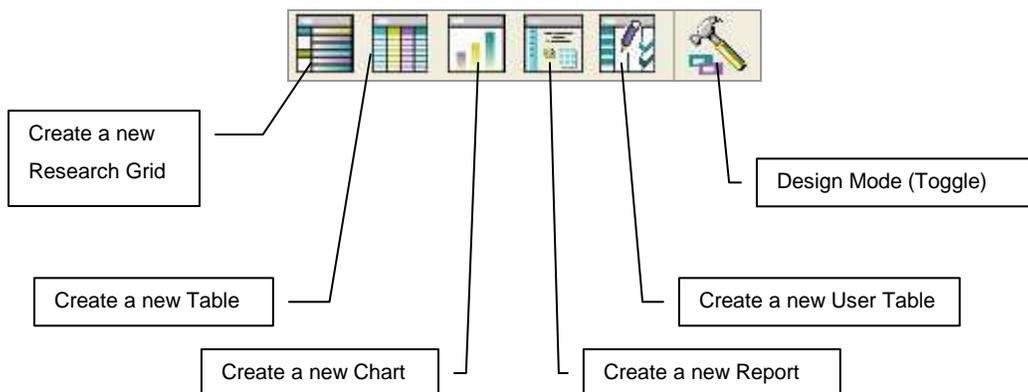
Design Mode (Toggle)

Create a new View by selecting the appropriate toolbar button on the Designer Toolbar.

Click on the Design Mode button to enter Design Mode for the currently selected View. The Design Mode button acts as a toggle to enter and exit Design Mode for a View. Use Design Mode to modify an existing View.

3.4 Exporting Data

Each View can export the data in a number of ways specific for the View type. For example, a Chart may be exported as a **Metafile** or **bitmap**. A Table may be exported as **Excel** or a **CSV** (comma separated values) text file. A Report may be exported as **PDF**, **Text**, **RTF** or **HTML**. There may be other formats as well. To export data, select a View and click the Export View button on the toolbar. The list of possible export formats will be displayed in a list for selection.

Export the View

The **Table View** is the preferred view for exporting to third party programs such as a LIMS system. Many third party programs import CSV text format, but have specific requirements for how the data is to be arranged and labeled. With drag & drop simplicity, the Table View can used to setup any CSV format as well as provide field name mapping. Enter Design Mode for a Table View to setup special Export options.

3.5 Printing Data

Although each View type can be printed, the Report View is the preferred method for generating high quality, customized page layouts of the analytical results, complete with page headers, and footers, page numbers and company logo.

Print the View
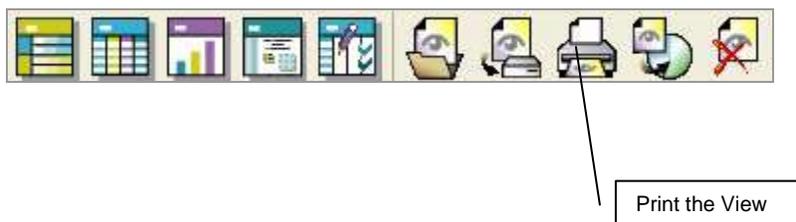
4 Advanced Features Overview

4.1 Preventing Changes to a Session

A Session can be **locked** so that it cannot be changed. A Session can be "soft" locked, so that anyone can unlock it to make changes, or "hard" locked, which requires a password to unlock it. Locking a Session using a password securely prevents any changes to a Session unless unlocked by someone who knows the password.

To lock a Session, click on **Session | Lock Session…**   The Session can also be locked by right-clicking on the Session in the Explorer bar and choosing Lock Session... from the pop up context menu. This menu item acts as a toggle. Click on it again to unlock the Session.

or
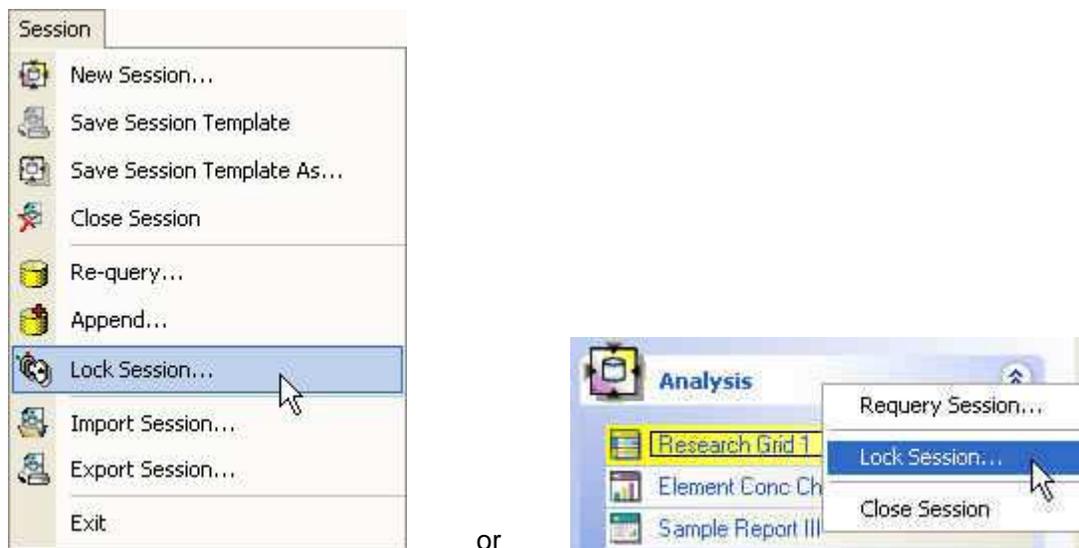
Figure 13: Locking a Session

4.2 Performing Calculations on the Instrument Data

You can add new columns to a Table and a Research Grid View and apply a formula to calculate the values based on other data in the same row. This can be used for applying corrections, evaluating check limits, converting to different units or species, calculating new quantities such as "hardness", or for any other purpose.

When new columns of data are added to a Research Grid, the new data is available for all other View types, including Charts, Reports and Tables.

To add new columns and apply formulas, click on **Design Mode** for the Research Grid

and choose the appropriate Designer toolbar buttons. .
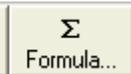
4.3 Auto-Exporting and Auto-Printing

Monitor Mode is a special LabSpeed mode that can be used to monitor the database for new samples.   When a new sample is detected it can be automatically printed and automatically exported. Monitor mode can be setup to:

- Auto-export to multiple locations with multiple formats
- Auto-print to multiple printers with different print layouts
- Match specific sample criteria to Auto-output
- Export and print more than one sample at a time (for example, to save paper a report could be printed with two samples per page)
- Auto-output by time (e.g. export and print all new samples detected every 30 minutes)
- Auto-output by number of samples (e.g. wait to auto-export or auto-print until 10 new samples are detected)
- Monitor Mode can run 24 hours/day, 7 days/week

> Monitor Mode is implemented through a special Session Template type called Monitor. The Monitor Template type is not supported by all Client Add-Ins. If it is supported, a Template called "Monitor" will be installed with the Client Add-In.

4.4 Limit Checking

Many processes require checking to determine if analytical results are within a valid range of values. Limit Checking is the method used to evaluate data by comparing to minimum and maximum values and then reporting the pass/fail results in a Table or Report. There are three types of Limit Checks supported by LabSpeed

1. Limit Checks - Limit Checks are typically used for checking sample results against upper and lower pre-set bounds for process control.

2. Quality Checks - Quality Checks are typically applied on Quality Control samples in order to check instrument performance.

3. Print Limit Checks - Print Limits are typically used to flag data that falls outside a calibration linear range.

Limit checking in LabSpeed requires a Limit Check **User Table** be created that contains high and/or low limit values for a series of instrument data. For example, if the instrument generates elemental concentrations, a Limit Check Table should specify high and low limits for each element concentration. Limit Checking may be applied to any instrument result, such as average concentration, standard deviation or %RSD. A Limit Check Table may specify any number of low and/or high limit values.

To Create a Limits Table, create a new User Table of the desired type:

Figure 14: Create a Limits Table

Once a Limit Table is created, it can be referenced by a Research Grid or Table to perform checking on a particular column of data. Results in a Table View may be color-coded to indicate Pass, Fail or Not Checked.

SampleNo	Element	Results	LimitResults	LimitStatus
BECK SAMPLE 3	Si	7.55	>>H7.55	Fail High
BECK SAMPLE 3	Fe	0.343	<L0.343	Fail Low
BECK SAMPLE 3	Cu	3.48	3.48	Pass
BECK SAMPLE 3	Mn	0.228	0.228	Pass
BECK SAMPLE 3	Mg	0.233	0.233	Pass
BECK SAMPLE 3	Cr	0.012		Not Checked
BECK SAMPLE 3	Ni	0.038	<L0.038	Fail Low
BECK SAMPLE 3	Zn	0.238	0.238	Pass
BECK SAMPLE 3	Ti	0.121		Not Checked
BECK SAMPLE 3	Ag	0.0006		Not Checked
BECK SAMPLE 3	B	0.0011		Not Checked
BECK SAMPLE 3	Ba	0.0001		Not Checked
BECK SAMPLE 3	Be	0.0001	<L0.0001	Fail Low
BECK SAMPLE 3	Bi	0.0016		Not Checked

Figure 15: Color-coded Limit Check Results in a Table View

4.5 Statistical Process Control (SPC)

Process control charts provide a basis for deciding whether the variation in the output is due to common causes (in control) or assignable causes (out of control). With all SPC charts, the Mean and the Standard Deviation values 1-sigma, 2-sigma and 3-sigma are calculated and displayed.

Upper and lower specification limits (USL, LSL) may be entered for each series from which the capability index can be calculated and displayed.

In addition to the standard SPC line chart, X-Charts, R-Charts, Histograms, Frequency Polygons and Ogive gallery types are supported.
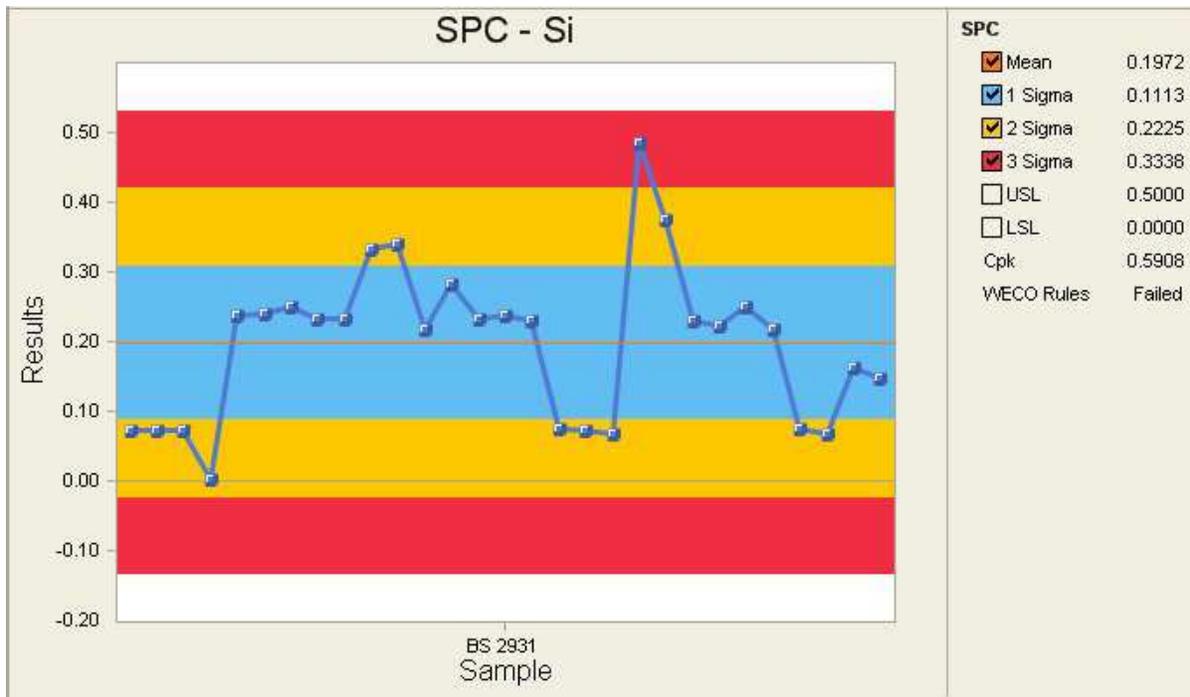
Figure 16: SPC Chart

To create an SPC chart, create a new Chart of the Statistical type. Then, in the Chart Designer, build the chart axes normally. It is recommended for SPC to control a single element at a time and create multiple SPC charts for each controlled element.

5 The Client Manager

The Client Manager is where you will manage the current list of LabSpeed Clients. You can add, upgrade, duplicate, view and delete Clients in the current list. To access the Client Manager, choose **Tools | Client Manager...**   The following Window will be displayed:
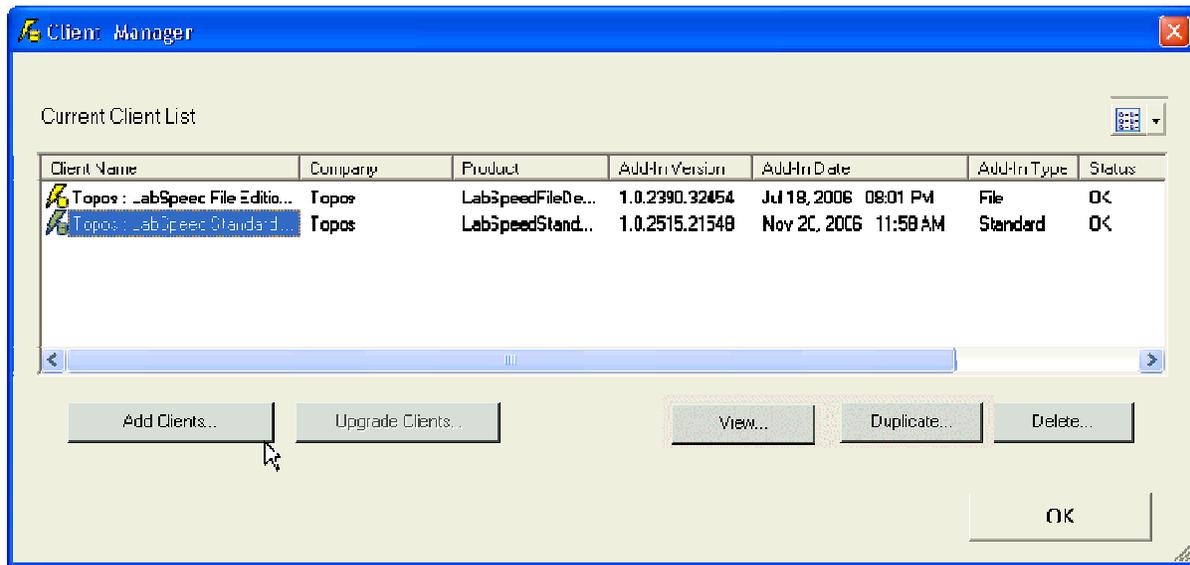
Figure 17: Client Manager

6 Appendix A – Installing Additional Instrument Support

Installing Add-Ins

Installation of specific instrument support is usually performed at the same time that LabSpeed is installed. However, adding additional instrument support to LabSpeed is a simple 4-step process.

1. Download Free Instrument Add-In from our Website

2. Install Add-In

3. Add Client to LabSpeed

4. Confirm Active Client Connection

Step 1. Download Instrument Add-In

Using a PC with internet access, visit our website at www.topostech.com and follow the link to **Supported Instruments**. Choose an Instrument Add-In from the list provided and download it to your PC Desktop or a temporary folder. The Add-In downloads as a single ".msi" (**M**icro**s**oft **i**nstaller) file.   If you are using a PC that is not where LabSpeed is installed, copy the install file to the PC where LabSpeed is installed to install it.

Note: If the PC where LabSpeed is installed has internet access, you can also run Lab-Speed and click on the **Help | Download Instrument Add-Ins** menu item. This is a direct link to the Download Add-In page on our website.

Step 2. Install Add-In

Double-Click on the downloaded ".msi" file to install. Follow the directions.

Warning: LabSpeed must not be running when installing an Add-In. If it is, exit the program first.

Step 3. Add Client to LabSpeed

Run LabSpeed. A dialog will appear that indicates LabSpeed has detected a newly installed Add-In. Follow the link to the **Client Manager.** You will see the newly installed Add-In Client Name presented in a list. Check the box to the left of the Client Name and click OK. This will add the Client to LabSpeed.

Note: You can also add the Client to LabSpeed manually. From the **Tools Menu**, choose **Client Manager**. In the Client Manager, click on the **Add Clients...** button.

Step 4. Confirm Active Client Connection

Before using this new Client to create charts and reports, you should check to make sure the database or file connection is setup the way you want it.

Run **Client Connections** from the **Tools Menu**. Select the newly added Client in the Client List and ensure that the Active Connection is set. If it is not, select the default Connection and click **Set Active**. Next, select the Connection and click **Edit....** On the following screen make sure the data source information is correct (database or file name and path, password, override preferences, etc). Click **Next** and test the connection to make sure the connection succeeds.

Un-installing Add-Ins

To un-install an Add-In, use the Windows Control Panel "Add/Remove Programs" application.
 Find the Add-In name in the list and remove it.

Note: Un-installing an Add-In does not remove the Client from the LabSpeed Client list.   If you wish to remove the Client from LabSpeed, run the Client Manager from the Tools menu, select the Client and choose Delete.

7 Appendix B – Glossary of Terms

Term	Meaning
Add-In	A LabSpeed Add-In is a separately installed external software module that specifically supports a particular instrument data source, file or database.
Connection	A Connection a list of connection parameters for a particular data source type.
Active Connection	Connections may be saved with unique names for later recall. The Active Connection is the currently selected connection to be used by all Templates.
Template	The Template (or Session Template) is the basic structure the user will interact with when using LabSpeed. It contains saved parameters that will be reused, such as data selection rules and a list of Views.
Session	A Session is a Template to which data has been added. A Session is displayed in the LabSpeed workspace.
View	A View is a visual object used to display data in a particular form, such as Table, Chart or Report.
Design Mode	The mode in which a View may be created or modified.
Client	A Client is the name of a LabSpeed solution, which consists of an instrument Add-In and a number of LabSpeed Session Templates and Views.
Client Manager	The section of LabSpeed where installed Clients can be managed. The Client Manager is used to add, remove, duplicate and change Clients
Limit Checking	Limit Checking is the method used to evaluate data by comparing to minimum and maximum values and reporting the pass/fail results.

8 Appendix C – Index